

**VALUE ENGINEERING STUDY
OF
WIDEN AND RECONSTRUCT CONLEY ROAD
FROM OLD DIXIE ROAD TO JONESBORO ROAD
PROJECT NO. STP-0001-00(817), STP-9010(2),
& NH-IM-285-1(288)**

**Atlanta, Georgia
October 17-19, 2005**

**Prepared by:
VENTRY ENGINEERING, L.L.C.**

**In Association With:
GEORGIA DEPARTMENT OF TRANSPORTATION**

**VALUE ENGINEERING STUDY
TEAM LEADER**

**William F. Ventry, P.E., C.V.S.
C.V.S. No. 84063 (LIFE)**

DATE

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I. EXECUTIVE SUMMARY

INTRODUCTION

This Value Engineering report summarizes the results of the Value Engineering Study performed by Ventry Engineering for the Georgia Department of Transportation. The study was performed during the week of October 17-19, 2005.

PROJECT DESCRIPTION

Project STP-9010(2), P.I. No. 752180 is proposed to widen and reconstruct Conley Road from Old Dixie Road to Jonesboro Road. This project will be phased to include project STP-0001-00(817), P.I. No. 0001817, and project NH-IM-285-1(288) P.I. No. 712430. The first phase to be constructed will be Project P.I. No. 0001817. This phase is proposed to grade, separate, and align, C.W. Grant Parkway with widened Conley Road under the Norfolk Southern Railroad and Old Dixie Highway. This phase also proposes to widen and relocate Old Dixie Road to the east approximately 600 feet.

Project P.I. No. 712430 is proposed to reconstruct the bridge at I-285/Conley Road and will be done as a portion of the second phase, which will encompass the remaining widening portion of Conley Road to Jonesboro Road. The length of project 0001817 is 1.13 miles and 752180 is 1.13 miles.

METHODOLOGY

The Value Engineering Team followed the basic Value Engineering procedure for conducting this type of analysis.

This process included the following phases:

1. Investigation
2. Speculation
3. Evaluation
4. Development
5. Presentation
6. Report Preparation

Evaluation criteria identified as a basis for the comparison of alternatives included the following:

- Traffic Control
- Construction Time
- Constructability
- Future Maintenance Cost
- Construction Cost
- Right-of-Way Impacts

I. EXECUTIVE SUMMARY (cont'd)

RESULTS – AREAS OF FOCUS

The following areas of focus were analyzed by the Value Engineering team and from these areas the following Value Engineering alternatives were developed and are recommended for implementation:

I. NEW ALIGNMENT

Recommendation Number 1: C.W. GRANT/CONLEY ROAD ALIGNMENT

The Value Engineering Team recommends that Value Engineering Alternative Number 3 be implemented. This alternative maintains the existing Conley Road alignment, carries Conley Road over the Railroad and Old Dixie Highway, and connects to C.W. Grant Parkway.

If this recommendation can be implemented, there is a possible savings of **\$ 5,617,206.**

If this recommendation cannot be implemented, the Value Engineering Team recommends that Value Engineering Alternative Number 2 be implemented. This alternative eliminates the Old Dixie Highway realignment, and carries Conley Road under the railroad and Old Dixie Highway.

If this recommendation can be implemented, there is a possible savings of **\$ 6,630,621.**

IF THE DEPARTMENT DECIDES NOT TO PURSUE EITHER OF THE NEW ALIGNMENT RECOMMENDATIONS BY THE VALUE ENGINEERING TEAM, THEN THE VALUE ENGINEERING TEAM RECOMMENDS THE CHANGES, (TO THE CURRENT ALIGNMENT) AS SHOWN ON THE FOLLOWING PAGES.

I. EXECUTIVE SUMMARY (cont'd)

RESULTS – AREAS OF FOCUS (cont'd)

II. CURRENT ALIGNMENT

Recommendation Number 1: TYPICAL SECTION

The Value Engineering Team recommends that the Value Engineering Alternative be implemented. This alternative removes the concrete pavement in the median and replaces it with grass.

If this recommendation can be implemented, there is a possible savings of **\$ 602,356.**

Recommendation Number 2: OLD DIXIE HIGHWAY BRIDGE

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative eliminates the bridge at Old Dixie Highway and cul-de-sacs Old Dixie Highway.

If this recommendation can be implemented, there is a possible savings of **\$ 427,999.**

Recommendation Number 3: RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

The Value Engineering Team recommends that the Value Engineering Alternative Number 2 be implemented. This alternative uses all MSE walls.

If this recommendation can be implemented, there is a possible savings of **\$ 391,225.**

If Value Engineering Alternative Number 2 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 1 be implemented. This alternative uses all soil nail walls.

If this recommendation can be implemented, there is a possible savings of **\$ 273,855.**

If Value Engineering Alternative Number 1 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 3 be implemented. This alternative uses all cast-in-place walls.

If this recommendation can be implemented, there is a **possible cost increase of \$ 329,495.**

I. EXECUTIVE SUMMARY (cont'd)

RESULTS – AREAS OF FOCUS (cont'd)

Recommendation Number 4: CONLEY ROAD BRIDGE OVER I-285

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative uses vertical abutments, mechanically stabilized earth walls, and a two-span bridge.

If this recommendation can be implemented, there is a possible savings of **\$ 258,246.**

Recommendation Number 5: RETAINING WALLS IN CUT SECTIONS

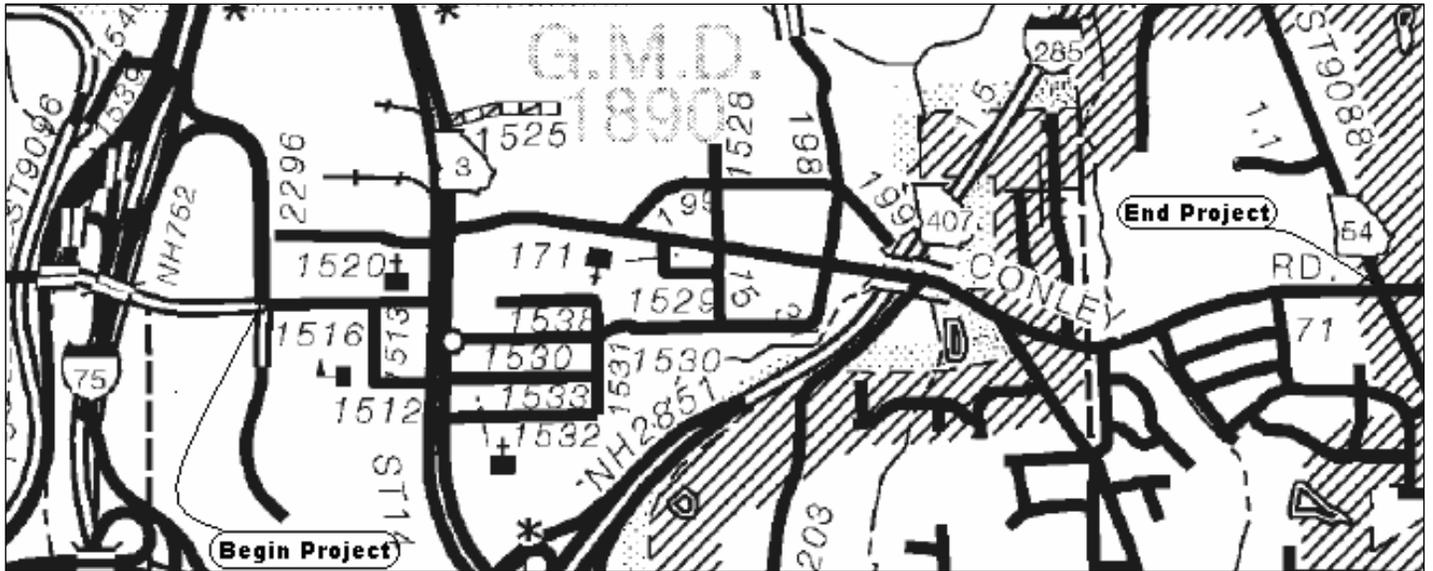
The Value Engineering Team recommends that Value Engineering Alternative Number 1 be implemented. This alternative eliminates the retaining walls and uses 1:1 back slopes.

If this recommendation can be implemented, there is a possible savings of **\$ 2,098,702.**

If Value Engineering Alternative Number 1 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 2 be implemented. This alternative uses soil nail walls.

If this recommendation can be implemented, there is a possible savings of **\$ 327,250.**

II. LOCATION OF PROJECT



**C.W. Grant Grade Separation at NS RR, Conley Road
Widening/Reconstruction, and Conley Road Bridge at I-285**

III. TEAM MEMBERS AND PROJECT DESCRIPTION

TEAMMEMBERS

NAME	AFFILIATION	EXPERTISE	PHONE
William Ventry, P.E., C.V.S.	Ventry Engineering	Team Leader	850/627-3900
Tom Hartley, P.E., C.V.S	Ventry Engineering	Roadway Design/Traffic	850-627-3900
John Ledbetter, P.E.	Ventry Engineering	Construction	850/627-3900
Bruce Nicholson	Ventry Engineering	Structures	850-627-3900
Kurt Ziegler	GA DOT	Urban Design	404-656-5441

PROJECT DESCRIPTION

Project STP-9010(2), P.I. No. 752180 is proposed to widen and reconstruct Conley Road from Old Dixie Road to Jonesboro Road. This project will be phased to include project STP-0001-00(817), P.I. No. 0001817, and project NH-IM-285-1(288) P.I. No. 712430. The first phase to be constructed will be Project P.I. No. 0001817. This phase is proposed to grade, separate, and align, C.W. Grant Parkway with widened Conley Road under the Norfolk Southern Railroad and Old Dixie Highway. This phase also proposes to widen and relocate Old Dixie Road to the east approximately 600 feet.

