

VALUE ENGINEERING REPORT

Spring Street Viaduct Replacement
Over CSX Transportation, Inc.
Project Nos.: BHNLB-9073-00(016) &
BRNLB-9073-00(018)
Fulton County
PI Nos.: 752086 & 752560
January 7, 2009

OWNER:



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

VALUE ENGINEERING CONSULTANT:



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EXECUTIVE SUMMARY

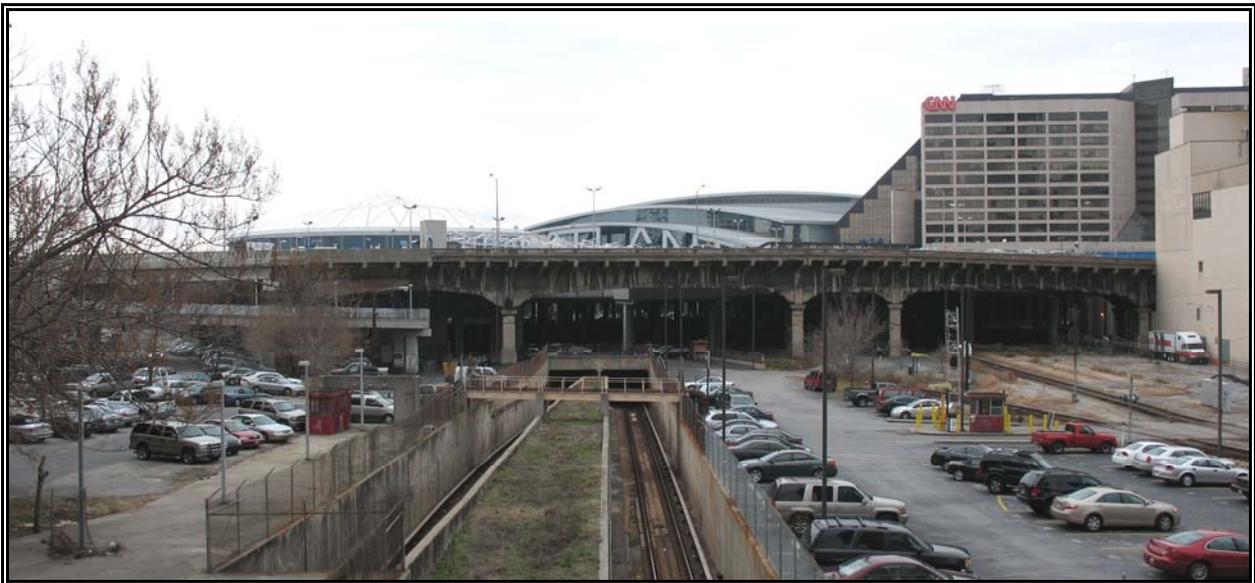
EXECUTIVE SUMMARY

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Introduction



Existing Spring Street Viaduct – Looking NW

This report summarizes the results of a value engineering (VE) study conducted on the replacement of the Spring Street Viaduct in Downtown Atlanta. Both projects are bridge projects relating to this replacement.

This effort included a four day study with a four person VE team on the 90% level design plans for the roadway and bridge portions of this project. The existing structure was built in 1922 and has evidence of advanced deterioration of steel and concrete elements. The sufficiency rating is 4.0 and trucks and busses are not allowed on the existing structure. The project consists of three elements as follows: 1) Spring Street from Mitchell Street to the start of the existing new viaduct construction at MLK Jr. Drive; 2) Spring Street from the end of the new viaduct construction north of Alabama Street to Marietta Street; and 3) MLK Jr. Drive from Forsyth Street to an

intersection with Spring Street. Element 1 includes the demolition and reconstruction of the viaduct from the abutment located between the Richard B. Russell Federal Building and the MLK Jr. Immigration Building to the MLK Jr. Drive intersection. Element 2 includes the demolition and reconstruction of the viaduct from north of Alabama Street crossing CSX Railroad and Wall Street. Element 3 includes the widening of the new viaduct construction from the new abutment to Spring Street viaduct, the widening of the approach slab and retaining wall, and the reconstruction of MLK Jr. Drive. The respective element lengths are 520 feet for Element 1, 900 feet for Element 2 and 480 feet for Element 3.

The estimated project cost for both projects including an estimated 10% factor for E&C and 10% for inflation, is \$19,333,000. This does not include right-of-way and utilities.

The study was conducted December 9-12, 2008, at the GDOT offices in Atlanta using a four person VE team. The design team included in-house GDOT personnel and Heath & Lineback Engineers, Inc. of Marietta, GA.

This report presents the VE Team's recommendations and all back-up information for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. The **Appendix** includes a complete record of the Team's activities and findings as well as the meeting attendees sign in sheet. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

Considerations

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

- ◆ The three Federal Buildings require access and security. Access to the MLK loading docks affected the location and configuration of piers 1 through 5.
- ◆ The CNN center parking deck has an entrance from Spring Street that does not provide a smooth transition. It will be reconstructed. Continuous access from Spring Street to this parking lot will be provided during construction.
- ◆ There is a pedestrian walkway under the existing viaduct. This will need to be closed during construction.
- ◆ The MARTA east –west line runs underneath span 14 of the viaduct from the Five Points Station.
- ◆ Norfolk Southern owns the wye track (under span 15) and leases it to CSX Transportation. CSX has two additional tracks under span 16.
- ◆ There are plans for a multi-modal passenger terminal (MMPT) near the corner of Forsyth Street and Lower Alabama. The proposed MMPT project includes several new rail lines and passenger platforms in the “gulch”. The layout of Spring Street piers 13 through 16 were closely coordinated with the current MMPT plans.
- ◆ The Atlanta Journal/Constitution (AJC) property is on both sides of and under the existing viaduct. Lower Wall Street is owned by AJC. The AJC is in operation 24

- hours per day and their prime concern is access with minimal disruption to their activities. Pier 17 was located to provide access to the AJC facilities. The existing AJC parking deck access will be rebuilt as part of the new bridge.
- ◆ When the Centennial Parking Deck was constructed, a portion of the Spring Street Viaduct overhang was removed and reconstructed as part of a free standing double-tee structure serving as an entrance ramp. This will be reconstructed within the Centennial property line to serve as an entrance ramp.

Results Obtained

The VE Team generated 16 ideas and presented 11 recommendations for consideration by GDOT. The recommendations involve using a concrete box beam for a portion of the structural steel section; reducing the lane width on the bridge to eleven feet; using one wider sidewalk in lieu of two; reducing the thickness of the sidewalks; using Class B concrete for sidewalks; increasing the cost by adding a new substructure in lieu of using the south abutment; closing access on lower MLK; and using smaller spans by reusing existing column locations for spans 1-5.

Neglecting the overlapping nature of the recommendations as much as possible, the net total of all the recommendations have the potential to reduce the project costs by as much as \$3.2 million in capital cost savings while continuing to provide the required functionality. This is shown on the last column of the Summary Table that follows the summary description below.

A brief presentation of these recommendations was conducted on December 12th with the following in attendance: Lisa Myers from GDOT Engineering Services, Nicoe Alexander from GDOT Urban Design and Heath & Lineback, the bridge design engineers and the VE Team: Dave Wohlscheid, George Obaranec, Andy Anderson and Aruna Sastry.

Recommendation Highlights

A-2 Use a single concrete box beam span for the CSX span pier 15-17.

This single 388 foot span replaces a continuous structural steel unit arrangement. There appears to be adequate vertical clearance to use the box beam. This solution will provide an open horizontal clearance for additional flexibility in future design options in this congested area.

Potential savings if implemented is \$445,000

B-1 Use three eleven foot wide travel lanes for Spring Street.

The existing design is for 4-10 foot lanes to match the 1995 constructed segment. This idea proposes re-striping the existing 1995 portion and constructing the new using 3-11 foot lanes. South of MLK Drive Spring Street carries two lanes of traffic in each direction, and North of Marietta Street it carries four ten foot lanes in one direction. The proposed three 11 foot lanes provides a good transition.

Potential savings if implemented is \$832,000

B-2 Use 1-14 foot sidewalk on the west side in lieu of 2-10 foot sidewalks.

This includes the section north of the 1995 construction only. The west side was chosen to retain the beautification completed by the Georgia Bar Building.

Potential savings if implemented is \$1,296,000

B-5 Use a 6 inch thick sidewalk.

This idea is to match current GDOT Standards and use 6 inch thick concrete rather than the 7 inch thick concrete used for the 1995 construction.

Potential savings if implemented is \$88,700

B-6 Use Class B concrete for bridge sidewalks.

This is in lieu of Class AA bridge deck concrete per existing design. The sidewalk rests on the new bridge deck and therefore no additional structural capacity is required or provided by the new sidewalk.

Potential savings if implemented is \$426,500

C-1 Design Consideration to use more, smaller diameter drilled caissons in lieu of the larger units.

This concept would help avoid obstructions as well as provide flexibility in placement of the caissons considering the unknowns involved in drilling in new locations.

No significant savings would result in this being implemented

F-1 Reduce work on Madison Avenue.

Because of the low traffic anticipated for this road that accesses the loading docks only, resurfacing and other minor improvements should suffice in lieu of complete reconstruction.

Potential savings if implemented is \$41,100

F-3 Revise the design of the South Abutment to add a new substructure.

This proposes to add a new drilled caisson in lieu of using the existing abutment. The existing abutment is 90 years old and carries several utilities. Construction would be simpler and more reliable if the area were avoided.

Potential cost increase if implemented is \$180,000

F-5 Close access on lower MLK.

This proposal is to use Alabama Street for access to the parking area served by this road. In addition, the volume of traffic using this route is relatively low.

Potential savings if implemented is \$89,800

H-1 Use BT-54 bulb tee PSC beams in lieu of BT-63 PSC units for spans 14 and 15.
It appears the BT-54 PSC beams will be adequate due to the availability of higher strength concrete.

Potential savings if implemented is \$40,400

H-2 Use smaller spans by reusing existing column locations in Spans 1-5.
Use existing columns and locations to minimize disturbance of new pier locations in this area. Existing columns are enhanced with drilled steel piles as shown in the sketch in the item development.

Potential savings if implemented is \$371,000

**Spring Street Viaduct Replacement over CSX Transportation, Inc.
SUMMARY OF POTENTIAL COST SAVINGS**

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Savings in Combination with other VE proposals
A	Structural Steel						
A-2	Use a single concrete box beam span for the CSX span 16-17	7,475,000	7,030,000	445,000	-0-	445,000	445,000
B	Superstructure Concrete AA						
B-1	Use 3-11 foot lanes	17,263,000	16,431,000	832,000	-0-	832,000	832,000
B-2	Use one 14 foot sidewalk on the west side	13,588,000	12,292,000	1,296,000	-0-	1,296,000	1,296,000
B-5	Use 6 inch thick sidewalks	88,700	-0-	88,700	-0-	88,700	-0-
B-6	Use Class B concrete for sidewalks	798,300	371,800	426,500	-0-	426,500	299,000
C	Drilled Caissons						
C-1	Use more smaller diameter drilled caissons in lieu of larger diameter units	Design Consideration				N/A	-0-

**Spring Street Viaduct Replacement over CSX Transportation, Inc.
SUMMARY OF POTENTIAL COST SAVINGS**

ITEM No.	CREATIVE IDEA DESCRIPTION	ORIGINAL INITIAL COST	PROPOSED INITIAL COST	INITIAL COST SAVINGS	FUTURE SAVINGS	TOTAL PRESENT WORTH SAVINGS	Maximum Savings in Combination with other VE proposals
F	Other						
F-1	Reduce work on Madison	49,300	8,200	41,100	-0-	41,100	41,100
F-3	Revise design of the South Abutment to add a new substructure	0	180,000	(180,000)	-0-	(180,000)	(180,000)
F-5	Close access on Lower MLK	96,600	6,800	89,800	-0-	89,800	89,800
H	PSC Beams, Type III						
H-1	Use a BT-54 bulb tee PSC beam in lieu of a BT-63 PSC for spans 14 and 15	400,100	359,700	40,400	-0-	40,400	40,400
H-2	Use smaller spans by reusing existing column locations in spans 1-5.	1,670,000	1,299,000	371,000	-0-	371,000	371,000
	TOTAL POTENTIAL SAVINGS						3,234,000

STUDY IDENTIFICATION

STUDY IDENTIFICATION

Project: Spring Street Viaduct Replacement over CSX Transportation, Inc.	Dates: December 9-12, 2008
Location: GDOT HQ – Atlanta	

VE Team Members

Name:	Discipline:	Organization:	Telephone:
David Wohlscheid	VE Team Leader	MACTEC	703-471-8383
George Obaranec	Highway Design	MACTEC	770-421-3346
Andy Anderson	Highway Construction	Street Smarts	770-813-0882
Aruna Sastry	Highway Bridges	Sastry and Associates	678-366-9375

Project Description



This effort included a four day study with a four person VE team on the 90% level design plans for the roadway and bridge portions of this project. The existing structure was built in 1922 and has evidence of advanced deterioration of steel and concrete elements. The sufficiency rating is 4.0 and trucks and busses are restricted from the existing structure. The project consists of three elements: 1) Spring Street from Mitchell Street to the start of the existing new viaduct

construction at MLK Jr. Drive; 2) Spring Street from the end of the new viaduct construction north of Alabama Street to Marietta Street; and 3) MLK Jr. Drive from Forsyth Street to an intersection with Spring Street. Element 1 includes the demolition and reconstruction of the viaduct from the abutment located between the Richard B. Russell Federal Building and the MLK Jr. Immigration Building to the MLK Jr. Drive intersection. Element 2 includes the demolition and reconstruction of the viaduct from north of Alabama Street crossing the CSX Railroad and Wall Street. Element 3 includes the widening of the new viaduct construction from the new abutment to the Spring Street viaduct, the widening of the approach slab and retaining wall, and the reconstruction of MLK Jr. Drive. The respective element lengths are 520 feet for Element 1, 900 feet for Element 2 and 480 feet for Element 3.