Project P.I. No. 712430 is proposed to reconstruct the bridge at I-285/Conley Road and will be done as a portion of the second phase, which will encompass the remaining widening portion of Conley Road to Jonesboro Road. The length of project 0001817 is 1.13 miles and 752180 is 1.13 miles.

IV. INVESTIGATION PHASE

VALUE ENGINEERING STUDY BRIEFING

WIDEN AND RECONSTRUCT CONLEY ROAD FROM OLD DIXIE ROAD TO JONESBORO ROAD October 17-19, 2005		
NAME	AFFILIATION	PHONE
William Ventry, P.E., C.V.S.	Ventry Engineering	850/627-3900
Tom Hartley, P.E., C.V.S	Ventry Engineering	850-627-3900
John Ledbetter, P.E.	Ventry Engineering	850/627-3900
Bruce Nicholson	Ventry Engineering	850-627-3900
Kurt Ziegler	GA DOT	404-656-5441
John Rosslow	GA DOT	404-656-5182
Stevie Berryman	GA DOT	404-635-8158
Paul Condit	GA DOT	404-699-4413
Jerry Milligan	GA DOT	770-463-2575
Mike Murdock	GA DOT	404-699-4417
David Zoeckler	GA DOT	404-559-4178
Lisa Myers	GA DOT	404-651-7468

STUDY RESOURCES

WIDEN AND RECONSTRUCT CONLEY ROAD FROM OLD DIXIE ROAD TO JONESBORO ROAD October 17-19, 2005		
NAME	AFFILIATION	PHONE
Wade Harris	GA DOT	404-656-6849
Jerry Milligan	GA DOT	770-986-1541
Ron Grimes	GA DOT	404-656-5196
George Bradfield	GFB Consultants	770-218-5583

IV. INVESTIGATION PHASE

FUNCTIONAL ANALYSIS WORKSHEET

WIDEN AND RECONSTRUCT CONLEY RD FROM OLD DIXIE RD TO JONESBORO RD						
October 17-19, 2005						
ITEM	<u>FUNCT.</u> VERB	<u>FUNCT.</u> NOUN	*TYPE	COST	WORTH	VALUE INDEX
Conley Road Bridge over I-285	Span	I-285	B	\$ 2,800,000	\$2,000,000	1.4
RR Bridge over Conley Road	Span	Conley	B	\$ 2,600,000	\$ 1,800,000	1.3
Old Dixie Hwy Bridge over Conley Road	Span	Conley	B	\$ 500,000	\$ 100,000	5.0
Base and Paving	Support	Vehicles	B	\$ 6,800,000	\$ 5,000,000	1.3
Earthwork	Provide	Grades	B	\$ 1,000,000	\$ 1,000,000	1.0
Retaining Walls	Retain	Material	B	\$ 2,300,000	\$ 2,000,000	1.1
Curb & Gutter	Channel	Water	B	\$ 1,000,000	\$ 1,000,000	1.0
Drainage	Convey	Water	B	\$ 900,000	\$ 900,000	1.0
Erosion Control	Control	Erosion	B	\$ 1,600,000	\$ 1,600,000	1.0
Traffic Control	Control	Traffic	B	\$ 700,000	\$ 700,000	1.0
Concrete Median	Separate	Traffic	S	\$ 600,000	\$ 100,000	6.0

***B – Basic S - Secondary**

** Note: This worksheet is a tool of the Value Engineering process and is only used for determining the areas that the Value Engineering team should focus on for possible alternatives. The column for COST indicates the approximate amount of the cost as shown in the cost estimate. The column for WORTH is an estimated cost for the lowest possible alternative that would provide the FUNCTION shown. Many times the lowest cost alternatives are not considered implementable but are used only to establish a worth for a function. A value index greater than 1.00 indicates the Value Engineering team intends to focus on this area of the project.

IV. INVESTIGATION PHASE

The following areas have a value index greater than 1.00 on the preceding Functional Analysis Worksheet and therefore have been identified by the Value Engineering Team as areas of focus and investigation for the Value Engineering process:

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

II. CURRENT ALIGNMENT

A. TYPICAL SECTION

B. OLD DIXIE HIGHWAY BRIDGE

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

D. CONLEY ROAD BRIDGE OVER I-285

E. RETAINING WALLS

F. CONLEY ROAD EAST OF I-285

V. SPECULATION PHASE

Ideas generated, utilizing the brainstorming method, for performing the functions of previously identified areas of focus:

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

- Shift C.W. Grant Parkway/Conley Road alignment to the north to connect to C.W. Grant Parkway.
- Eliminate Old Dixie Highway realignment and carry Conley Road over/under the Railroad and Old Dixie Highway.
- Maintain the existing Conley Road alignment, carry Conley Road over the Railroad and Old Dixie Highway, and connect to C.W. Grant Parkway.

II. CURRENT ALIGNMENT

A. TYPICAL SECTION

- Remove concrete pavement in median and replace with grass.
- Move sidewalks to break point of shoulder.

B. OLD DIXIE HIGHWAY BRIDGE

- Eliminate bridge at Old Dixie Highway.
- Cul-de-sac Old Dixie Highway.

C. RETAINING WALLS AT RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

- Use all soil nails.
- Use all cast-in-place.
- Use all MSE walls.

D. CONLEY ROAD BRIDGE OVER I-285

- Use vertical abutments.
- Use mechanically stabilized earth walls.
- Use a two-span bridge.

E. RETAINING WALLS IN CUT SECTIONS

- Eliminate retaining walls and use back slopes where possible.
- Use soil nails.

F. CONLEY ROAD EAST OF I-285

- Realign Conley Road to the north at the cemetery.
- Use retaining walls where needed to protect grave sites.

VI. EVALUATION PHASE

A. ALTERNATIVES

The following alternatives were formulated during the "eliminate and combine" portion of the Evaluation Phase.

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 1: Shift C.W. Grant Parkway/Conley Road alignment to the north to connect to existing C. W. Grant Parkway.

Value Engineering Alternative Number 2: Eliminate Old Dixie Highway realignment and carry Conley Road over/under the railroad and Old Dixie Highway.

Value Engineering Alternative Number 3: Maintain the existing Conley Road alignment, carry Conley Road over the railroad and Old Dixie Highway, and connect to C.W. Grant Parkway.

II. CURRENT ALIGNMENT

A. TYPICAL SECTION

Value Engineering Alternative: Remove concrete pavement in median and replace with grass.

B. OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative: Eliminate bridge at Old Dixie Highway and cul-de-sac Old Dixie Highway.

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative Number 1: Use all soil nails walls.

Value Engineering Alternative Number 2: Use all MSE walls.

Value Engineering Alternative Number 3: Use all cast-in-place walls.

VI. EVALUATION PHASE (cont'd)

A. ALTERNATIVES (cont'd)

II. CURRENT ALIGNMENT

D. CONLEY ROAD BRIDGE OVER I-285

Value Engineering Alternative: Use vertical abutments, mechanically stabilized earth wall, and a two-span bridge.

E. RETAINING WALLS IN CUT SECTIONS

Value Engineering Alternative Number 1: Eliminate retaining walls and use back slopes where possible.

Value Engineering Alternative Number 2: Use all soil nails walls.

F. CONLEY ROAD EAST OF I-285

Value Engineering Alternative: Realign Conley Road to the north at the cemetery, using retaining walls where needed to protect grave sites.

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES

The following Advantages and Disadvantages were developed for the Value Engineering Alternatives previously generated during the speculation phase. It also includes the Advantages and Disadvantages for the "As Proposed".

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

"As Proposed": Realign both Conley Road and Old Dixie Highway.

Advantages

- Good traffic control during construction

Disadvantages

- High right-of-way impacts
- Difficult construction at the Railroad/Old Dixie Highway crossing
- High construction cost of railroad bridge
- Less than desirable interface with future passenger rail station

Conclusion

Carry forward for further evaluation

Value Engineering Alternative Number 1: *Shift C.W. Grant Parkway/Conley Road alignment to the north to connect to existing C. W. Grant Parkway.*

Advantages

- Medium right-of-way impacts

Disadvantages

- Difficult traffic control during construction at the Old Dixie Highway/Aviation Boulevard intersection
- Difficult construction at the Railroad/Old Dixie Highway crossing
- High construction cost of railroad bridge
- Less than desirable interface with future passenger rail station

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

I. NEW ALIGNMENT

Value Engineering Alternative Number 2: *Eliminate Old Dixie Highway realignment and carry Conley Road over/under the Railroad and Old Dixie Highway.*

Advantages

- Less highway construction cost
- Less right-of-way impact

Disadvantages

- Difficult construction at the Railroad/Old Dixie Highway crossing
- High construction cost of railroad bridge
- Less than desirable interface with future passenger rail station

Conclusion

Carry forward for further evaluation

Value Engineering Alternative Number 3: *Maintain the existing Conley Road alignment, carry Conley Road over the railroad and Old Dixie Highway, and connect to C.W. Grant Parkway.*

Advantages

- Less bridge cost
- Easier construction
- Less right-of-way impacts
- Less highway construction cost
- Better arrangement for future rail station

Disadvantages

- More difficult traffic control during construction along Conley Road

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

A. TYPICAL SECTION

"As Proposed": Paved concrete median.