The existing typical section for Elements 1 and 2 consists of 4 – 10 foot lanes, no gutters, 10 foot sidewalks on each side within 59 feet of existing right of way. The existing Element 3 section consists of 2 or 3 – 12 foot lanes with varying width sidewalks on the left side and temporary barriers on the right side. A portion of Element 2 crosses the Atlanta Journal and Constitution Building (AJC), Wall Street and the Federal Reserve Bank with columns penetrating the AJC. Lower Wall Street is used by employees of both the AJC and the Bank. The City has requested that Wall Street remain open at all times. The base year traffic (2013) is estimated at 17,350 VPD and the design year traffic (2033) is 25,750 with 3% trucks. The posted and design speed for all elements is 30 mph.

The proposed design of Element 1 includes the following: 4-10 foot lanes and 9.5 foot sidewalks, including an auxiliary left turn lane into the parking area. It is proposed to operate as a one-way roadway north of MLK Jr. Drive and a two-way road south of MLK Jr. Drive.

The proposed section for Element 2 consists of 4-10 foot lanes with curb and gutter and 10.5 foot wide sidewalks on both sides. Steel spans of 173 feet and 215 feet will eliminate the column penetrating the AJC. The proposed right of way will vary from 60 feet to 72 feet. This section will operate as a one way roadway.

Element 3 is the widening of MLK Jr. Drive from Forsyth Street to Spring Street. On the upper level the section will consist of 4-10 foot lanes with an 8 foot sidewalk on the south side and a variable width sidewalk on the north side. The lower level will consist of 2 – 11 foot lanes with curb and gutter both sides, and a 6 foot sidewalk on the north side. This section will operate as a two way roadway.

The proposed alignment contains a 176 foot radius curve to correspond to the existing alignment. This will require a design exception. The proposed staged construction is as follows: from the south abutment to the southern CNN ramp will be demolished in the first stage; the rest of the north section will be demolished in the second stage; the span over Wall Street will be last to be constructed to keep Lower Wall Street open throughout construction. Detours will be provided via Forsyth Street, MLK Jr. Drive, Techwood Avenue and Walton Street.

The estimated project cost for both projects including an estimated 10% factor for E&C and 10% for inflation is \$19,333,000. This does not include right-of-way and utilities.

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

The study was conducted December 9-12, 2008, at the GDOT offices in Atlanta using a four person VE team. The design team included in-house GDOT personnel and Heath & Lineback Engineers, Inc. of Marietta, GA.

Kick off Meeting/Design Presentation

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

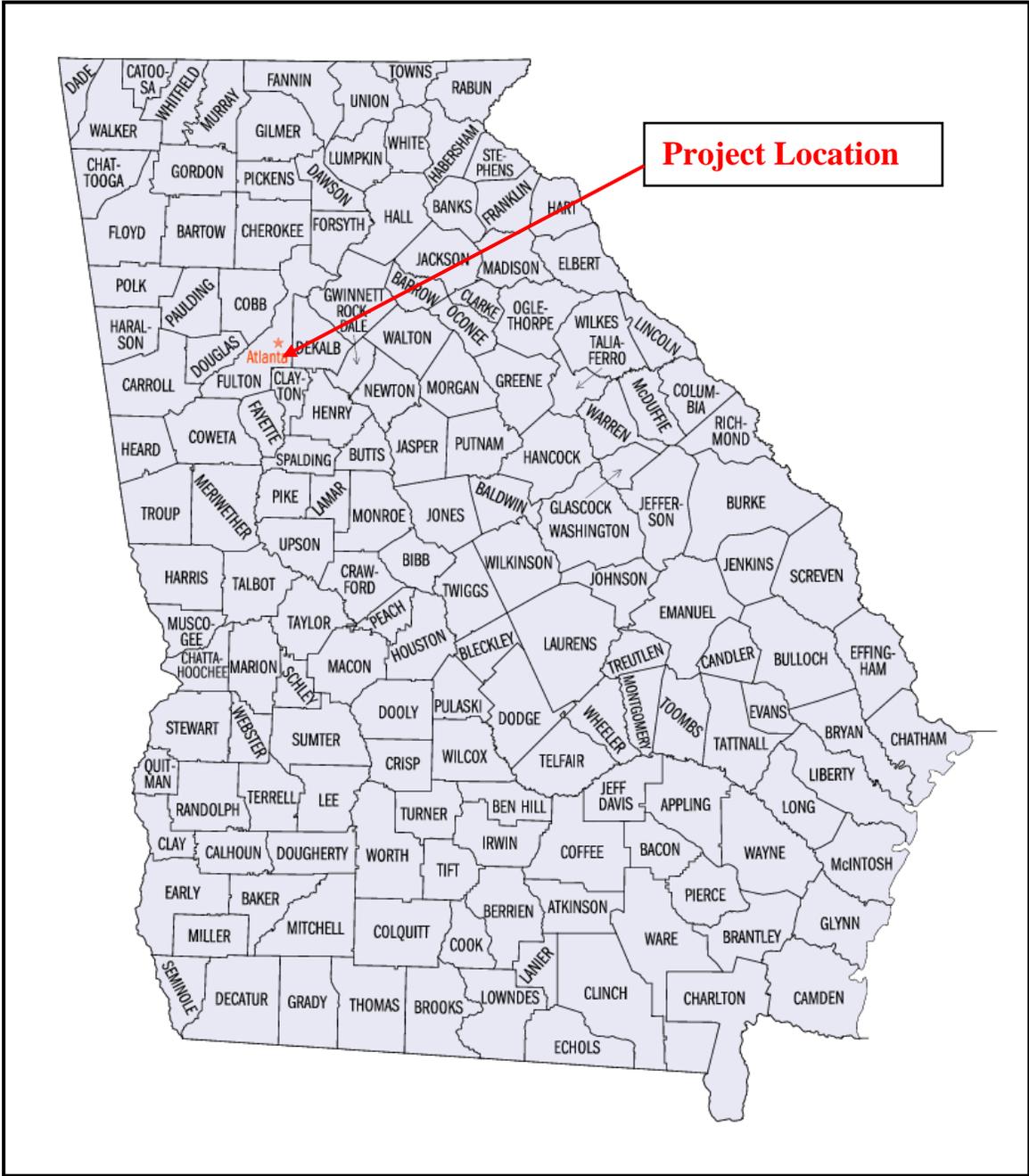
Lisa Myers	GDOT Engineering Services
Masood Shabazaz	Vice President, Heath and Lineback Engineers
Kristen Kasmire	Project Manager, Heath and Lineback Engineers
Nicoe Alexander	GDOT Urban Design
James Magnus	GDOT Construction
Ken Werho	GDOT T.O. Design Review
Jeff Simmons	GDOT Urban Design
Percy Combay	GDOT Area 4 Construction
Jerry Milligan	GDOT Right of Way
Gordon Sisk	GDOT Urban Design
Doug Franks	GDOT Bridge Design
Chuck Hasty	GDOT Urban Design
Darrell Williams	GDOT Area 4

The VE Team appreciated the project overview given by Kristen Kasmire and Nicoe Alexander. Highlights included:

- The existing viaduct was constructed in 1922 and has signs of considerable deterioration.
- The structure has a sufficiency rating of 4.
- The project has been under design/study since 1995.
- The project proposes to replace the viaduct from the South abutment to MLK Jr. Drive and from the CNN parking deck to the North abutment.
- Stakeholders concerns and requirements have been listed under the Considerations section of the previous section and are considered to be Constraints placed on the VE Team.
- The project matches the existing alignment therefore minimal ROW will be needed.
- Roadwork includes mill and overlay to minimize conflicts with existing utilities.
- Tie-ins with existing facilities are project constraints including tie-ins with Mitchell Street, the RBR Plaza, the MLK Plaza, the intersection with MLK, the existing Pier 5, existing Pier 13, the CNN Parking Deck, the AJC Parking Deck, the Centennial Parking Deck, the GA Bar Parking Deck and Marietta Street.

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

**Figure 1
Project Vicinity Map**



County Map of Georgia

Figure 2
Project Location Map

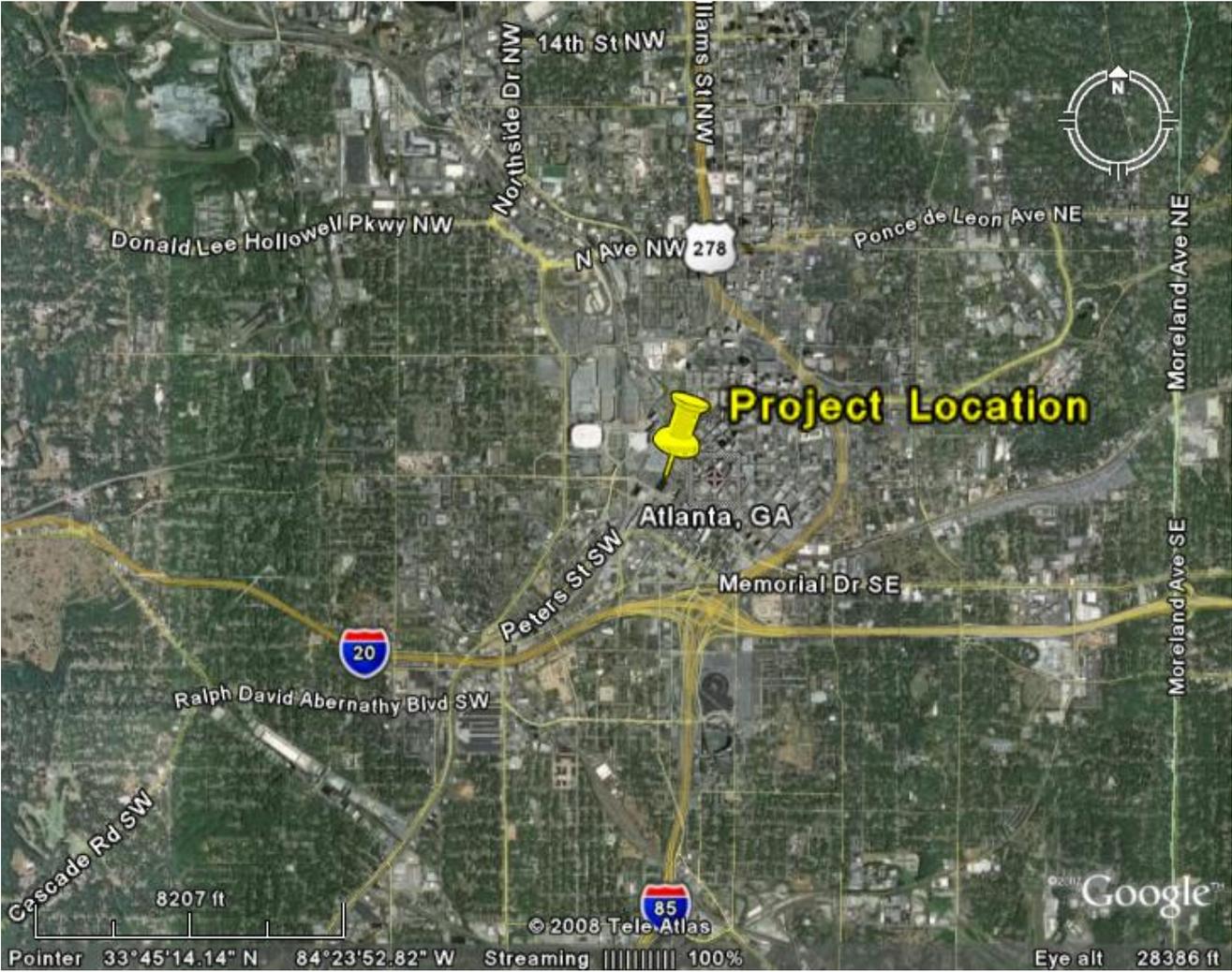


Figure 3
Project Limits

Spring Street Viaduct Replacement

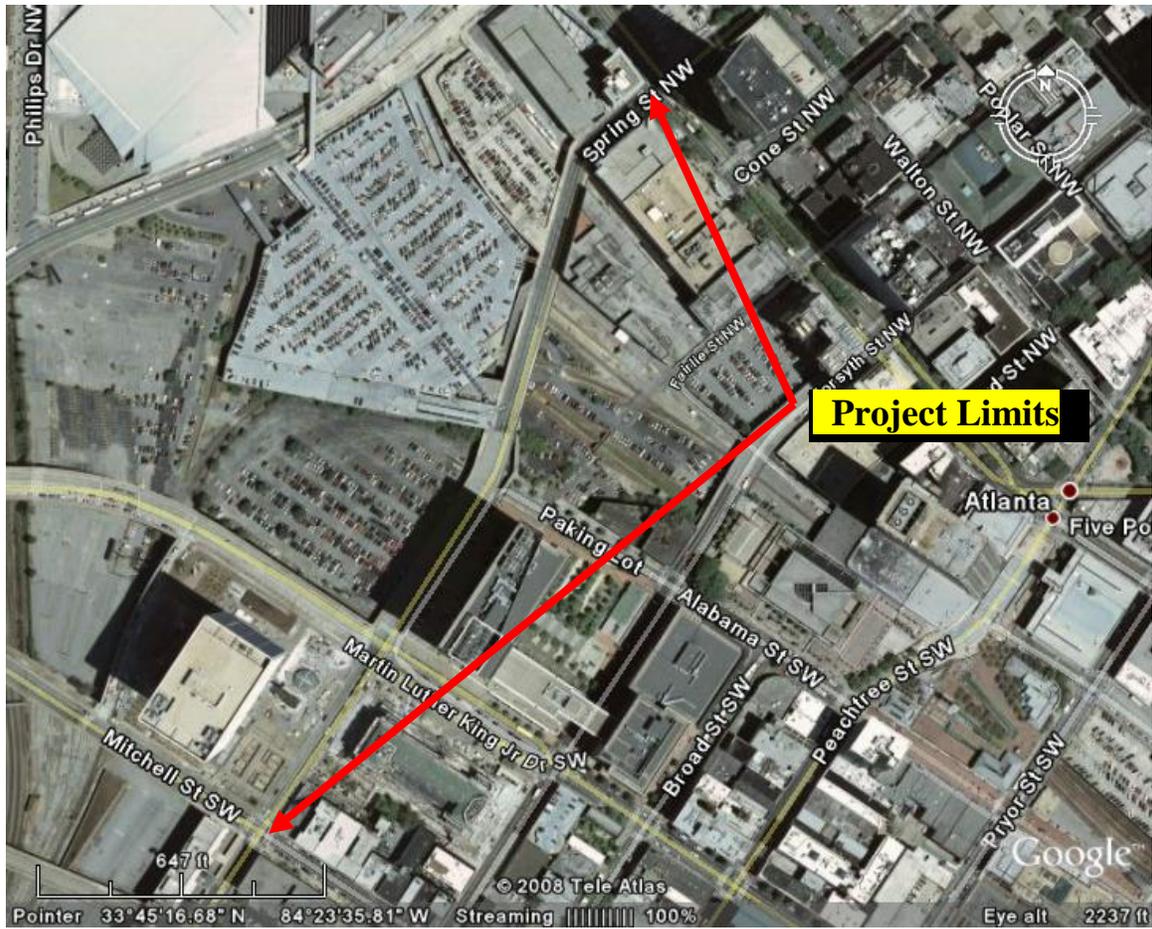


Figure 4 Project Plan

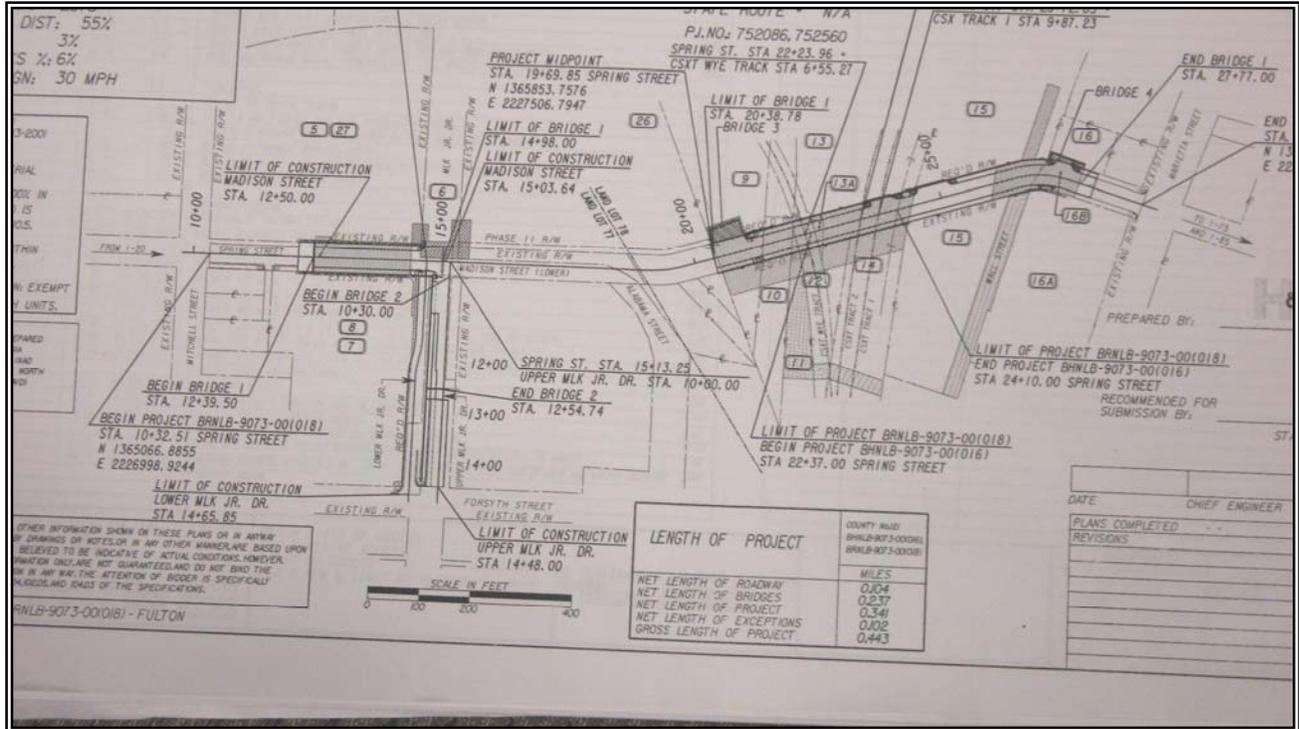
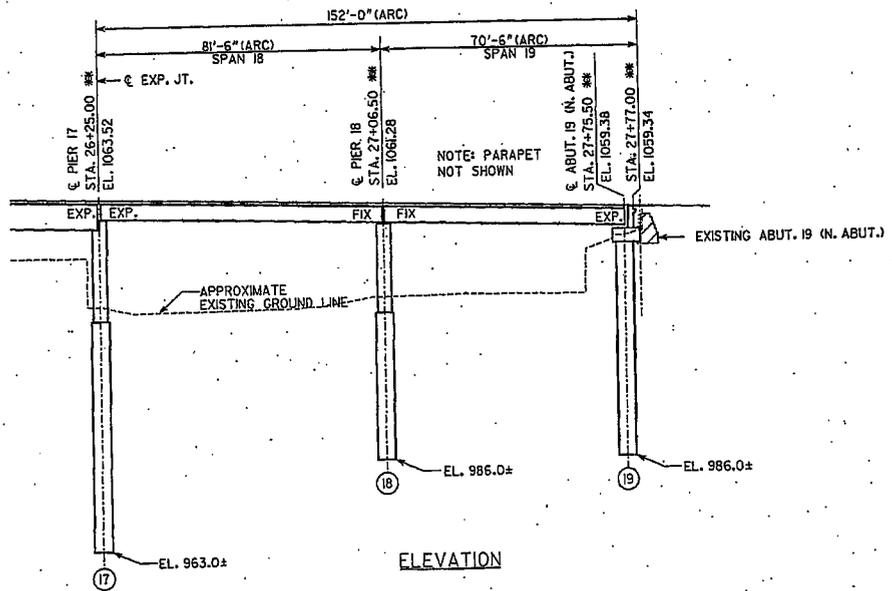
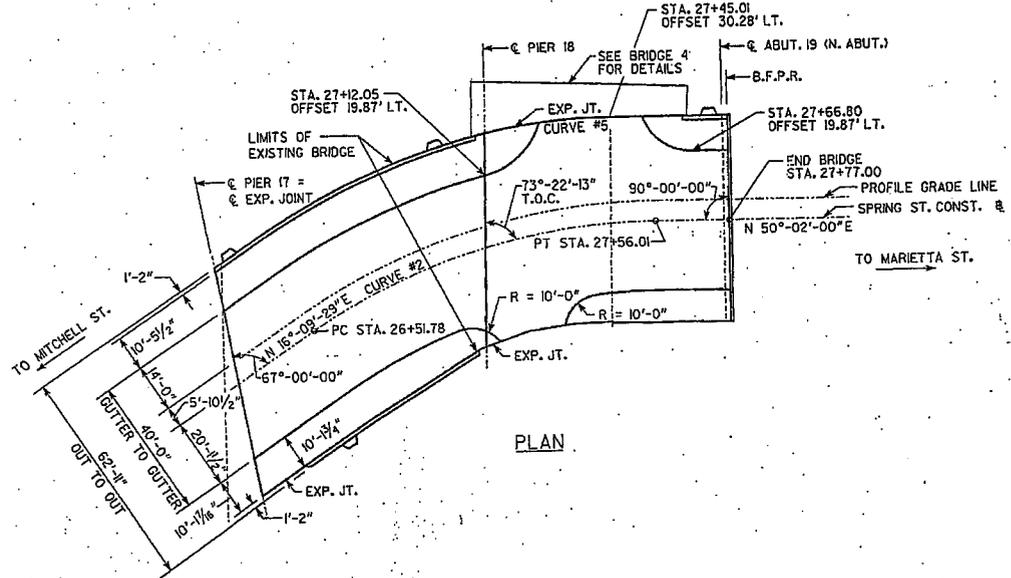


Figure7
Span 18-19

CURVE #2
 PISTA = 27+05.47
 $\Delta = 33^\circ-52'-31''$ RT.
 $D = 32^\circ-30'-02''$
 $R = 176.2920'$
 $T = 53.688'$
 $L = 104.230'$
 PIN = 1366560.2890
 PIE = 2227711.5950

CURVE #5
 PISTA = 27+29.74
 $\Delta = 12^\circ-48'-08''$ RT.
 $D = 35^\circ-34'-17''$
 $R = 161.07'$
 $T = 18.07'$
 $L = 35.99'$
 PIN = 1366597.7520
 PIE = 2227709.8720



Estimate Report for file "BHNLB-9073 (16) 752086_2008-09-12"

Section BRIDGE					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
449-1000	1	EA	10000.00	BRIDGE DECK JOINT SEAL, BRIDGE NO. BENT NO.	10000.00
500-0100	810	SY	4.57	GROOVED CONCRETE	3701.70
500-1006	1	LS	507500.00	SUPERSTR CONCRETE, CL AA, BR NO - (406)	507500.00
500-2110	305	LF	218.21	CONCRETE PARAPET, SPCL DESIGN	66554.05
500-3600	237	CY	850.00	CLASS AAA CONCRETE	201450.00
501-3000	1	LS	1568000.00	STR STEEL, BR NO - (490000#)	1568000.00
511-1000	33783	LB	1.01	BAR REINF STEEL	34120.83
511-3000	1	LS	108267.95	SUPERSTR REINF STEEL, BR NO - (101185#)	108267.95
524-0010	122	LF	1620.99	DRILLED CAISSON -	197760.78
540-1202	1	LS	200000.00	REMOVAL OF PARTS OF EXISTING BRIDGE, BR NO -	200000.00
544-1000	1	LS	30000.00	DECK DRAIN SYSTEM, BR NO -	30000.00
999-0001	1	LS	1000.00	PAINTING CONCRETE, SUBSTRUCTURE & SUPERSTRUCTURE	1000.00
Section Sub Total:					\$2,928,355.31

Section LIGHTING					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
681-4321	2	EA	6000.00	LIGHTING STD. 32 FT MH, 8 FT ARM	12000.00
682-6120	346	LF	13.32	CONDUIT, RIGID, 2 IN	4608.72
682-9020	2	EA	591.50	ELECTRICAL JUNCTION BOX	1183.00
Section Sub Total:					\$17,791.72

Section SIGNING & MARKING					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
653-1501	346	LF	0.68	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	235.28
653-1804	120	LF	2.14	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	256.80
654-1002	8	EA	3.15	RAISED PVMT MARKERS TP 2	25.20
Section Sub Total:					\$517.28

Total Estimated Cost: \$2,946,664.31

Estimate Report for file "BRNLB-9073 (18) 752560_2008-09-12"

Section BRIDGE					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
433-1000	312	SY	157.44	REINF CONC APPROACH SLAB	49121.28
449-1000	7	EA	10000.00	BRIDGE DECK JOINT SEAL, BRIDGE NO. BENT NO.	70000.00
500-0100	4802	SY	4.57	GROOVED CONCRETE	21945.14
500-1006	1	LS	2662500.00	SUPERSTR CONCRETE, CL AA, BR NO - (2130)	2662500.00
500-2110	1146	LF	218.21	CONCRETE PARAPET, SPCL DESIGN	250068.66
500-3200	330	CY	582.17	CLASS B CONCRETE (8" SIDEWALK)	192116.10
500-3600	381	CY	850.00	CLASS AAA CONCRETE	323850.00
500-3650	767	CY	295.81	CLASS AA-1 CONCRETE	226886.27
501-3000	1	LS	2331520.00	STR STEEL, BR NO - (728600#)	2331520.00
507-9003	2277	LF	145.06	PSC BEAMS, AASHTO TYPE III, BR NO -	330301.62
507-9030	1763	LF	168.27	PSC BEAMS, AASHTO, BULB TEE, 54 IN, BR NO -	296660.01
507-9031	1763	LF	186.88	PSC BEAMS, AASHTO, BULB TEE, 63 IN, BR NO -	329469.44
507-9100	132	LF	340.00	PSC BEAMS, DOUBLE TEE	44880.00
509-0005	13375	LB	3.37	PRESTRESSING CAST-IN-PLACE CONC, BR NO-	45073.75
511-1000	224785	LB	1.01	BAR REINF STEEL	227032.85
511-3000	1	LS	517385.66	SUPERSTR REINF STEEL, BR NO - (483538#)	517385.66
524-0010	1117	LF	1620.99	DRILLED CAISSON -	1810645.83
540-1202	1	LS	1500000.00	REMOVAL OF PARTS OF EXISTING BRIDGE, BR NO -	1500000.00
544-1000	1	LS	83695.61	DECK DRAIN SYSTEM, BR NO -	83695.61
999-0001	1	Lump Sum	10000.00	PAINTING CONCRETE, SUBSTRUCTURE & SUPERSTRUCTURE	10000.00
Section Sub Total:					\$11,323,152.22

Section DRAINAGE					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
550-1240	208	LF	43.56	STORM DRAIN PIPE, 24 IN, H 1-10	9060.48
550-1362	198	LF	72.24	STORM DRAIN PIPE, 36 IN, H 15-20	14303.52
550-1422	509	LF	122.69	STORM DRAIN PIPE, 42 IN, H 15-20	62449.21
668-2100	6	EA	2410.62	DROP INLET, GP 1	14463.72
668-4300	7	EA	2308.03	STORM SEWER MANHOLE, TP 1	16156.21
668-4311	73	LF	329.74	STORM SEWER MANHOLE, TP 1, ADDL DEPTH, CL 1	24071.02
Section Sub Total:					\$140,504.16

Section LIGHTING					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
610-6605	1	EA	24.92	REM LIGHTING STANDARD	24.92
611-5480	1	EA	3405.00	RESET LIGHTING STANDARD	3405.00
681-4321	11	EA	6000.00	LIGHTING STD., 32 FT MH, 8 FT ARM	66000.00
681-4326	6	EA	6000.00	LIGHTING STD., 32 FT MH, 8 FT TWIN ARM	36000.00
681-6366	25	EA	1515.00	LUMINAIRE, TP 3, 400 W, HP SODIUM	37875.00
681-6620	16	EA	540.00	LUMINAIRE, TP A, 150 W, HP SODIUM	8640.00
682-1304	565	LF	1.19	CABLE, TP THW, AWG NO 10	672.35
682-3424	2420	LF	6.68	MULT COND CABLE, TP RHW, 2-#2-1-#4	16165.60
682-6110	320	LF	14.25	CONDUIT, RIGID, 1 IN	4560.00
682-6120	2594	LF	13.32	CONDUIT, RIGID, 2 IN	34552.08
682-6140	2356	LF	26.94	CONDUIT, RIGID, 4 IN	63470.64
682-9020	33	EA	591.50	ELECTRICAL JUNCTION BOX	19519.50
Section Sub Total:					\$290,885.09