Advantages

- Typical Construction
- Separates traffic

Disadvantages

- High construction cost
- Longer construction time

Conclusion

Carry forward for further evaluation

Value Engineering Alternative: *Remove concrete pavement in median and replace with grass.*

Advantages

- Separates traffic
- Aesthetics
- Less construction time
- Less construction cost

Disadvantages

- Grass mowing

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

B. OLD DIXIE HIGHWAY BRIDGE

"As Proposed": Construct new highway bridge over C. W. Grant Parkway/Conley Road.

Advantages

- Provides separation between roadways
- Maintains continuity of Old Dixie Highway

Disadvantages

- High construction cost
- Future bridge maintenance
- Longer construction time
- Requires construction detour

Conclusion

Carry forward for further evaluation

Value Engineering Alternative: Eliminate bridge at Old Dixie Highway and cul-de-sac Old Dixie Highway.

Advantages

- Less construction time
- Less construction cost
- Will enhance use of new facility

Disadvantages

- Requires additional right-of-way
- Impacts the proposed intersection of C. W. Grant/Old Dixie connector by adding an additional leg

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

C. **RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE**

"As Proposed": Use a combination of cast-in-place and mechanically stabilized earth walls.

Advantages

- Well known construction methods
- Generates excavated material that could be used as fill

Disadvantages

- Excavation is required behind wall face in order to construct MSE walls from the bottom up
- Excavation for the wall will impact the adjacent property owners
- Construction of MSE walls requires select borrow material
- Difficult construction of two different types of walls as currently proposed

Conclusion

Carry forward for further evaluation

Value Engineering Alternative Number 1: Use all soil nails walls.

Advantages

- No excavation required to construct walls
- Does not impact adjacent property owners
- Easier construction

Disadvantages

- May not be a well known construction method locally

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative Number 2: Use all MSE walls.

Advantages

- Well known construction method
- Generates excavated material that could be used as fill

Disadvantages

- Excavation is required behind wall face in order to construct MSE walls from the bottom up
- Excavation for the wall will impact the adjacent property owners
- Construction of MSE walls requires select borrow material

Conclusion

Carry forward for further evaluation

Value Engineering Alternative Number 3: Use all cast-in-place walls.

Advantages

- Well known construction method

Disadvantages

- High construction cost

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

D. CONLEY ROAD BRIDGE OVER I-285

“As Proposed”: Four span bridge.

Advantages

- May give future opportunity to add lanes by excavating spill through abutments

Disadvantages

- Spill through abutments require additional bridge length
- Higher construction cost
- May be more future bridge maintenance because more bridge length
- Longer construction time

Conclusion

Carry forward for further evaluation

Value Engineering Alternative: *Use vertical abutments, mechanically stabilized earth wall, and shorter two-span bridge.*

Advantages

- Less construction cost
- Less future bridge maintenance
- Less construction time

Disadvantages

- None apparent

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

E. RETAINING WALLS IN CUT SECTIONS

"As Proposed": Construct MSE walls.

Advantages

- Reduces right-of-way takes
- Well known construction method
- Generates excavated material that could be used as fill

Disadvantages

- Excavation is required behind wall face in order to construct MSE walls from the bottom up
- Excavation for the wall will impact the adjacent property owners
- Construction of MSE walls requires select borrow material

Conclusion

Carry forward for further evaluation

Value Engineering Alternative Number 1: *Eliminate retaining walls and use back slopes where possible.*

Advantages

- Contract time may be shortened
- Lower construction cost

Disadvantages

- Requires additional right-of-way

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

E. RETAINING WALLS IN CUT SECTIONS

Value Engineering Alternative Number 2: Use soil nails.

Advantages

- No excavation required to construct walls
- Does not impact adjacent property owners
- Easier construction

Disadvantages

- May not be a well known construction method locally

Conclusion

Carry forward for further evaluation

VI. EVALUATION PHASE (cont'd)

B. ADVANTAGES AND DISADVANTAGES (cont'd)

II. CURRENT ALIGNMENT

F. CONLEY ROAD EAST OF I-285

"As Proposed": Align Conley Road to avoid impact to cemetery.

Advantages

- No impacts to cemetery

Disadvantages

- High right-of-way impacts
- Displacement of tenants

Conclusion

Carry forward for further evaluation

Value Engineering Alternative: *Realign Conley Road to the north at the cemetery, using retaining walls where needed to protect grave sites.*

Advantages

- Reduced right-of-way impacts
- May eliminate some relocations

Disadvantages

- May not totally eliminate relocations

Conclusion

Carry forward for further evaluation

VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE NUMBER 1**
- (3) VALUE ENGINEERING ALTERNATIVE NUMBER 2**
- (4) VALUE ENGINEERING ALTERNATIVE NUMBER 3**

II. CURRENT ALIGNMENT

A. TYPICAL SECTION

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE**

B. OLD DIXIE HIGHWAY BRIDGE

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE**

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE NUMBER 1**
- (3) VALUE ENGINEERING ALTERNATIVE NUMBER 2**
- (4) VALUE ENGINEERING ALTERNATIVE NUMBER 3**

D. CONLEY ROAD BRIDGE OVER I-285

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE**

E. RETAINING WALLS

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE NUMBER 1**
- (3) VALUE ENGINEERING ALTERNATIVE NUMBER 2**

F. CONLEY ROAD EAST OF I-285

- (1) AS PROPOSED**
- (2) VALUE ENGINEERING ALTERNATIVE**

VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

“As Proposed”

The proposed horizontal alignment for G.W. Grant Parkway/Conley Road begins a shift south 600 feet +/- east of International Boulevard. This shift allows for the continued use of the intersections at Old Dixie Highway and Old Dixie Road during construction. The vertical alignment at this point begins to drop in order for the new alignment to cross under the Norfolk Southern Railroad tracks and Old Dixie Highway. The vertical alignment then begins to rise to meet the new at grade intersection of the newly aligned Old Dixie Road about 350 feet +/- east of the Railroad tracks. East of the intersection, the alignment begins an “S” curve to connect with the existing Conley Road alignment.

Old Dixie Road will be realigned to the east a maximum distance of 350 feet, this shift will begin approximately 900 feet south of its intersection with C.W. Grant Parkway and will be back on the existing alignment approximately 1100 feet north of its intersection with C.W. Grant Parkway.

Since the proposed design grade separates Old Dixie Highway and the realigned C.W. Grant Parkway, a connector road will be constructed at the northwest quadrant of these two roadways to provide access to these roadways.

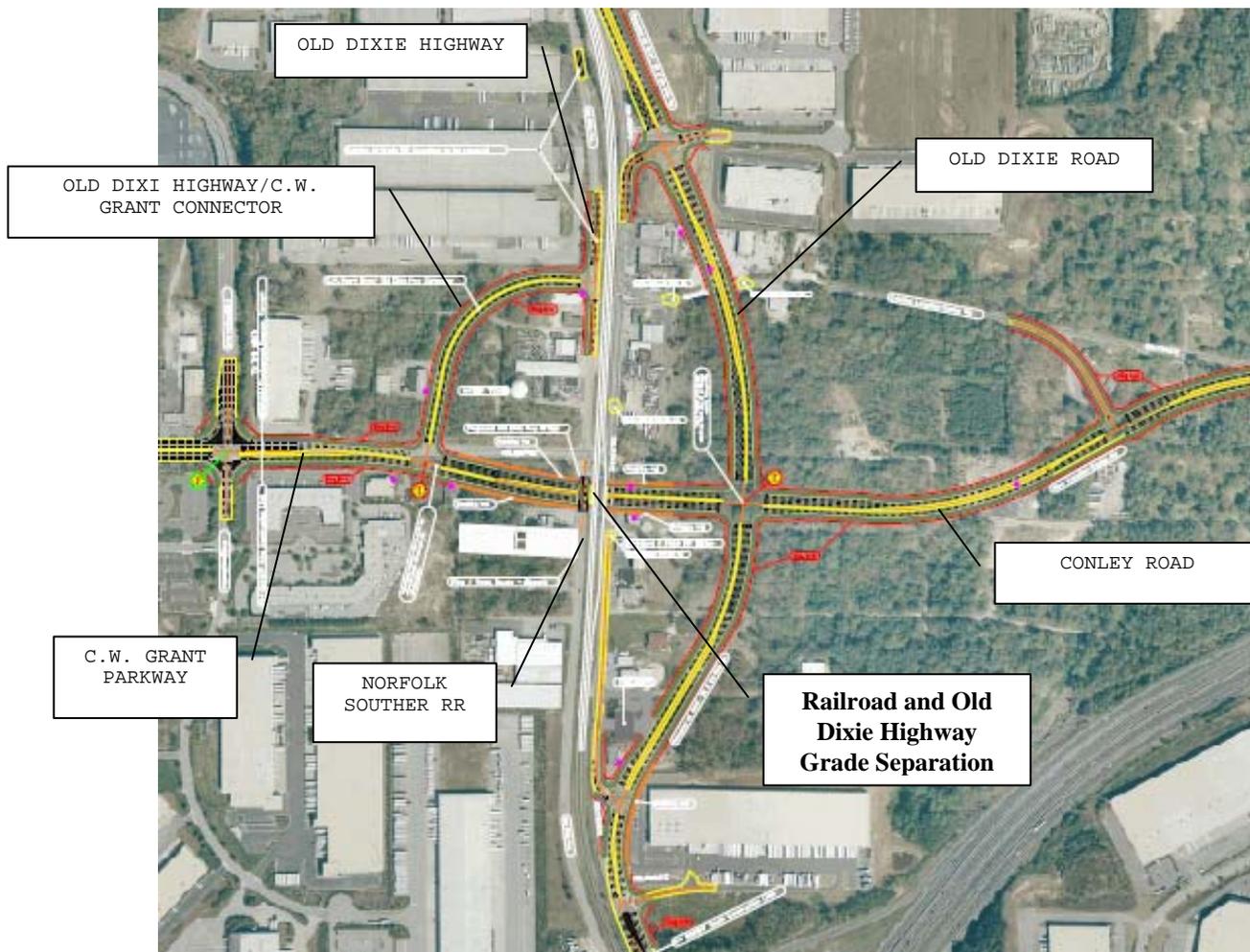
The additional right-of-way required for this project amounts to approximately 30.0 +/- acres. The team received an estimate of \$14,955,326 for 19.0 acres in private ownership for an average of \$786,680.43/acre. For the purposes of the cost comparisons for each Value Engineering Alternative, the team will use \$750,000/acre as the value of the properties regardless of ownership or land use.

VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

“As Proposed”



AS PROPOSED ALIGNMENT

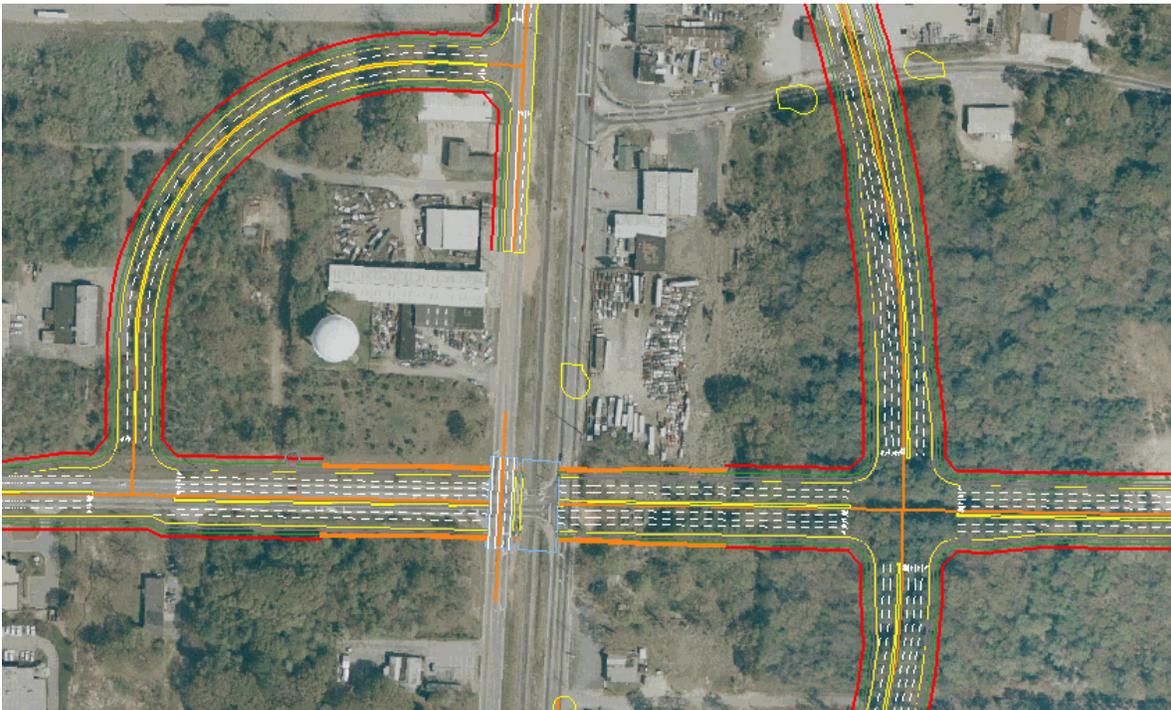
VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 1

Value Engineering Alternative Number 1 is to keep the horizontal alignment of C.W. Grant at the intersection of Old Dixie Highway and Old Dixie Road. The C.W. Grant Parkway/Old Dixie Highway Connector will have to be constructed before work on the underpass begins in order to maintain traffic to-and-from Old Dixie Highway. When underpass construction begins Old Dixie Road will lose its direct access to the east and will make travel across the Railroad circuitous during construction. This alternative will reduce right-of-way acquisition and minimally reduce roadway construction cost.



VALUE ENGINEERING ALTERNATIVE NUMBER 1

**I. NEW ALIGNMENT
SHIFT CONLEY ROAD TO NORTH TO CONNECT TO C.W. GRANT PKWY
VALUE ENGINEERING ALTERNATIVE NUMBER 1
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
CLEAR & GRUB	AC	\$10,000.00	31.7	\$317,000	29.1	\$291,000
CURB & GUTTER (TYPE 7)	LF	\$12.00	9804	\$117,648	8756	\$105,072
CONCRETE MEDIAN PAVEMENT	SY	\$23.00	39216	\$901,968	35024	\$805,552
BASE & PAVING	SY	\$40.17	24741	\$993,846	23349	\$937,943
SUBTOTAL				\$2,330,462		\$2,139,567
CONSTRUCTION ENGINEERING			10.0%	\$233,046	10.0%	\$213,957
INFLATIONS	2	0%	0.0%	\$0	0.0%	\$0
RIGHT OF WAY	AC	\$750,000.00	30.0	\$22,500,000	27.4	\$20,550,000
GRAND TOTAL				\$25,063,508		\$22,903,523

POSSIBLE SAVINGS:

\$2,159,985

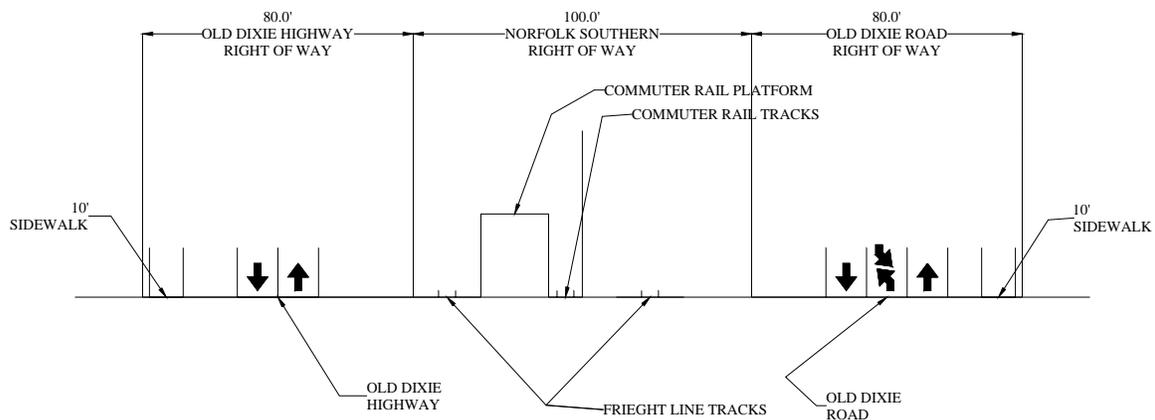
VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 2

Value Engineering Alternative Number 2 recommends eliminating the realignment of Old Dixie Road and carrying the “As Proposed” horizontal alignment of C.W. Grant Parkway/Conley Road over/under Old Dixie Highway, the railroad, and Old Dixie Road. Because of encroachments on Norfolk Southern right-of-way, it is assumed that Old Dixie Road will be shifted to the east and some of the buildings may have to be condemned and businesses may have to be relocated for this alternative.



CONCEPTUAL TYPICAL SECTION FOR OLD DIXIE HIGHWAY NORFOLK SOUTHERN RAILROAD RIGHT-OF-WAY AND OLD DIXIE ROAD

Access from C.W. Grant/Conley Road to Old Dixie Road would be through the existing at grade intersection of Old Dixie Road and Old Conley Road. Access to the Commuter Rail Platform would be via a pedestrian overpass.

Since this alternative uses the same Conley Road Alignment and the construction sequence for reconstructing Old Dixie Road outside of the railroad right-of-way will be as follows:

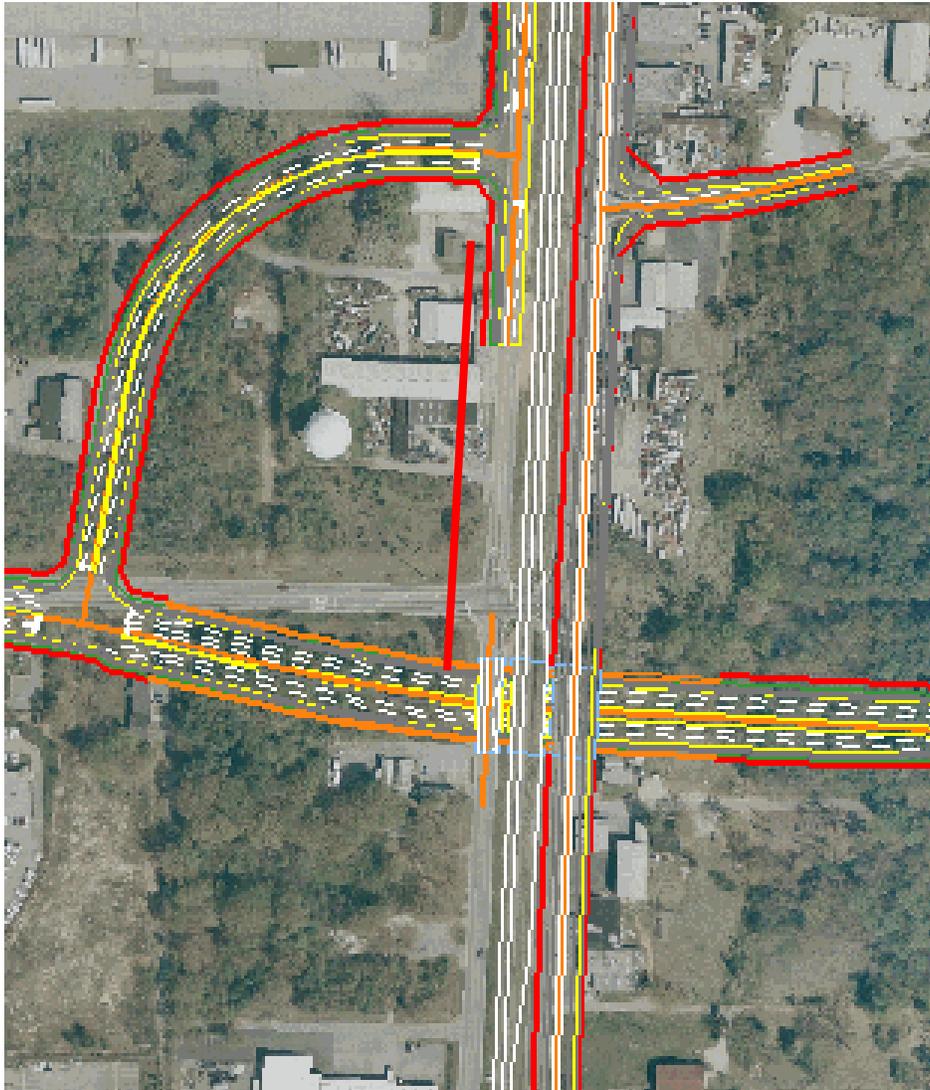
1. Construct new Old Dixie Road overpass bridge as far to the east as practical, construct new pavement and maintain traffic on existing Old Dixie Road.
2. Shift traffic onto new pavement and bridge complete removal of existing pavement.

VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 2



**RECONSTRUCT OLD DIXIE ROAD
OUTSIDE RAILROAD RIGHT-OF-WAY**

**I. NEW ALIGNMENT
ELIMINATE OLD DIXIE ROAD REALIGNMENT
VALUE ENGINEERING ALTERNATIVE NUMBER 2
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
CLEAR & GRUB	AC	\$10,000.00	13.8	\$138,446	4.8	\$47,888
BRIDGE OVER CONLEY ROAD	SF	\$80.00	0.0	\$0	8960.0	\$716,800
CURB & GUTTER (TYPE 7)	LF	\$12.00	9278	\$111,336	0.0	\$0
CONCRETE MEDIAN PAVEMENT	SY	\$23.00	4124	\$94,842	0.0	\$0
SIGNAL	EA	\$50,000.00	1.0	\$50,000	2.0	\$100,000
BASE & PAVING	SY	\$40.17	24741	\$993,859	16688	\$670,357
SUBTOTAL				\$1,388,483		\$1,535,045
CONSTRUCTION ENGINEERING			10.0%	\$138,848	10.0%	\$153,504
INFLATIONS	2	0%	0.0%	\$0	0.0%	\$0
RIGHT-OF-WAY	AC	\$750,000.00	30.0	\$22,500,000	20.9	\$15,708,161
GRAND TOTAL				\$24,027,331		\$17,396,711

POSSIBLE SAVINGS:

\$6,630,621

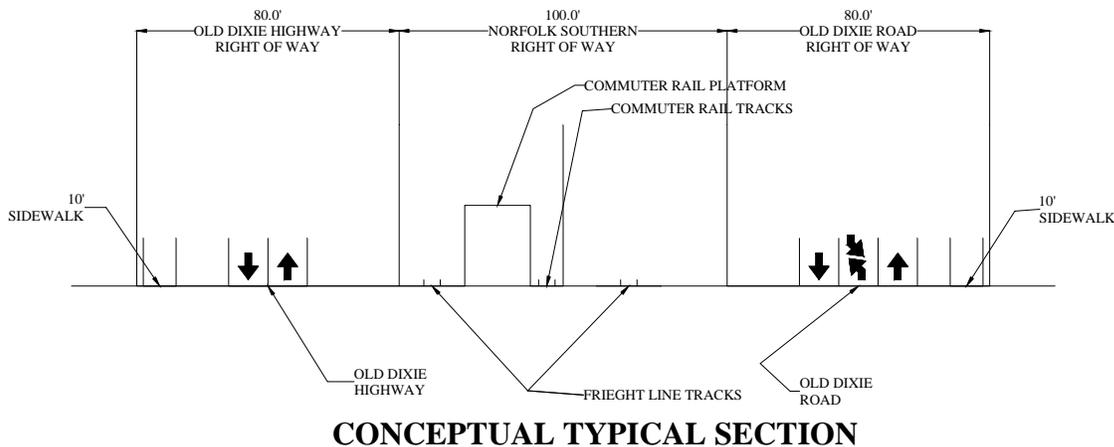
VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 3

Value Engineering Alternative Number 3 recommends reconstructing Conley Road on the existing Conley Road alignment. At Old Dixie Highway, the railroad, and Old Dixie Road, Conley Road will be carried on a structure and touch-down at C.W. Grant Parkway using the C.W. Grant Parkway/Old Dixie Highway Connector horizontal alignment. Old Dixie Road would only be realigned to the east enough to eliminate any Norfolk Southern right-of-way encroachments.



Access to Old Dixie Highway and Old Dixie Road will be on two-lane connector roads.

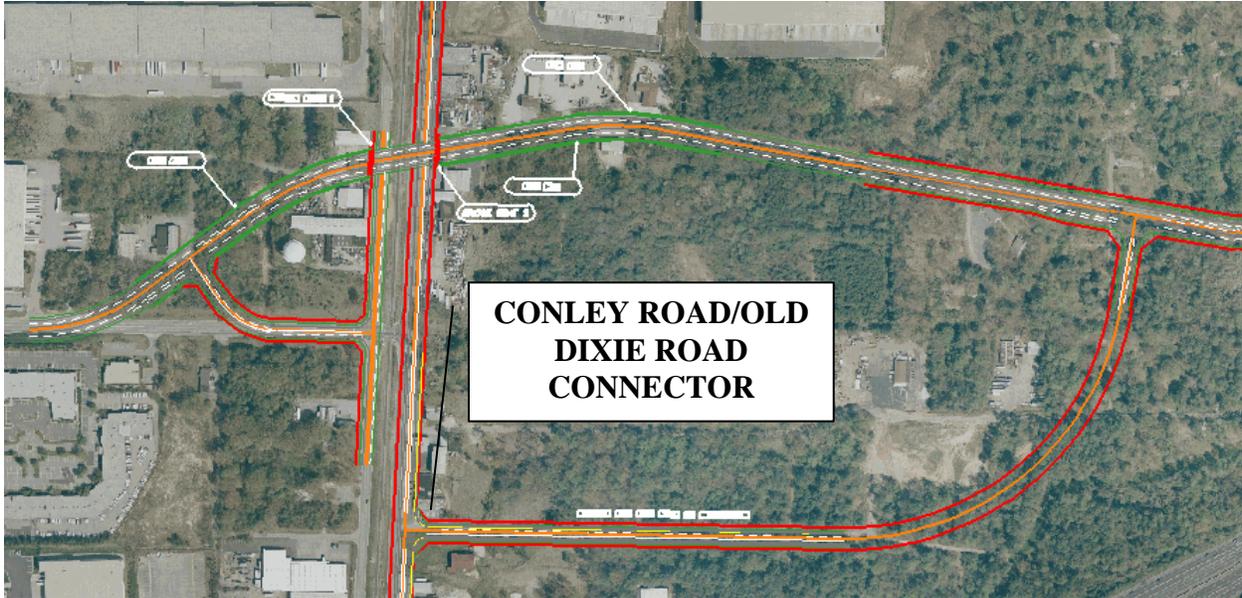
One of the advantages of this alternative is the reduced risk of designing/constructing Conley Road when the final configurations of the Commuter Rail and Norfolk Southern facilities have not been finalized. Conley Road would span over the railroad right-of-way along with Old Dixie Highway and Old Dixie Road eliminating possible conflicts.

VII. DEVELOPMENT PHASE

I. NEW ALIGNMENT

A. C.W. GRANT/CONLEY ROAD ALIGNMENT

Value Engineering Alternative Number 3



VALUE ENGINEERING ALTERNATIVE NUMBER 3

**I. NEW ALIGNMENT
 MAINTAIN EXISTING CONLEY ROAD ALIGNMENT AND SPAN OVER
 RAILROAD, OLD DIXIE HIGHWAY, AND OLD DIXIE ROAD
 VALUE ENGINEERING ALTERNATIVE NUMBER 3
 COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
CLEAR & GRUB	AC	\$10,000.00	13.8	\$138,446	3.4	\$34,435
BRIDGE OVER OLD DIXIE ROAD, RR, AND OLD DIXIE HWY	SF	\$80.00	0.0	\$0	23660.0	\$1,892,800
RR BRIDGE	SF	\$250.00	10535.0	\$2,633,750	0.0	\$0
BRIDGE OVER CONLEY ROAD	SF	\$80.00	7367.0	\$589,360	0.0	\$0
MSE WALL	SF	\$45.00	0.0	\$0	52946.0	\$2,382,570
CURB & GUTTER (TYPE 7)	LF	\$12.00	9278	\$111,336	0.0	\$0
CONCRETE MEDIAN PAVEMENT	SY	\$23.00	4124	\$94,842	0.0	\$0
SIGNAL	EA	\$50,000.00	1.0	\$50,000	0.0	\$0
BASE & PAVING	SY	\$40.17	24741	\$993,859	16000	\$642,720
SUBTOTAL				\$4,611,593		\$4,952,525
CONSTRUCTION ENGINEERING			10.0%	\$461,159	10.0%	\$495,253
INFLATIONS	2	0%	0.0%	\$0	0.0%	\$0
RIGHT OF WAY	AC	\$750,000.00	30.0	\$22,500,000	22.0	\$16,507,769
GRAND TOTAL				\$27,572,752		\$21,955,546