Section ROADWAY					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
150-1000	1	LS	125318.78	TRAFFIC CONTROL -	125318.78
153-1300	1	EA	67522.56	FIELD ENGINEERS OFFICE TP 3	67522.56
210-0100	1	LS	689838.92	GRADING COMPLETE -	689838.92

310-5100	1568	SY	15.95	GR AGGR BASE CRS, 10 INCH, INCL MATL	25009.60
402-1812	220	TN	100.00	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	22000.00
402-3121	100	TN	100.00	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	10000.00
402-3131	441	TN	100.00	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM MATL & H LIME	44100.00
402-3190	329	TN	100.00	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL BITUM MATL & H LIME	32900.00
413-1000	240	GL	4.00	BITUM TACK COAT	960.00
432-5010	1525	SY	2.07	MILL ASPH CONC PVMT, VARIABLE DEPTH	3156.75
441-0004	620	SY	46.94	CONC SLOPE PAV, 4 IN	29102.80
441-0006	775	SY	61.16	CONC SLOPE PAV, 6 IN	47399.00
441-0104	644	SY	34.18	CONC SIDEWALK, 4 IN	22011.92
441-0108	330	SY	92.45	CONC SIDEWALK, 8 IN	30508.50
441-4020	95	SY	39.67	CONC VALLEY GUTTER, 6 IN	3768.65
441-6222	1550	LF	15.44	CONC CURB & GUTTER, 8 IN X 30 IN, TP 2	23932.00
441-6223	320	LF	21.50	CONC. CURB & GUTTER, 8 IN X 30 IN, TP 3	6880.00
500-3101	175	CY	397.03	CLASS A CONCRETE	69480.25
500-9999	321	CY	229.45	CLASS B CONC, BASE OR PVMT WIDENING	73653.45
620-0200	200	LF	120.00	TEMPORARY BARRIER, METHOD NO. 2	24000.00
635-1000	100	LF	90.23	BARRICADES	9023.00
643-1153	200	LF	25.00	CH LK FENCE, ZC COAT, 6 FT, 11 GA	5000.00
643-8010	3	EA	1301.69	GATE, CHAIN LINK ZC COAT -	3905.07
Section Sub Total:					\$1,369,471.25

Section SIGNING & MARKING					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
632-0003	2	EA	12336.04	CHANGEABLE MESSAGE SIGN, PORTABLE, TYPE 3	24672.08
636-1029	121	SF	15.25	HIGHWAY SIGNS, TP 2 MATL, REFL SHEETING, TP 3	1845.25
636-2030	289	LF	9.20	GALV STEEL POSTS, TP 3	2658.80
653-0120	9	EA	74.10	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	666.90
653-0130	9	EA	93.20	THERMOPLASTIC PVMT MARKING, ARROW, TP 3	838.80
653-0140	12	EA	76.83	THERMOPLASTIC PVMT MARKING, ARROW, TP 4	921.96
653-1501	794	LF	0.68	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	539.92
653-1504	1468	LF	1.92	THERMOPLASTIC SOLID TRAF STRIPE, 12 IN, WHITE	2818.56
653-1604	233	LF	7.87	THERMOPLASTIC SOLID TRAF STRIPE, 18 IN, WHITE	1833.71
653-3501	637	GLF	0.51	THERMOPLASTIC SKIP TRAF STRIPE, 5 IN, WHITE	324.87
654-1001	30	EA	3.71	RAISED PVMT MARKERS TP 1	111.30
654-1002	91	EA	3.15	RAISED PVMT MARKERS TP 2	286.65
654-1003	12	EA	4.16	RAISED PVMT MARKERS TP 3	49.92
Section Sub Total:					\$37,568.72

Section TEMPORARY EROSION CONTROL					
Item Number	Quantity	Units	Unit Price	Item Description	Cost
163-0503	2	EA	570.17	CONSTRUCT AND REMOVE SILT CONTROL GATE, TP 3	1140.34
163-0529	100	LF	4.20	CONSTRUCT AND REMOVE TEMPORARY SEDIMENT BARRIER OR BALED STRAW CHECK DAM	420.00
165-0010	100	LF	0.92	MAINTENANCE OF TEMPORARY SILT FENCE, TP A	92.00
171-0010	200	LF	2.72	TEMPORARY SILT FENCE, TYPE A	544.00
Section Sub Total:					\$2,196.34

Total Estimated Cost: \$13,163,777.78

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.: A-2	PAGE No.: 1 of 3	CREATIVE IDEA: Use a single Concrete Box span for spanning over the CSX RR including Span 16-17
-------------------------	----------------------------	---

Comp By: AS Date: 12-10-08 Checked By: DCW Date: 12-11-08

Original Concept:

Use a 2-span continuous structural steel unit arrangement over the CSX Railroad (Span 16-17).

Proposed Change:

Build a single concrete box girder unit span 388'-0" long to replace the two span design.

Justification:

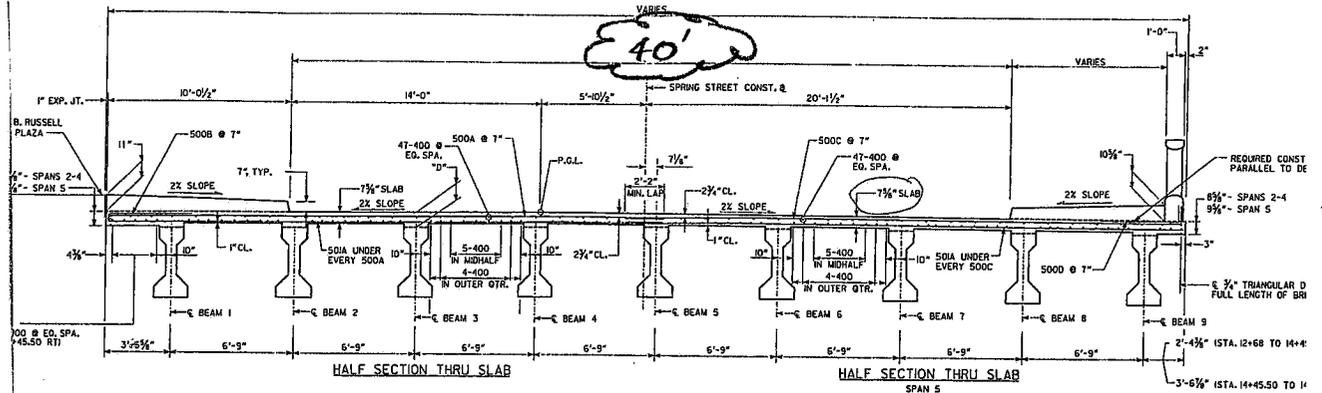
This will provide an open horizontal clearance and provide flexibility for multi-modal rail tracks in future construction.

This results in cost savings.

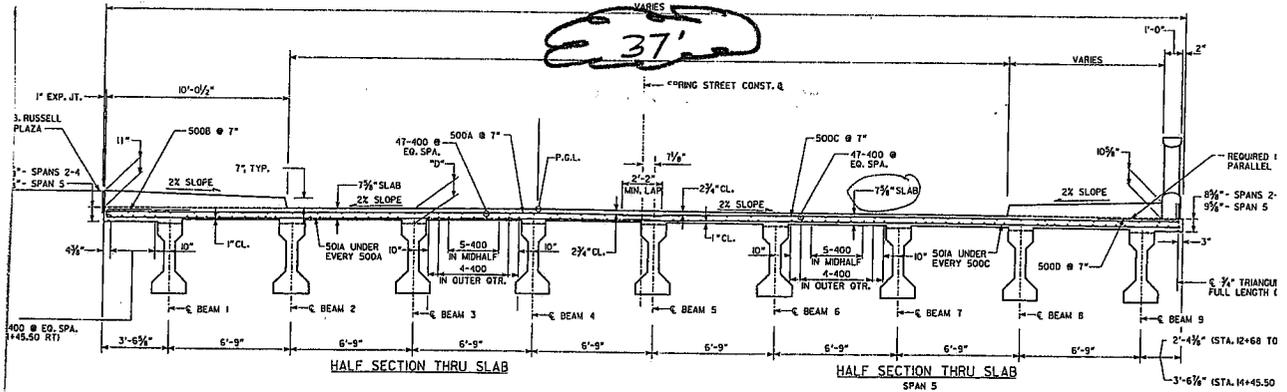
LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	7,475,000		
- Proposed	7,030,000		
- Savings	445,000		445,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			445,000

Spring Street Viaduct Replacement over CSX Transportation, Inc.

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



ORIGINAL



PROPOSED

CALCULATIONS

**Spring Street Viaduct Replacement over CSX
Transportation, Inc.**

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

Area of Bridge for Contract BRNLB-9073-00(018)

STA 20+38.78 TO 27+77.87 = 739.09 feet X 62.92 feet = 46,503.54 SF
\$/SF = \$11,323,152 / 46,504 = \$243.49 / SF

A 3 - foot reduction in bridge width = 3 ft. X 2,217.27 SF X \$243.49 = \$539,883

Area of Bridge for contract BHNLB-9073-00(016)

12+09.50 to 14+98.00 = 288.50 feet X 59.83 feet = 17,260.96 SF

Cost/SF= \$2,928,355 / 12,260.96 = \$169.65/SF

A 3- foot reduction in width = 3 ft X 288.5 ft. = 865.5 SF X \$169.65 = \$146,832

Asphalt Savings on Roadway

Sta 28+10 to 29+08 = 98 ft. X 3 ft. = 294 SF / 9 SF/SY X 9.5 inches X 115lbs./in /
2000#/T= 17.8 Tons

Sta 10+32 to 12+09.5 = 177.5 ft. X 3 ft. = 532.5 ft. / 9 X 9.5 in. X 115 #/in. / 2000
#/Ton=32.3 Tons

Total = say 51 Tons

GAB

28+10 to 29+08 = 98 ft. X 3 ft. = 294 SF/9 SF/SY = 32.7 SY

10+32 to 12 +09.5 = 177.5 ft. X 3 ft. = 532.5 SF / 9 SF/SY = 59.2 SY

Total = 92 SY

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.:	PAGE No.:	CREATIVE IDEA:
B-2	1 of 4	Use 1 large 14' sidewalk on the west side of the Spring Street section north of the Spring Street section built in 1995

Comp By: AA Date: 12-10-08 Checked By: DCW Date: 12-11-08

Original Concept:

Build 2 - 10' sidewalks on Spring Street.

Proposed Change:

Use 1 – 14' sidewalk on the west side of Spring Street north of the section built in 1995, instead of the original design of 2 – 10' sidewalks.

Justification:

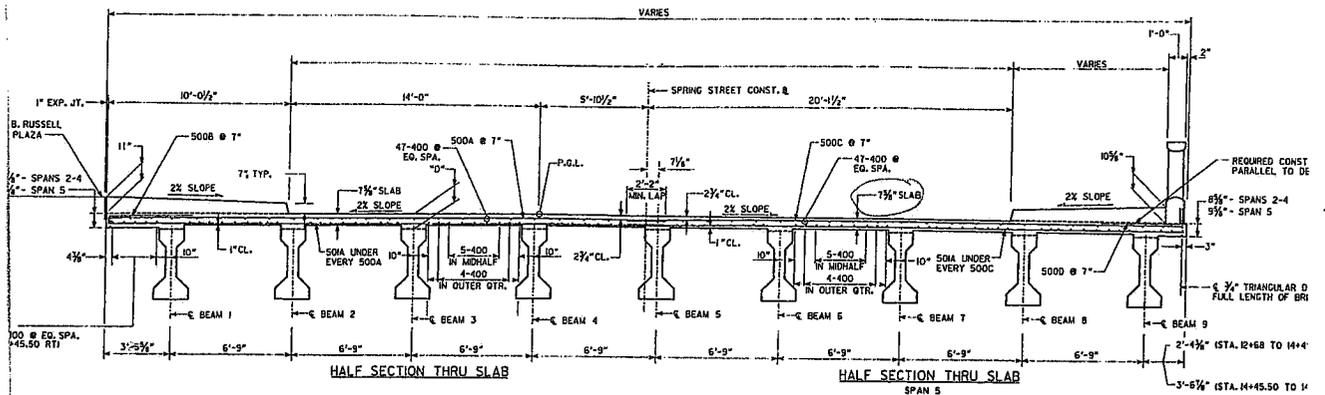
The existing design uses 2 – 10' sidewalks on each side of Spring Street (see Note). The north end of Spring Street has no development adjacent to the east side of the road. Pedestrian traffic could shift to the west side of Spring Street in this area since there is no development and no need to draw pedestrians to the east side of Spring Street. The sidewalk is part of the bridge deck, and therefore a reduction in the sidewalk width would result in an overall reduction in the bridge structure.

Note: Even though the plans call for varying width sidewalks, 10' is the nominal dimension and was used in this analysis.