POSSIBLE SAVINGS:

\$5,617,206

VII. DEVELOPMENT PHASE

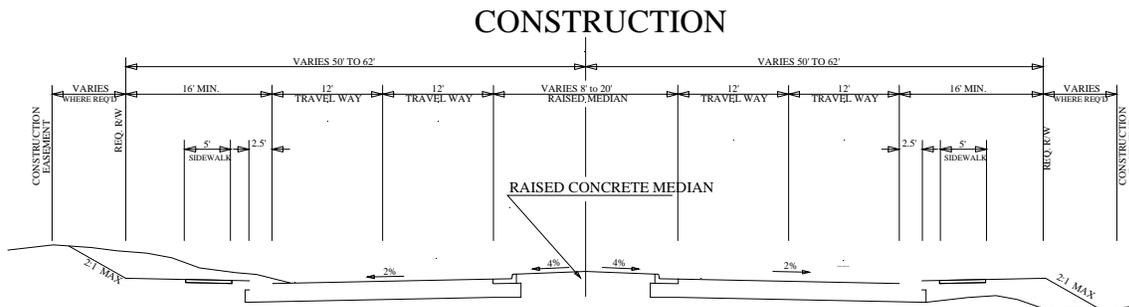
II. CURRENT ALIGNMENT

A. TYPICAL SECTION

“As Proposed”

The proposed project consists of constructing two new roadways. C.W. Grant Parkway/Conley Road will run essentially east and west, while the Old Dixie Road / US 19/41 will run from north to south. These new facilities will have an urban typical section with 2-12-foot lanes in each direction and left and right turn lanes as warranted at intersections. Also included with this typical section will be the use of curb and gutter with a sidewalk to the outside, and curb and gutter with a raised concrete median to the inside.

The median varies from 8 feet to 20 feet in width. The narrow width is to accommodate the left turn lanes at intersections. Curb and gutter consumes five feet of the median width with the remainder being 4 inches of concrete median paving. This typical section is generally preferred due to the minimum amount of maintenance required for the median.



**“AS PROPOSED”
TYPICAL SECTION**

VII. DEVELOPMENT PHASE

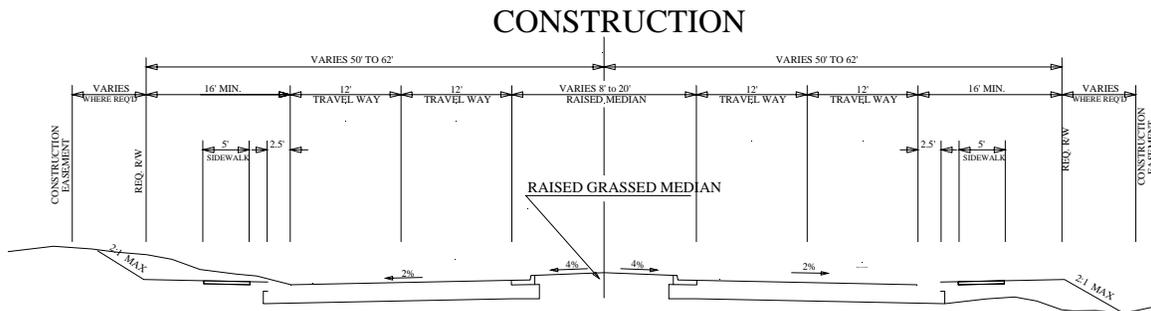
II. CURRENT ALIGNMENT

A. TYPICAL SECTION

Value Engineering Alternative

The construction of the new roadway facilities in this area has started much speculation by local governments about the future possibilities of using this area. There is discussion about there being a transportation hub near the crossing of the new roadways. There may be a multi-level, high capacity parking facility constructed. A people mover may be constructed to quickly carry passengers to the Hart-Jackson International Airport. MARTA may also provide a rail service to this hub as well as a commuter rail line becoming a reality to serve this area.

With all the possibilities for the exposure of this area to public display, the proposed roadways should strive to enhance the overall aesthetics of the area. It is the recommendation of the study team that the concrete median be changed to a grass median to allow the possibility of a more parkway-like appearance. The grassed area would be only in those areas where the width between the back of the curb and gutter is 15 feet. In the turn lane areas and in the transition area from 15 feet down to 3 feet, concrete median paving would still be used. The savings to implement this change is \$602,356. The study team recommends that this alternative be accepted.



VALUE ENGINEERING ALTERNATIVE TYPICAL SECTION

**II. CURRENT ALIGNMENT
TYPICAL SECTION
VALUE ENGINEERING ALTERNATIVE
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
CONCRETE MEDIAN	SY	\$23.00	26212.0	\$602,876	2260.0	\$51,980
GRASSING (IN MEDIAN)	AC	\$1,000.00	0.0		3.3	\$3,300
SUBTOTAL				\$602,876		\$55,280
E & C			10.0%	\$60,288	10.0%	\$5,528
GRAND TOTAL				\$663,164		\$60,808

POSSIBLE SAVINGS:

\$602,356

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

B. OLD DIXIE HIGHWAY BRIDGE

“As Proposed”

Old Dixie Highway is a two-lane facility that parallels the Norfolk Southern Railway and Old Dixie Road/US 19/41. As part of the development of these new east-west and north-south arteries, it is proposed that Old Dixie Highway be reconstructed to include a new bridge to span Conley Road/C.W. Grant Parkway. Traffic will be maintained during construction by using College Street and Brown Drive in the southwest quadrant and shifting Old Dixie Highway traffic to this facility. These minor streets will need to be resurfaced and the cost for this resurfacing has been included in the quantities.

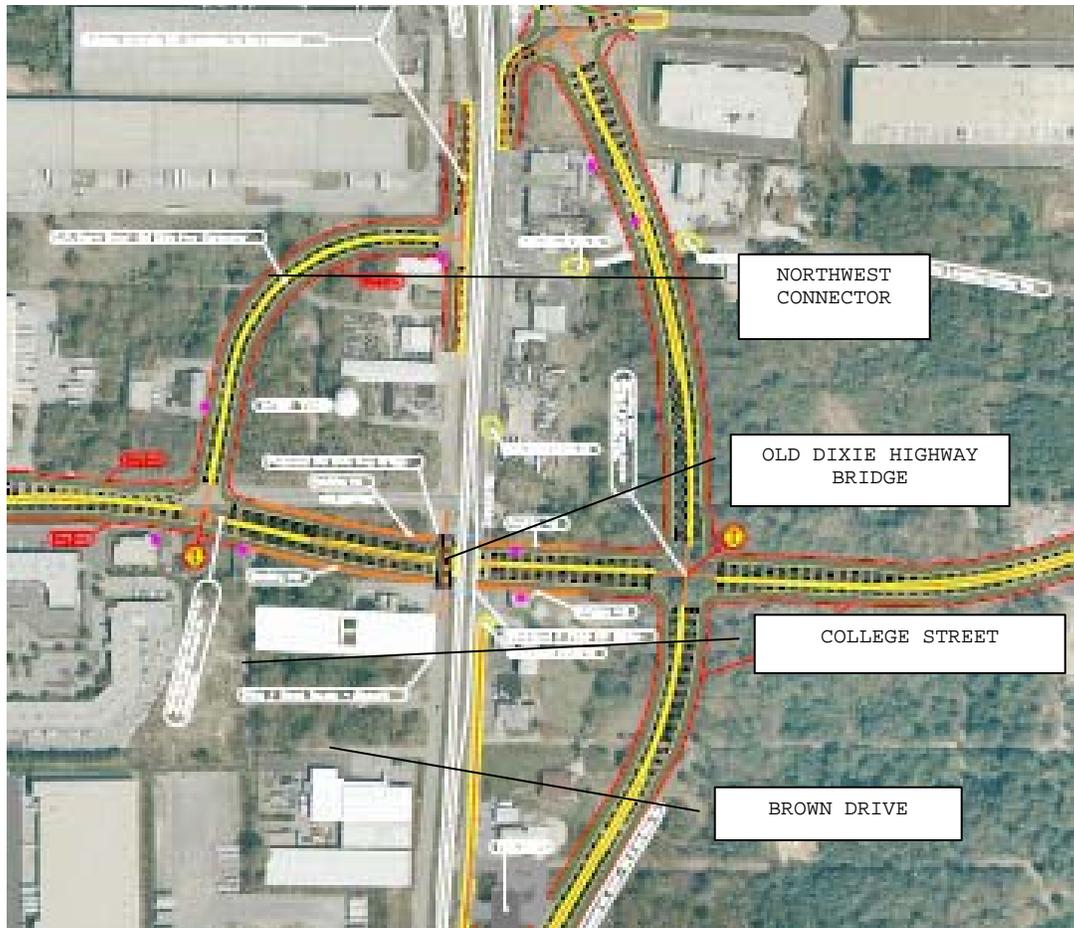
Upon completion of the proposed new construction, Old Dixie Highway will have a connection in the northwest quadrant to Conley Road/C.W. Grant Parkway. This connection is approximately 1300 feet in length. Due to the projected traffic volumes using this connection and its short length, it is required that this connector be a four-lane facility. The Conley Road/C. W. Grant Parkway intersection will be a “T” with a left and right turn lane. This intersection will be signalized.