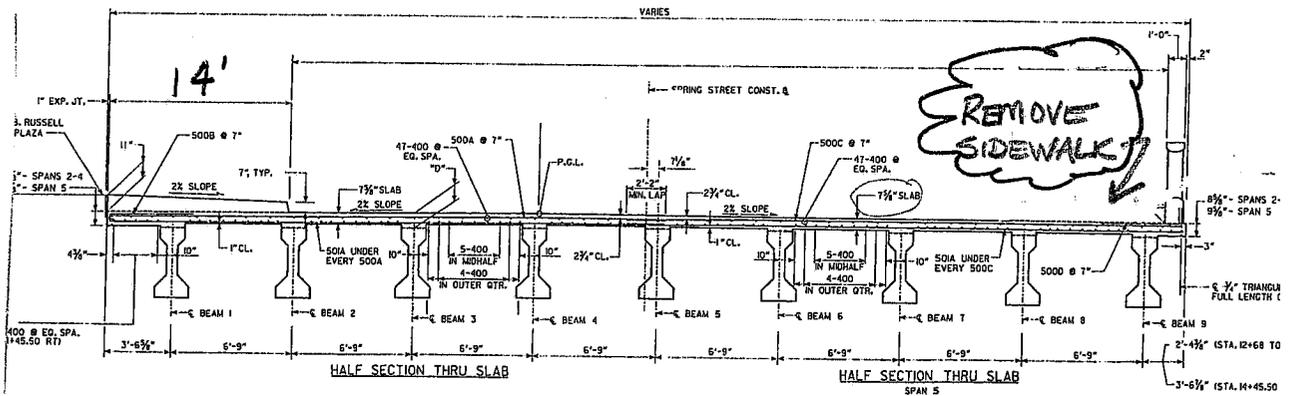
LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	13,588,000		
- Proposed	12,292,000		
- Savings	1,296,000		1,296,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			1,296,000

Spring Street Viaduct Replacement over CSX Transportation, Inc.

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



ORIGINAL



PROPOSED

CALCULATIONS

**Spring Street Viaduct Replacement over CSX
Transportation, Inc.**

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

Sta 20+38.78 to 27+77.87 = 739.09 ft. X 62.92 ft. = 46,504 SF

Cost / SF = \$243.49 (see B-1)

Savings = 6 ft. X 739.09 ft. = 4,434.54 SF X \$243.49 = \$1,079,766 + markups

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.:

PAGE No.:

CREATIVE IDEA:

B-5

1 of 4

Use a six inch thick sidewalk

Comp By: GAO

Date: 12-10-08

Checked By: DCW

Date: 12-11-08

Original Concept:

The current plans call for seven inch thick sidewalks on the bridges.

Proposed Change:

Use six inch thick sidewalks on the bridges.

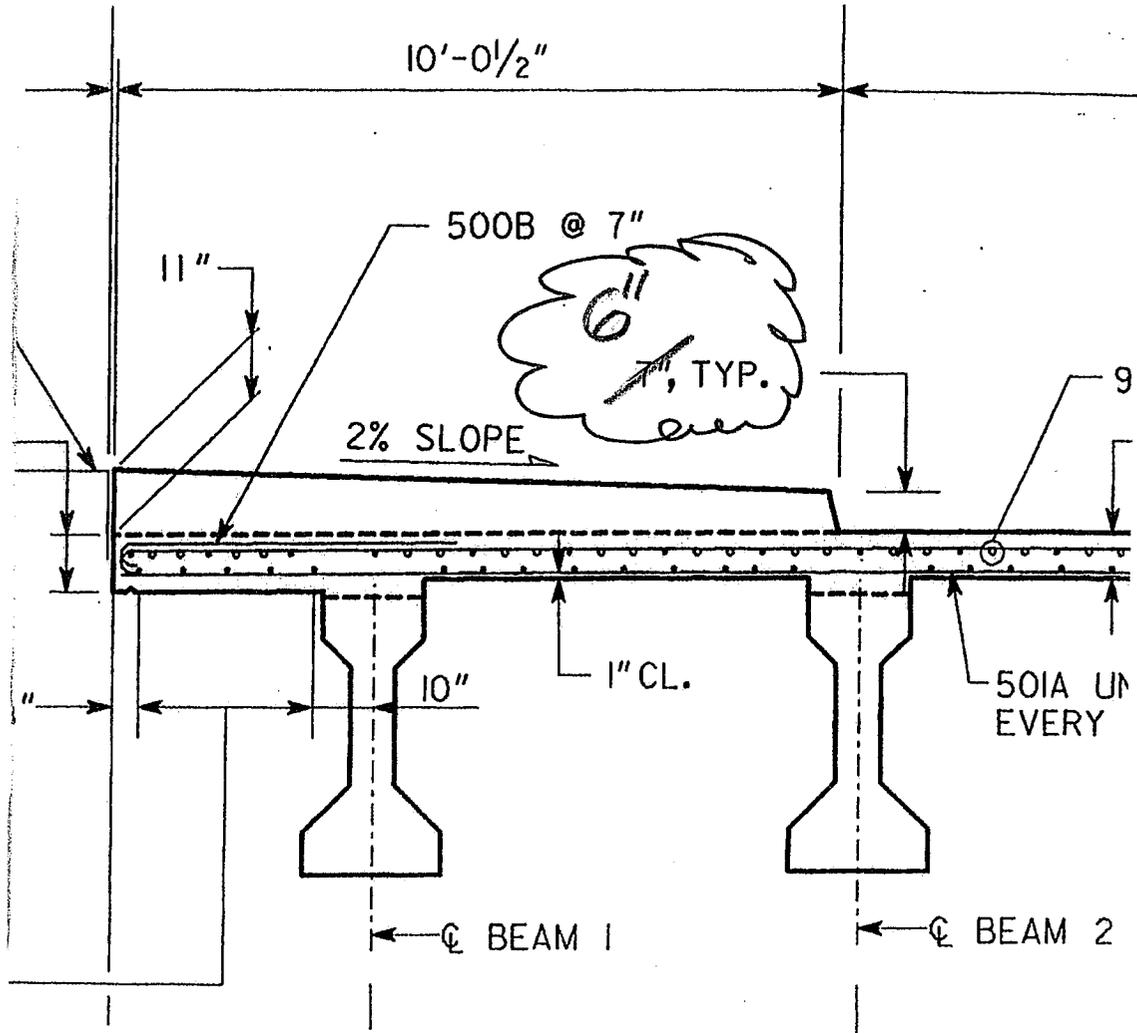
Justification:

The current design provides for seven (7) inch thick sidewalks to match the existing area constructed earlier in 1995. The current GDOT standard is 6 inches thick. A one inch thick difference in the sidewalk is not noticeable. We do not see any constructive reason to provide a thicker sidewalk to match a previously constructed segment, when it does not conform to current criteria. The benefits include less material, dead weight, and lower costs. Most importantly, it conforms to the GDOT standard.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	88,700		
- Proposed	0		
- Savings	88,700		88,700
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			88,700

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: **B-5**
CLIENT: GDOT
Sheet 2 of 4



CALCULATIONS

**Spring Street Viaduct Replacement over CSX
Transportation, Inc.**

ITEM N^o: B-5
CLIENT: GDOT
Sheet 4 of 4

Bridge deck limits

$$\text{Sta } 12 + 40 \text{ to } 14 + 60 = 220 \text{ ft}$$

$$\text{Sta } 20 + 39 \text{ to } 27 + 77 = 738 \text{ ft}$$

$$\text{Total length} \quad 958 \text{ ft}$$

$$2 \times (958 \text{ ft} \times 10 \text{ ft wide} \times 1/12 \text{ ft thick}) \times (1 \text{ cy} / 27 \text{ cf}) = 59.14 \text{ cy}$$

Cost of bridge deck concrete: (from estimate)

$$\$2,662,500 / 2130 \text{ cy} = \$1,250 / \text{cy}$$

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.:

PAGE No.:

CREATIVE IDEA:

B-6

1 of 4

Use Class B concrete for the bridge sidewalks

Comp By: GAO

Date: 12-10-08

Checked By: DCW

Date: 12-11-08

Original Concept:

The current plans call for Class AA concrete to be used throughout the bridge deck including the sidewalk.

Proposed Change:

Use a lower grade of concrete for the sidewalk on the bridge; Class B.

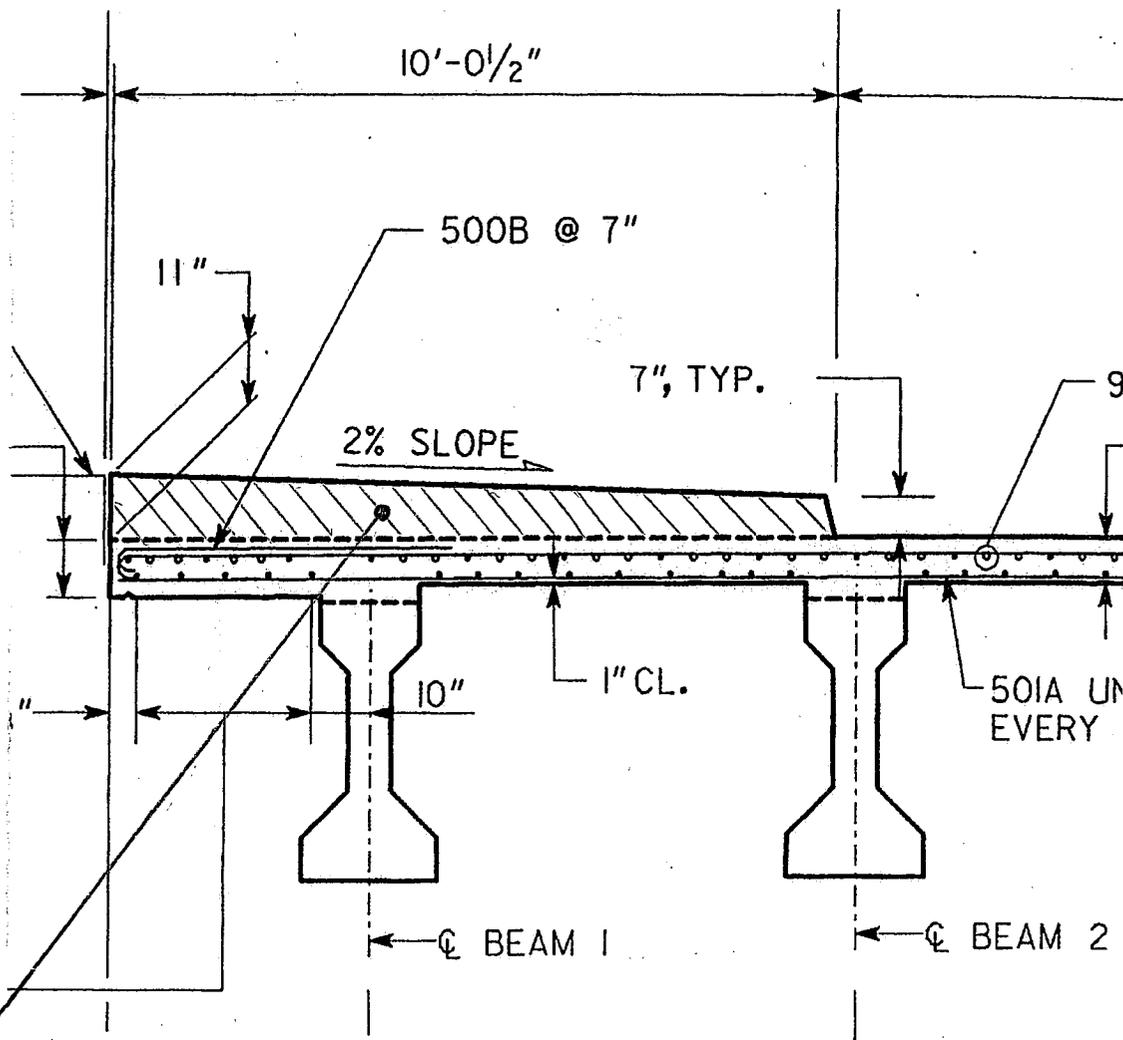
Justification:

The current design uses high grade, Class AA concrete at \$1,250 per cy for the bridge deck, including the concrete sidewalk. Since the concrete sidewalk rests on the new, sound bridge deck, there is no additional structural capacity required or provided by the sidewalk. The purpose is to delineate the roadway, provide a gutter line and support pedestrian traffic on the bridge. A lower grade of concrete can be used. This will reduce the project construction cost while providing the same project function.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	798,300		
- Proposed	371,800		
- Savings	426,500		426,500
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			426,500

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: B-6
 CLIENT: GDOT
 Sheet 2 of 4



AREA

$$10 \text{ ft} \left(\frac{11 + 7}{2} \right) \times \frac{1 \text{ ft}}{12 \text{ in}} = 7.5 \text{ ft}^2$$

CALCULATIONS

**Spring Street Viaduct Replacement over CSX
Transportation, Inc.**

ITEM N^o: B-6
CLIENT: GDOT
Sheet 4 of 4

Bridge deck limits

Sta 12 + 40 to 14 + 60 = 220 ft

Sta 20 + 39 to 27 + 77 = 738 ft

Total length 958 ft

$(958 \text{ ft} \times 7.5 \text{ sf}) \times 2 \text{ sides} \times (1 \text{ cy} / 27 \text{ cf}) = 532.22 \text{ cy}$

Cost of bridge deck concrete: (from estimate)

$\$2,662,500 / 2130 \text{ cy} = \$1,250 / \text{cy}$

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.: C-1	PAGE No.: 1 of 1	DESIGN RECOMMENDATION: Design Consideration Use smaller drilled caissons instead of larger diameter caissons
Comp By: AS	Date: 12-10-08	Checked By: DCW Date: 12-11-08

Original Concept:

Use larger drilled caissons for various substructure bents up to 7 feet in diameter.

Proposed Change:

Utilize more smaller diameter drilled caissons instead of larger diameter caissons.

Justification:

As there are various utilities, existing railroad tracks, buildings, parking decks, etc., smaller diameter caissons will help avoid obstructions as well as provide flexibility.

There are no significant cost savings.

Design Consideration

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

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.: F-1	PAGE No.: 1 of 4	CREATIVE IDEA: Reduce work on Madison Street
Comp By: GAO Date: 12-11-08		Checked By: DCW Date: 12-11-08

Original Concept:

The current plans call for reconstructing Madison Street, the area under the Spring Street overpass.

Proposed Change:

Rather than total reconstruction and improvements, provide only a resurfacing and other minor improvements.