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

B. OLD DIXIE HIGHWAY BRIDGE

“As Proposed”



VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

B. OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative

The Value Engineering alternative to the construction of a new bridge on Old Dixie Highway is to not build a bridge. This recommendation is made due to the consideration of several factors. The first is the fact that a new connector must be constructed in the northwest quadrant to allow all potential movements between Old Dixie Highway and the new Conley Road/C.W. Grant Parkway. If a connector could be built in the southwest quadrant, all movements would be accommodated. Another factor considered is the fact that the proposed northwest connector had to be made four lanes wide to accommodate traffic volumes. By constructing a two-lane connector in the southwest quadrant this could also be reduced to two lanes.

The cul-de-sacs of Old Dixie Highway created by not constructing a new bridge will change the traffic behavior and future development of the area. With there being a new facility to the east on the new Old Dixie Road, traffic should be encouraged to use this facility and the character of Old Dixie Highway should be encouraged to remain as it currently is. This would help preclude any future need to expand the lanes on Old Dixie Highway.

Another potential savings, by eliminating the Old Dixie Highway Bridge, would be a decrease in the amount of walls required. By using a longitudinal reduction in the walls of 50 feet, there is an estimated reduction of 1000 SF in the amount of walls required.

There are a couple of drawbacks in this recommendation. The resultant new cross intersection of the connectors with C.W. Grant Parkway will not be quite as efficient as the as proposed “T” intersection. It will not overly impact the operation because some of the previous left turn movements will now become right turn movements.

Another disadvantage is the need for additional rights-of-way for the southwest connector. After consulting with GA DOT personnel, the estimate of \$2.06 per square foot was used. This figure was expanded by adding the scheduling contingency of 55%, the Adm/Court cost of 60%, and the inflation factor of 40%, bringing the cost to \$7.15 per square foot.

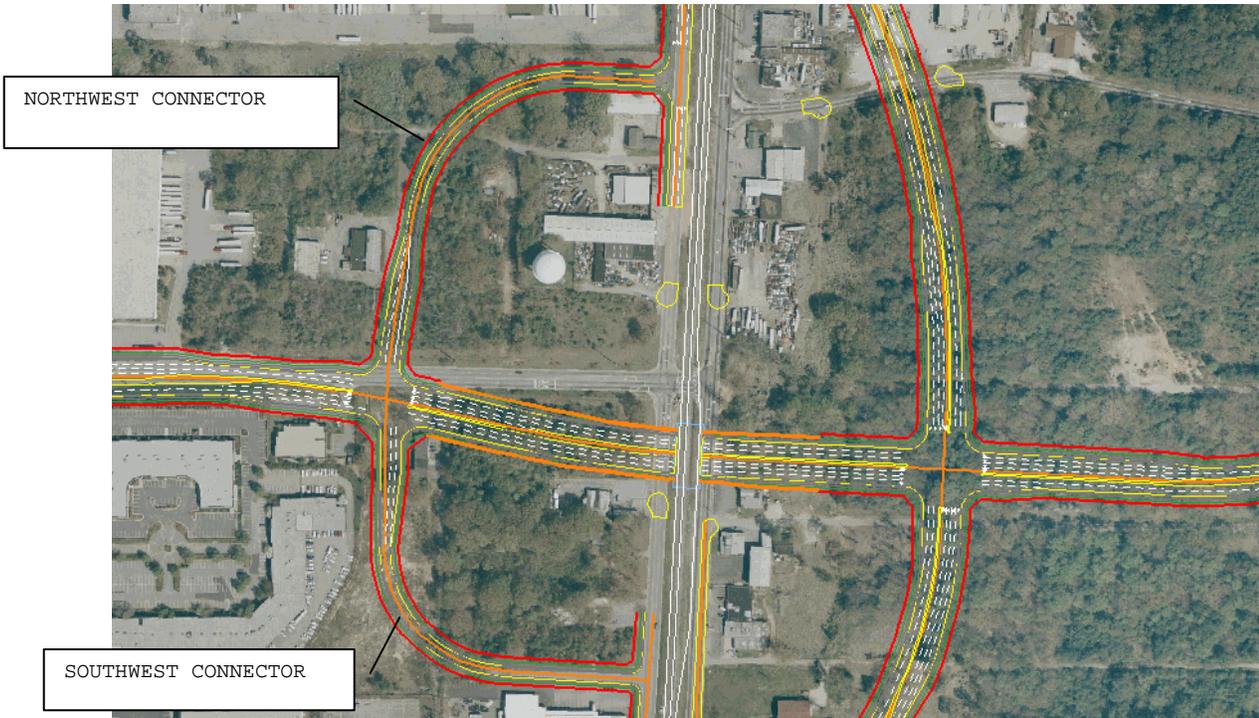
The implementation of this recommendation to not build a bridge over Conley Road/C.W. Grant Parkway and by building two-lane connectors in the quadrants to the west could result in a savings of \$427,999. The study team recommends that consideration be given to accepting this alternative.

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

B. OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative



**SOUTHWEST CONNECTOR
VALUE ENGINEERING ALTERNATIVE**

**II. CURRENT ALIGNMENT
OLD DIXIE HIGHWAY BRIDGE
VALUE ENGINEERING ALTERNATIVE
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
ROADWAY BRIDGES	SF	\$80.00	7367.0	\$589,360	0.0	\$0
GRADED AGGREGATE 12"	TN	\$28.00	119845.0	\$3,355,660	120540.0	\$3,375,120
1.5" 12.5mm SUPERPAVE	TN	\$52.00	13310.0	\$692,120	13135.0	\$683,020
2" 19mm SUPERPAVE	TN	\$46.00	17513.0	\$805,598	17653.0	\$812,038
6" 25mm SUPERPAVE	TN	\$36.00	52245.0	\$1,880,820	52655.0	\$1,895,580
CURB & GUTTER (TYPE 2)	LF	\$12.00	41548.0	\$498,576	38948.0	\$467,376
CURB & GUTTER (TYPE 7)	LF	\$12.00	35743.0	\$428,916	33143.0	\$397,716
CONCRETE MEDIAN	SY	\$23.00	26212.0	\$602,876	25782.0	\$592,986
WALLS	SF	\$45.00	50570.0	\$2,275,650	49570.0	\$2,230,650
SUBTOTAL				\$11,129,576		\$10,454,486
E & C			10.0%	\$1,112,958	10.0%	\$1,045,449
SUBTOTAL				\$12,242,534		\$11,499,935
RIGHT-OF-WAY	SF	\$7.15			44000.0	\$314,600
GRAND TOTAL				\$12,242,534		\$11,814,535

POSSIBLE SAVINGS:

\$427,999

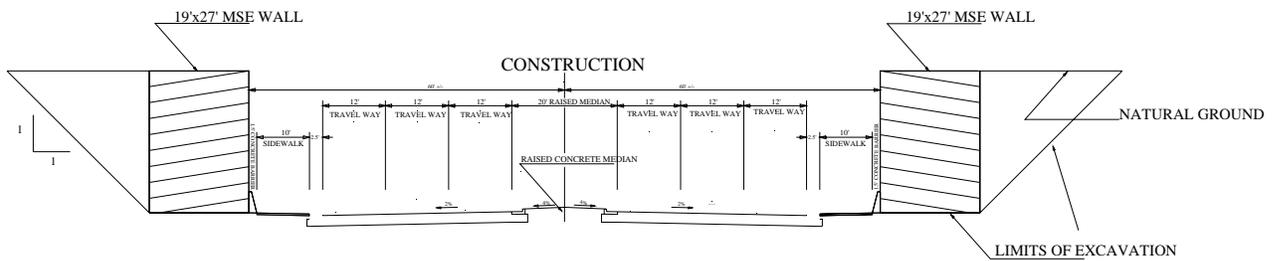
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

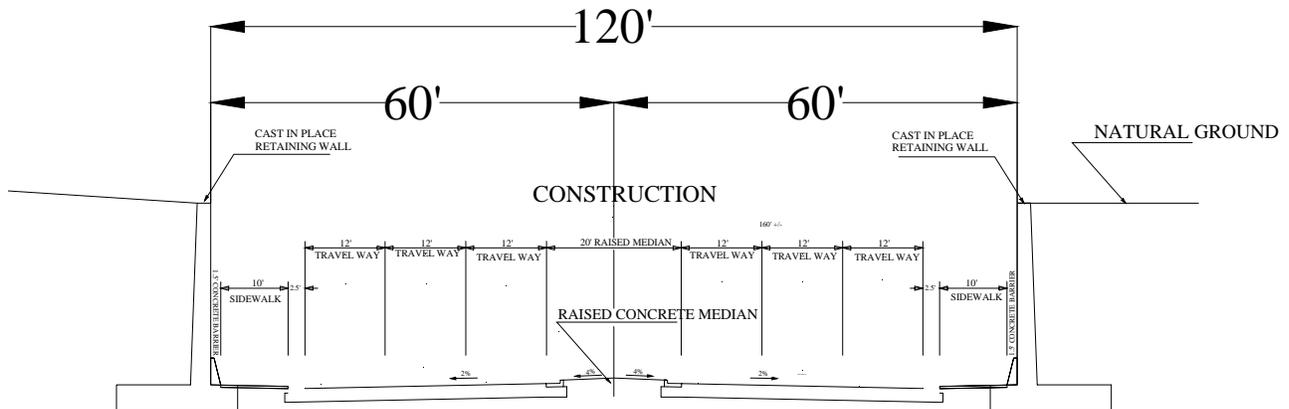
C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

“As Proposed”

The “As proposed” design consists of Conley Road being in a depressed roadway section underneath and adjacent to the Norfolk Southern Railroad and Old Dixie Highway Bridges. The depth of the depressed roadway is about 30 feet. The depressed box-shaped section is formed with vertical retaining walls on both sides. The retaining walls are MSE type constructed from the bottom up. This requires an excavation of at least the width of the proposed MSE wall behind the MSE wall face, and a 1:1 back slope out to natural ground. After the MSE wall is constructed, the 1:1 slope is backfilled. The Norfolk Southern Railroad Bridge will be on a reinforced concrete abutment while the Old Dixie Highway Bridge will be on the MSE wall.