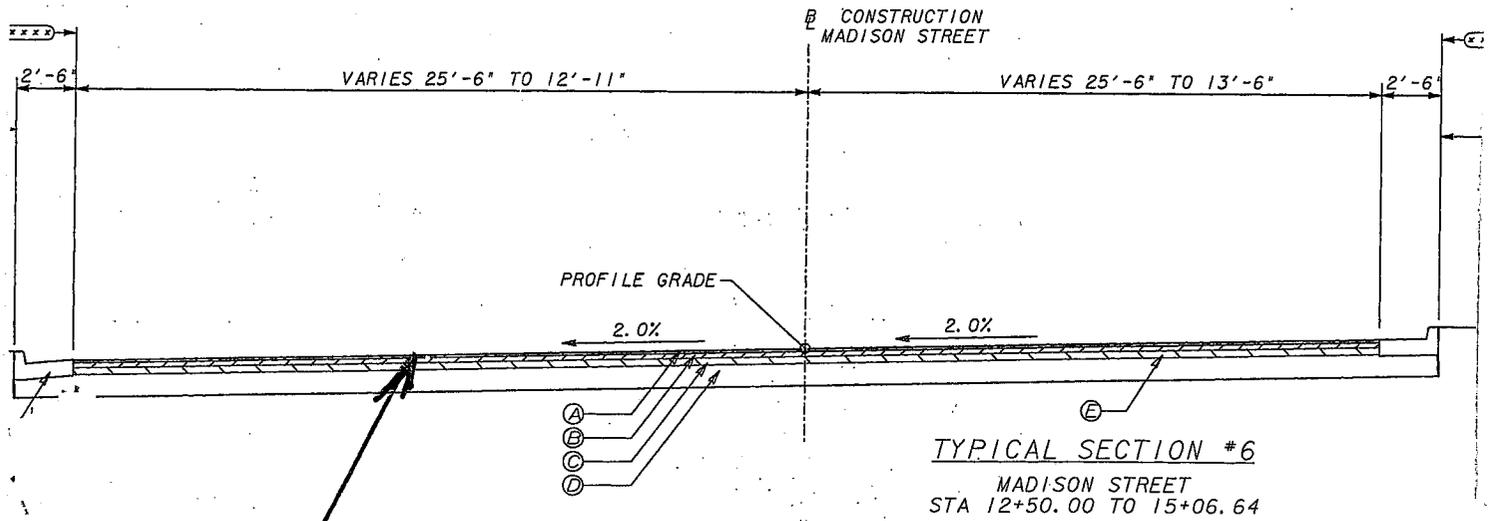
Justification:

This area is a dead end area accessing the loading dock of the post office building and other maintenance / utility vaults in the area of the south abutment. This area will be disturbed during construction of the Spring Street overpass however it will never be further developed. Basically, it will be an access drive for the building and the utilities. There is no need to provide for full depth pavement with concrete curb and gutter. A 2 inch resurfacing / restoration with minor signage and improvements upon completion of the structural construction will be sufficient for this area. This will provide some cost savings for the project.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	49,300		
- Proposed	8,200		
- Savings	41,100		41,100
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			41,100

Spring Street Viaduct Replacement over CSX Transportation, Inc.

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



USE 2" OVERLAY

CALCULATIONS

Spring Street Viaduct Replacement over CSX Transportation, Inc.

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

Madison Street limits

$$\text{Sta } 12 + 50 \text{ to } 14 + 40 = 200 \text{ ft}$$

$$\text{Average width } 27 \text{ ft}$$

$$\text{Area} = 27 \text{ ft} \times 200 \text{ ft} = 5400 \text{ sf} = 600 \text{ sy}$$

Pavement – 7.5 inch thick asphalt

$$(5400 \text{ sf} \times 7.5 / 12 \text{ ft}) (150 \text{ \#/cf}) (1 \text{ ton} / 2000\#) = 253 \text{ tons}$$

Resurfacing – 2 inch thick asphalt

$$(5400 \text{ sf} \times 2 / 12 \text{ ft}) (150 \text{ \#/cf}) (1 \text{ ton} / 2000\#) = 68 \text{ tons}$$

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.:

F-3

PAGE No.:

1 of 3

CREATIVE IDEA:

Revise design of the south abutment to add a new substructure

Comp By: AS

Date: 12-11-08

Checked By: DCW

Date: 12-11-08

Original Concept:

Use the existing concrete south abutment to support the new slab span for the new bridge.

Proposed Change:

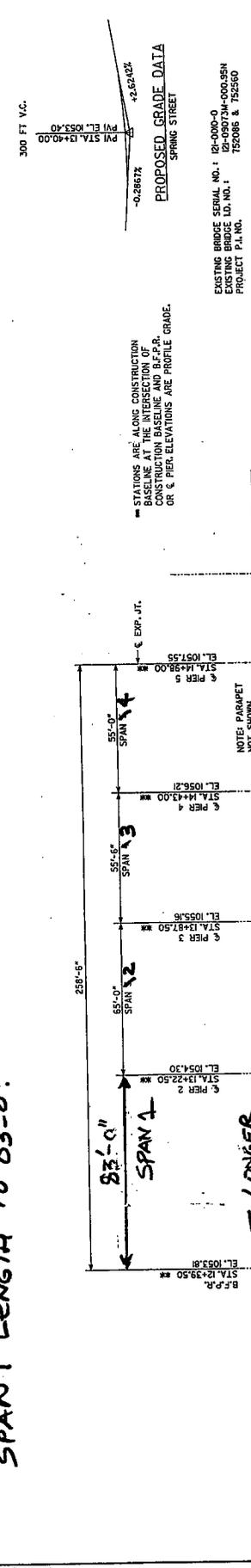
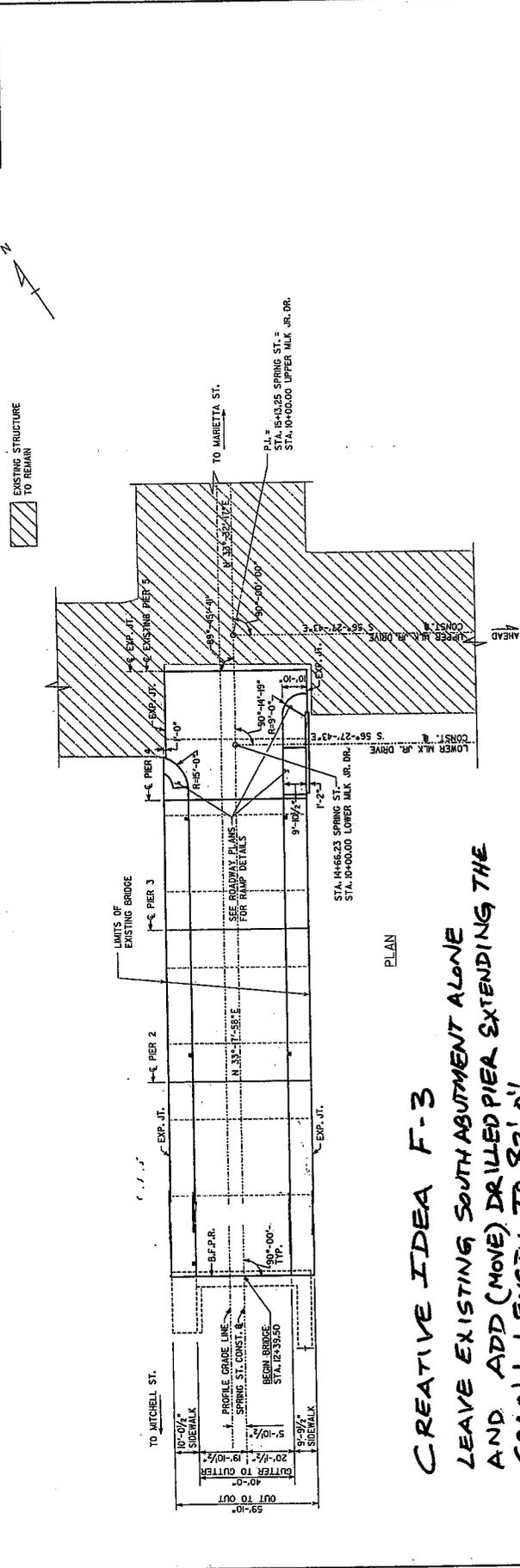
Leave the existing Abutment alone and add a new drilled caisson in front of it to support the superstructure for the new bridge

Justification:

The existing South Abutment is a 90 year old structure and carries several utilities. A new substructure (drilled caisson) is needed to prevent possible future failure due to age of facility.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	0		
- Proposed	180,000		
- Savings	(180,000)		(180,000)
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			(180,000)

DATE	SCALE	PROJECT NUMBER	NO.	SHEET
		CA. BRIDGE-3000000	7	



EXISTING BRIDGE SERIAL NO.: 12-000-0
 EXISTING BRIDGE I.D. NO.: 12-9073M-000.95N
 PROJECT P.I. NO.: 752086 & 752560

BRIDGE NO. 1

Heath & Lindbeck Engineers
 GEORGIA
 DEPARTMENT OF TRANSPORTATION
 PRECONSTRUCTION DIVISION-OFFICE OF BRIDGE DESIGN

PLAN AND ELEVATION
 SPRING STREET VIADUCT OVER
 CSX TRANSPORTATION
 BRNLB-9073-001016
 BRNLB-9073-001018
 FULLTON COUNTY
 SCALE: 1" = 20'-0"
 NOVEMBER 2007

BRIDGE SHEET 1 OF 1

REVISIONS

DATE

BY

APPROVED

DATE

CREATIVE IDEA F-3
 LEAVE EXISTING SOUTH ABUTMENT ALONE
 AND ADD (MOVE) DRILLED PIER EXTENDING THE
 SPAN 1 LENGTH TO 83'-0"

LONGER BEAM
 ELIMINATE SUBSTR.
 NEW DRILLED CAISSON
 IN FRONT
 OF EXIST.
 SOUTH ABUTMENT

STATIONS ARE ALONG CONSTRUCTION
 STATIONING AT THE INTERSECTION OF
 CONSTRUCTION BASELINE AND B.F.P.R.
 OR & PIER ELEVATIONS ARE PROFILE GRADE.

PROPOSED GRADE DATA
 SPRING STREET
 -0.2667%
 PVI STA. 12+40.00
 PVI EL. 1053.40
 300 FT. V.C.
 +2.6242%



EXISTING STRUCTURE
 TO REMAIN



PLAN

ELEVATION

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.:

PAGE No.:

CREATIVE IDEA:

F-5

1 of 8

Close access on lower MLK

Comp By: GAO

Date: 12-11-08

Checked By: DCW

Date: 12-12-08

Original Concept:

The current plans call for providing two lane service on lower MLK.

Proposed Change:

Eliminate this access. Use current side road, Alabama Street.

Justification:

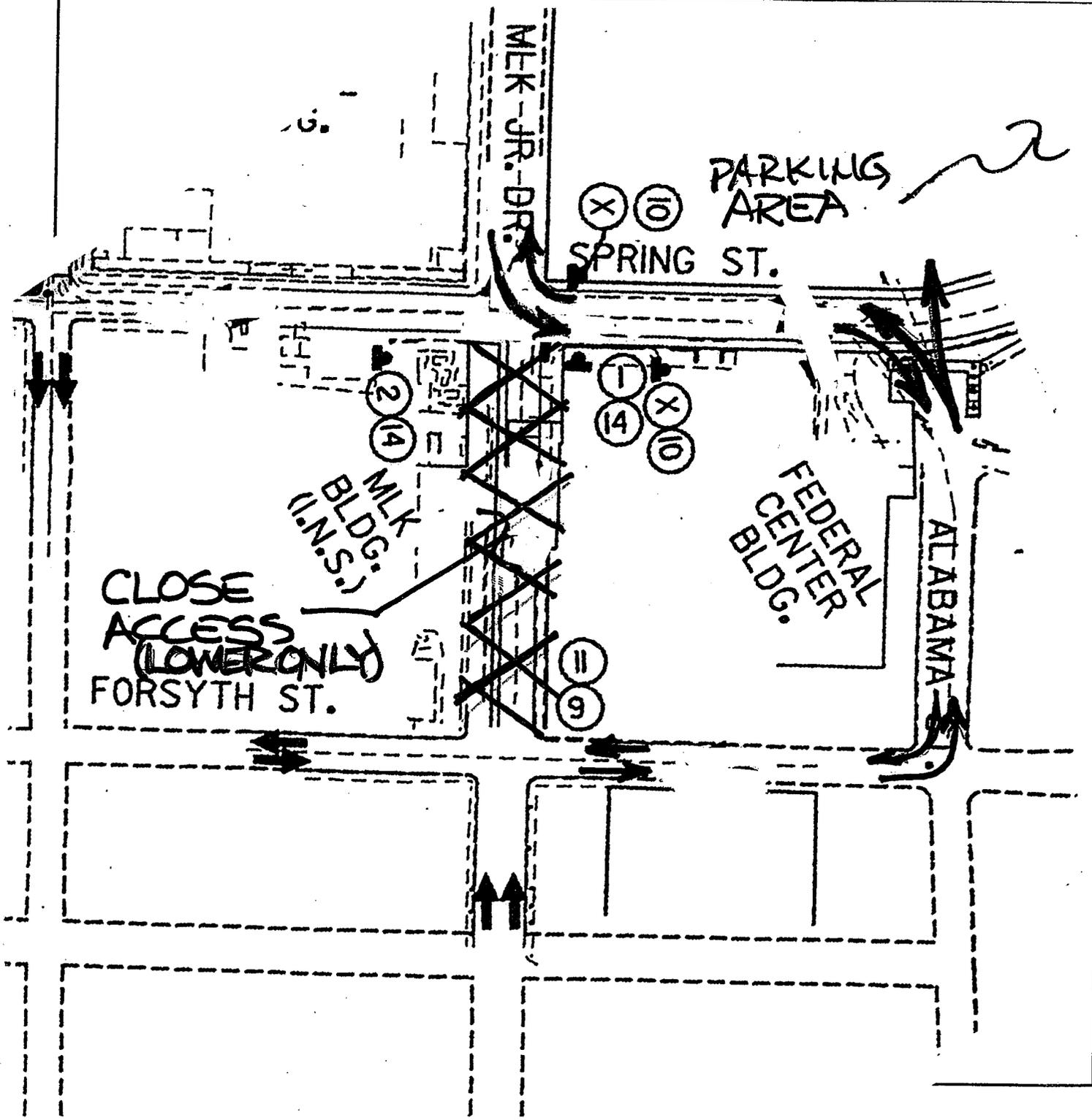
Based on the traffic information included in the plans, 95% of the traffic using lower MLK turn right and access the parking lot, which is also conveniently accessed via Alabama Street. It therefore does not appear lower MLK service is required.

Additionally, the volumes of traffic are relatively low. Alabama Street has the capacity to handle the additional traffic load. The project benefit will be reduced construction costs while allowing similar traffic movements. Another benefit would be eliminating an awkwardly oriented intersection.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	96,600		
- Proposed	6,800		
- Savings	89,800		89,800
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			89,800

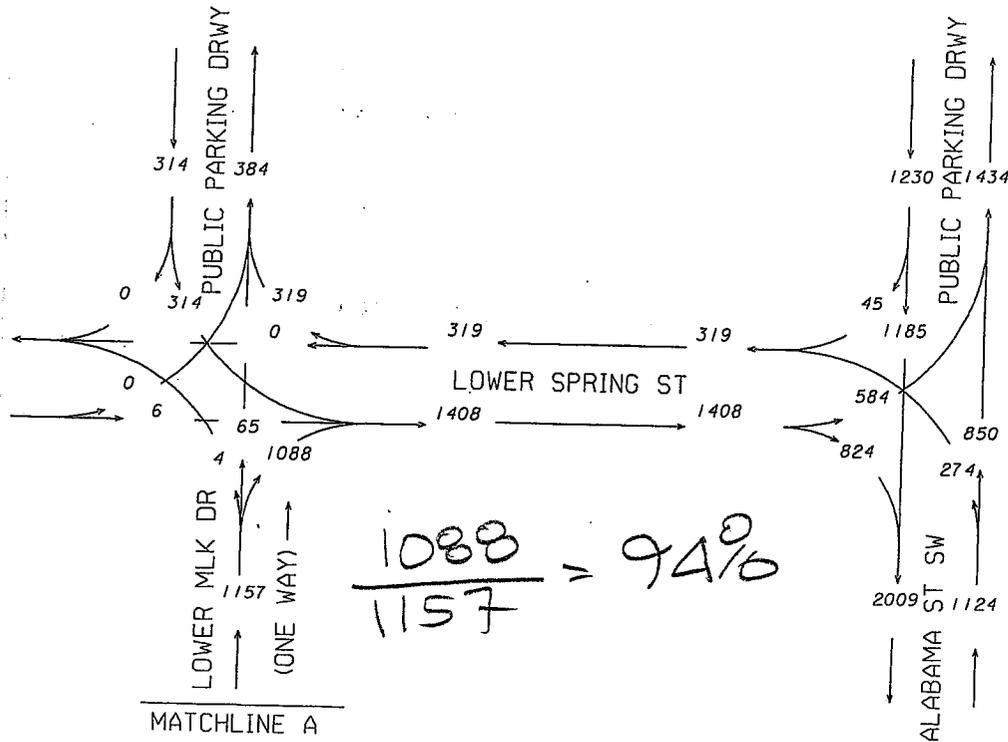
Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: **F-5**
CLIENT: GDOT
Sheet 2 of 8



Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: F-5
 CLIENT: GDOT
 Sheet 3 of 8



BRNLB-9073-00(018),
 BHNLB-9073-00(016),
 PINO. 752086,752560

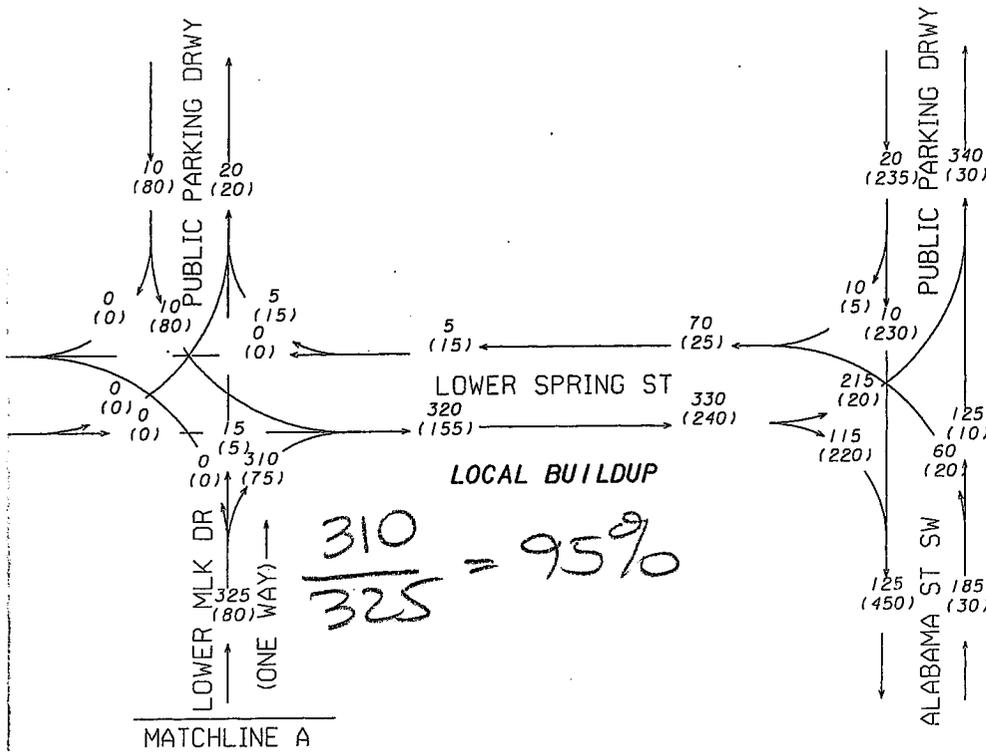
CITY OF ATLANTA
 FULTON COUNTY

SPRING ST

2008 ADT= 000

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: F-5
 CLIENT: GDOT
 Sheet 4 of 8



T = 3%

BRNLB-9073-00(018),
 BHNLB-9073-00(016),
 PINO. 752086,752560

CITY OF ATLANTA
 FULTON COUNTY

SPRING ST

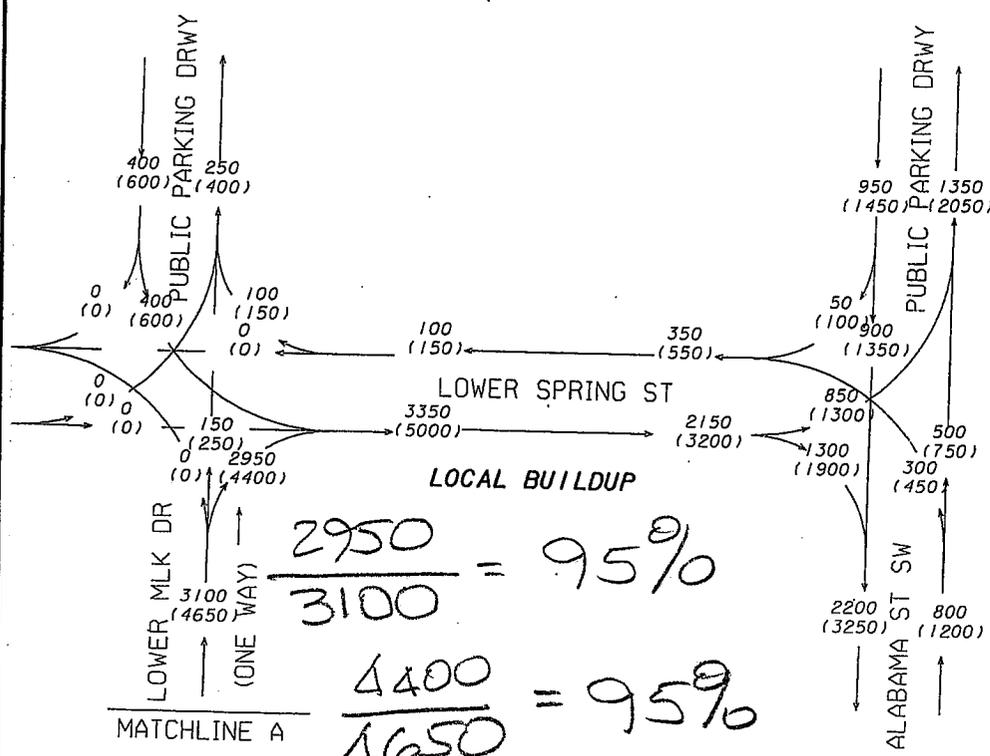
2033 BUILD
 TRAFFIC VOLUMES

AM PEAK HOUR = 000
 PM PEAK HOUR = (000)

SKETCH

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: F-5
 CLIENT: GDOT
 Sheet 5 of 8



SU= 4%
 COMBO= 2%
 TOTAL= 6%

BRNLB-9073-00(018),
 BHNLB-9073-00(016),
 PINO. 752086,752560

CITY OF ATLANTA
 FULTON COUNTY

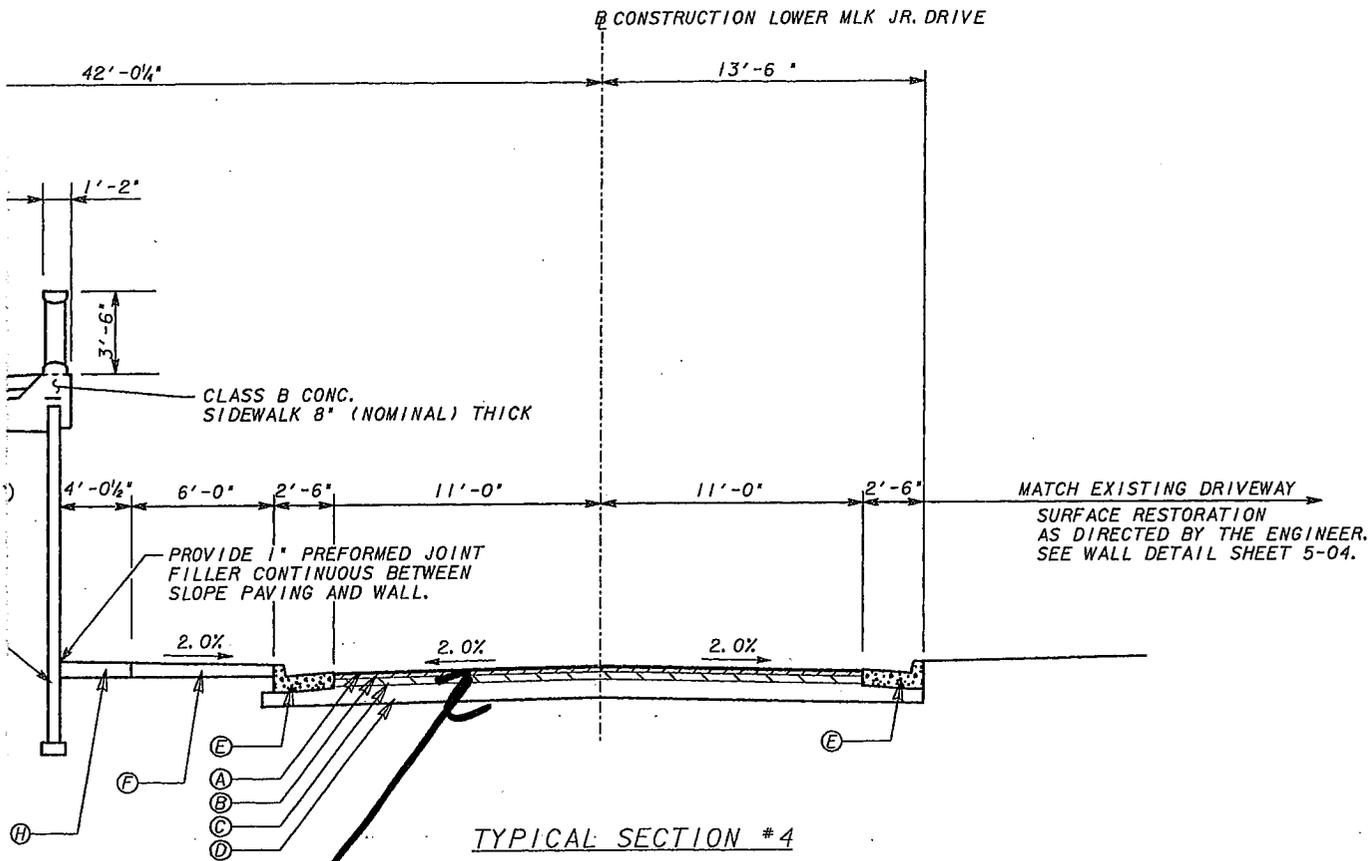
SPRING ST

BUILD DAILY
 TRAFFIC VOLUMES

2013 ADT = 000
 2033 ADT = (000)

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: F-5
CLIENT: GDOT
Sheet 6 of 8



TYPICAL SECTION #4
LOWER MARTIN LUTHER KING JR. DR.
STA. 12+54.74 TO 14+65.85

← REPLACE WITH GRASSED AREA

CALCULATIONS

**Spring Street Viaduct Replacement over CSX
Transportation, Inc.**

ITEM N^o: F- 5
CLIENT: GDOT
Sheet 8 of 8

Lower MLK limits

Sta 10 + 00 to 14 + 65 = 465 ft

Average width 22 ft

Area = 22 ft x 465 ft = 10230 sf = 1137 sy

Pavement – 7.5 inch thick asphalt

(10230 sf x 7.5 / 12 ft) (150 #/cf) (1 ton / 2000#) = 480 tons

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.: H-1	PAGE No.: 1 of 2	CREATIVE IDEA: Use of BT-54 Bulb Tee PSC beams instead of BT-63 PSC beams for Spans 14 and 15
-------------------------	----------------------------	---

Comp By: AS Date: 12-10-08 Checked By: DCW Date: 12-11-08

Original Concept:

Use BT-63 PSC beams for new bridge span 14 and 15 arrangement

Proposed Change:

Use BT-54 PSC beams for new bridge span 14 and 15 arrangement. There is no change in the spacing (in kind replacement).

Justification:

BT-54 PSC beams due to availability of higher strength concrete will result in a slight savings.

LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	400,100		
- Proposed	359,700		
- Savings	40,400		
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			40,400

DEVELOPMENT AND RECOMMENDATION PHASE

Spring Street Viaduct Replacement Over CSX Transportation, Inc.

IDEA No.: H-2	PAGE No.: 1 of 4	CREATIVE IDEA: Use smaller spans for proposed spans 1-5 by reusing existing column locations
-------------------------	----------------------------	--

Comp By: AS Date: 12-10-08 Checked By: DCW Date: 12-11-08

Original Concept:

Use longer spans for the new bridge span arrangement for Spans 1-5.

Proposed Change:

Utilize existing columns/locations by beefing up columns using smaller drilled circular piles and use small spans with smaller beams.

Justification:

This procedure will simplify construction and handling of smaller beams. It may also prevent conflict with unknown underground items at the new pier locations. This results in some cost savings.

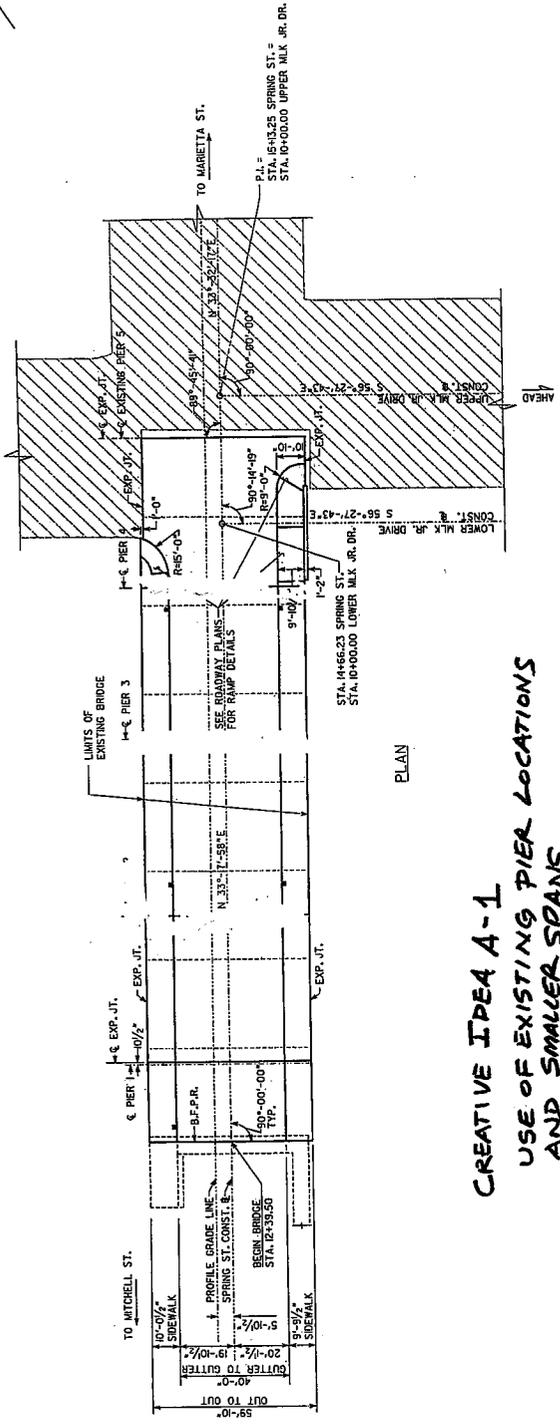
LIFE CYCLE COST SUMMARY	CAPITAL COST	FUTURE COST	PRESENT WORTH
INITIAL COST - Original	1,670,000		
- Proposed	1,299,000		
- Savings	371,000		371,000
FUTURE COST - Savings			-0-
TOTAL PRESENT WORTH SAVINGS			371,000

DATE	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
GAL. BRN LB-9073-000018	BRN LB-9073-000018	7	7

DWG. NO.



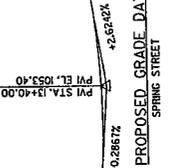
EXISTING STRUCTURE TO REMAIN



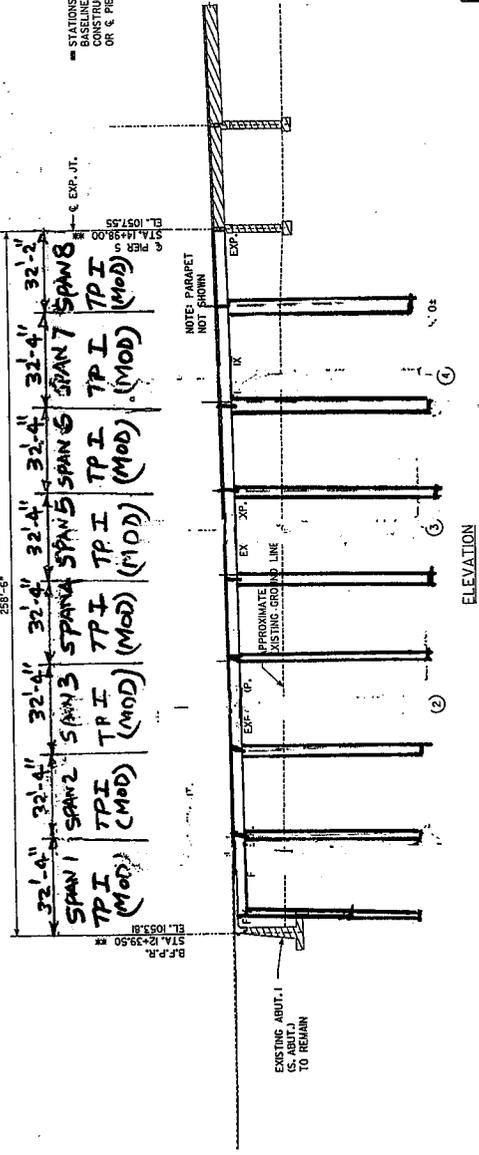
PLAN

**CREATIVE IDEA A-1
USE OF EXISTING PIER LOCATIONS
AND SMALLER SPANS**

300 FT. V.C.



STATIONS ARE ALONG CONSTRUCTION BASELINE AT THE INTERSECTION OF R. OR PIER. ELEVATIONS ARE PROFILE GRADE.



ELEVATION

EXISTING BRIDGE SERIAL NO.: 01-000-0
EXISTING BRIDGE I.D. NO.: 152086 & 152560
PROJECT PLAN NO.

BRIDGE NO. 1



DEPARTMENT OF TRANSPORTATION
RECONSTRUCTION DIVISION-OFFICE OF BRIDGE DESIGN

PLAN AND ELEVATION
SPRING STREET VIADUCT OVER
CSX TRANSPORTATION
BRN LB-9073-000018
FULTON COUNTY

SCALE: P= 20'-0"
NOVEMBER 2007

BY	REVISIONS	DATE

BRIDGE SHEET
1 OF 7

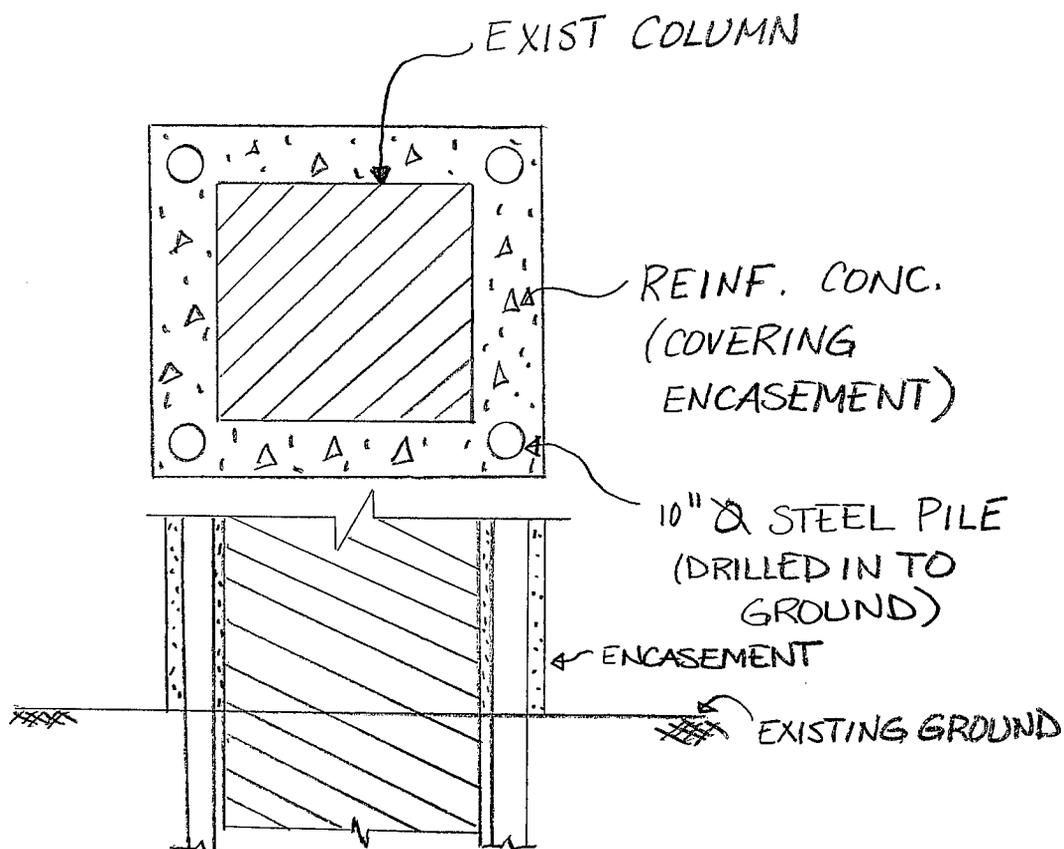
Item
H-2
Pg 2 of 4

Spring Street Viaduct Replacement over CSX Transportation, Inc.

ITEM N^o: H-2
CLIENT: GDOT
Sheet 3 of 4

RE-USING EXISTING COLUMN

LOCATIONS



APPENDIX

COST MODEL

**VALUE ENGINEERING
COST MODEL/DISTRIBUTION**

Spring Street Viaduct Replacement
Over CSX Transportation, Inc.
Project Nos.: BHNLB-9073-00(016) &
BRNLB-9073-00(018)
PI Nos.: 752086 & 752560
Fulton County

January 7, 2009

Element ID.	Item Description	Cost x \$1,000	%
A	Structural steel, bridge	4,679	24
B	Superstr. Concrete, class AA	3,803	20
C	Drilled caisson	2,409	12
D	Remove of parts of existing bridge	2,040	11
E	Grading	828	4
F	Superstr. reinforcing steel	751	4
G	Class AAA concrete	631	3
H	PSC beams, Type III	396	2
80% Cost Line			
I	PSC beams, 63 inch bulb tee	395	2
J	Concrete parapet	380	2
K	Lighting	371	2
L	PSC beams, 54 inch bulb tee	356	2
M	Bar reinforcing steel	313	2
N	Class AA-1 concrete	272	1
O	Class B concrete – sidewalk	231	1
P	Pavement concrete, class A and B	172	1
Q	Drainage	169	1
R	Traffic control	150	1
S	Deck drain system	136	1
T	AC pavement	136	1
U	Bridge deck joint seal	96	1
V	Concrete slope pavement	92	1
W	Field engineer's office	81	0
X	Roadway sidewalk	63	0
Y	Reinforced concrete approach slab	59	0
Z	PSC beams, double tee	54	0
AA	Prestressing cast in place concrete	54	0
BB	Signing and marking	46	0
CC	Curb and gutter	42	0
DD	Other	128	1
TOTAL		\$19,333	100.0%

INFORMATION PHASE				FUNCTION ANALYSIS			
Spring Street Viaduct Replacement over CSX Transportation, Inc.							
System: Replace Bridge							
Function: Restore Service							
ITEM No.	DESCRIPTION	FUNCTION			INITIAL DOLLARS (x 1,000)		
		Verb	Noun	Kind*	Cost	% of Total	Worth
A	Structural steel	Support	Load	B	4,679	24	2700
B	Superstructure concrete AA	Carries	Traffic	B	3,803	20	3500
		Transfers	Loads				
C	Drilled caisson	Supports	Superstructure	B	2,409	12	2,100
		Transfers	Loads				
D	Remove parts of existing bridge	Prepare	Site	S	2,040	11	1,800
E	Grading	Haul	Material	S	828	4	800
F	Superstructure reinforcing steel	Include	Tensile Strength	S	751	4	500
G	Class AAA concrete	Speed	Cure	S	631	3	400
H	PSC Beams, Type III	Support	Deck	S	396	2	800
TOTALS					15,537	80	12,600

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
Spring Street Viaduct Replacement over CSX Transportation, Inc.			
NO.	CREATIVE IDEA	COMMENTS	IDEA RATING **
A	Structural Steel		
A-1	Use smaller spans by using existing columns		√
B	Superstructure Concrete AA		
B-1	Use 3-11 foot lanes		√
B-2	Use 1 larger sidewalk		√
B-3	Separate sidewalk from bridge structure		√
B-4	Use smaller sidewalks	Not wanted by City of Atlanta	X
B-5	Use 6 inch thick sidewalks		√
B-6	Use Class B concrete for sidewalks		√
C	Drilled Caissons		
C-1	Use smaller diameter		√

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

NO.	CREATIVE IDEA	COMMENTS	IDEA RATING **
D	Demolition		
D-1	Demolish from below not above	Only occurs near AJC building	X
D-2	Demolish piers to the ground level	Already being done for majority of project	X
E	Grading		
	No ideas generated		√
F	Other		
F-1	Reduce work on Madison Street		√
F-2	Use a one way MLK	Small savings	X
F-3	Revise the design for the south abutment		√
F-4	Eliminate upper MLK work	Higher traffic volumes may not be acceptable	√
F-5	Close lower MLK		√
G	Staging		
G-1	Review staging		√
H	PSC Beams, Type III		
H-1	Review sizing of concrete beams		√
H-2	Use concrete box beam for 400 foot span		√

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

VE STUDY SIGN-IN SHEET

BHNLB-9073-00(018) (016)

Project No.: BRNLB-9073-00(018)

County: Fulton

PI No.: 752560 & 752086

Date: Dec. 9-12, 2008

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