**“AS PROPOSED”
ABUTMENTS FOR OLD DIXIE HIGHWAY BRIDGE**



**“AS PROPOSED”
ABUTMENTS FOR NORFOLK SOUTHERN RR BRIDGE**

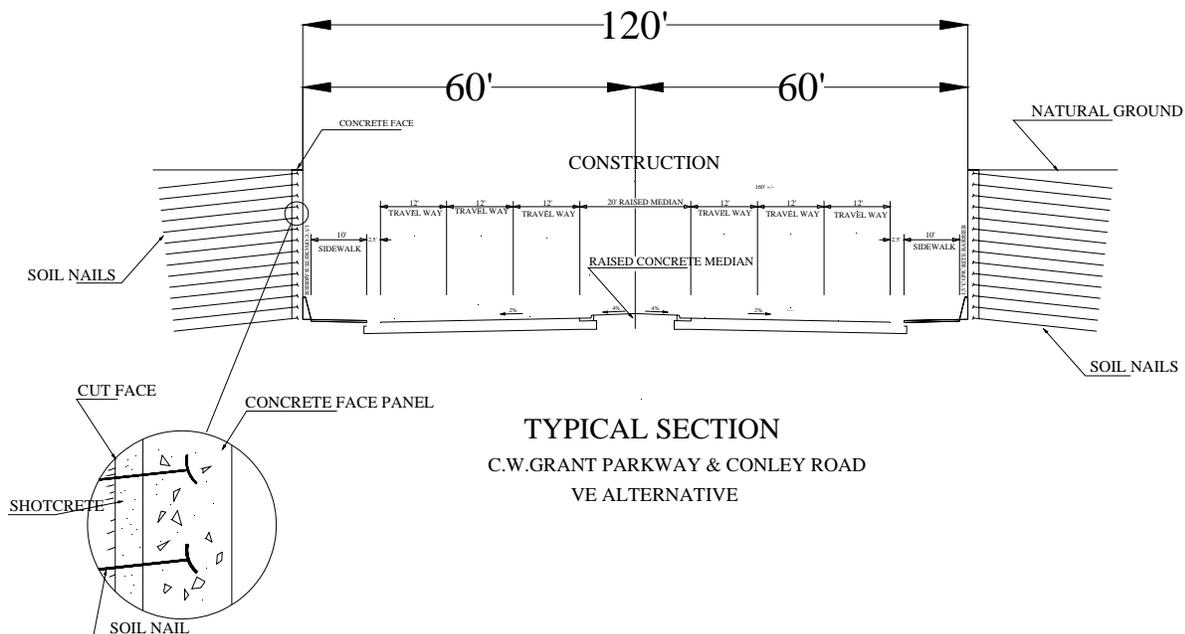
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative Number 1

This alternative uses Soil Nail Wall abutments for both the railroad and highway bridges. Since the bridges are so close, the abutments are combined into one structure. To account for the heavier railroad loading the cost of soil nails is increased by 125%. Soil nail walls are built with a top-down construction procedure. This type of wall construction does not require excavation behind the wall face. Typically, 5-to-6 feet is excavated at the wall face and a drill machine bores a pattern of approximately 8-inch diameter holes into the excavated vertical face. The spacing of the holes varies from approximately 3-to-5 feet horizontally and vertically. The bored holes are then filled with cement grout and a 1-inch steel bar is inserted into the grout. Next, a thin drainage board is placed at intervals along the vertical face, and the 5-to-6 feet of cut is covered with about 6-inches of shotcrete. The soil nails extend through the shotcrete and are later anchored into a cast-in-place reinforced concrete face, or are attached to precast panels. The facing is not attached or cast until the soil nails and shotcrete procedures have been completed for the entire wall. The wall construction proceeds from the top down in increments of 5-to-6 feet as described.



VALUE ENGINEERING ALTERNATIVE NUMBER 1

**II. CURRENT ALIGNMENT
RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGES
VALUE ENGINEERING ALTERNATIVE NUMBER 1
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
Old Dixie Highway MSE Abutments	SF	\$55.00	240.0	\$13,200		
Norfolk Southern RR Cast-in-Place Abut	CY	\$850.00	810.0	\$688,500		
Excavation Weathered Rock	CY	\$3.00	3033.0	\$9,099		
Excavation Rock	CY	\$20.00	3033.0	\$60,660		
Soil Nail Combined Abut	SF	\$95.00			5500.0	\$522,500
SUBTOTAL				\$771,459		\$522,500
10% E & C				\$77,146		\$52,250
GRAND TOTAL				\$848,605		\$574,750

POSSIBLE SAVINGS:

\$273,855

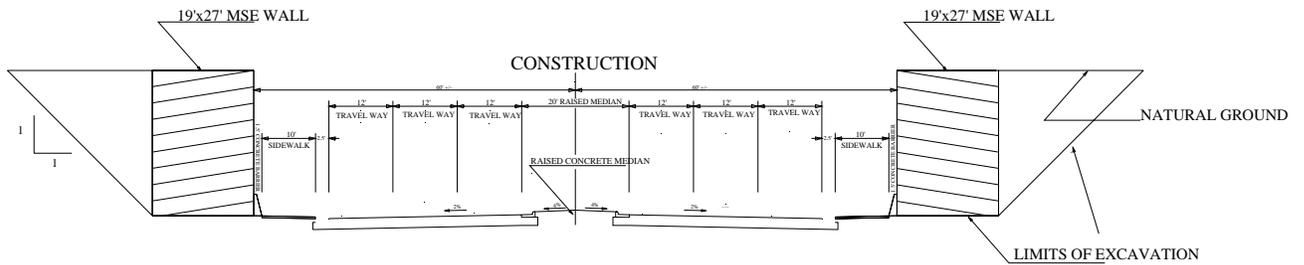
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative Number 2

This alternate uses MSE vertical abutments for both the highway and railroad bridges. Since the bridges are so close, (within 10 feet +/-), the abutments are combined into a single structure. The cost for MSE walls is increased 125% to account for the heavier railroad loading. To construct the MSE wall, an excavation is required. The excavation uses a 1:1 back slope.



**VALUE ENGINEERING ALTERNATIVE NUMBER 2
TYPICAL SECTION**

**II. CURRENT ALIGNMENT
RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGES
VALUE ENGINEERING ALTERNATIVE NUMBER 2
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
Old Dixie Highway MSE Abutments	SF	\$55.00	240.0	\$13,200		
Norfolk Southern RR Cast-in-Place Abut	CY	\$850.00	810.0	\$688,500		
Excavation Weathered Rock	CY	\$3.00	3033.0	\$9,099		
Excavation Rock	CY	\$20.00	3033.0	\$60,660		
MSE Combined Abut	SF	\$70.00			5940.0	\$415,800
MSE Weathered Rock Excavation	CY	\$3.00			2310.0	\$6,930
MSE Rock Excavation	CY	\$20.00			2310.0	\$46,200
SUBTOTAL				\$771,459		\$415,800
10% E & C				\$77,146		\$41,580
GRAND TOTAL				\$848,605		\$457,380

POSSIBLE SAVINGS: \$391,225

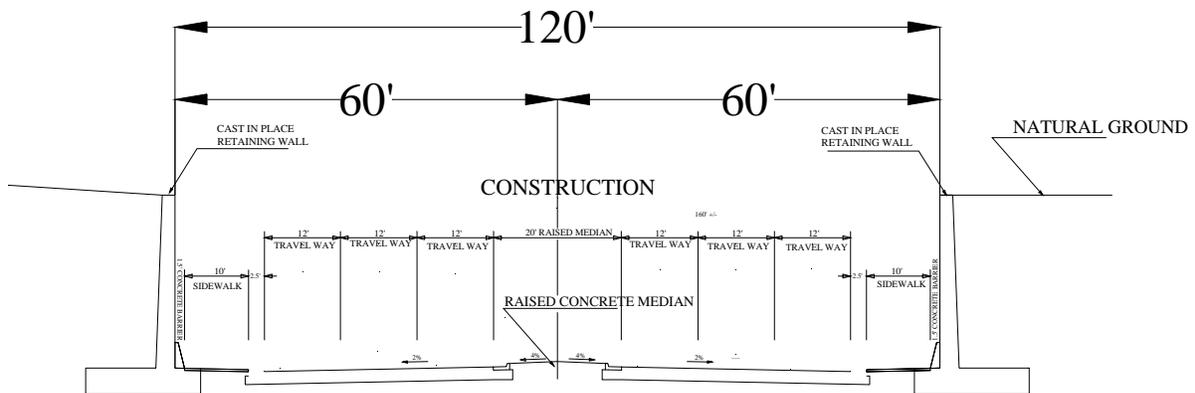
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

C. RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

Value Engineering Alternative Number 3

This alternate uses a reinforced concrete cast-in-place abutment for both the highway and the railroad bridges. These abutments are combined into a single abutment, because the bridges are so close. The excavation for the abutment has a 1:1 back slope, and the abutment wings are parallel with Conley Road.



VALUE ENGINEERING ALTERNATIVE NUMBER 3

**II. CURRENT ALIGNMENT
RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGES
VALUE ENGINEERING ALTERNATIVE NUMBER 2
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
Old Dixie Highway MSE Abutments	SF	\$55.00	240.0	\$13,200		
Norfolk Southern RR Cast-in-Place Abut	CY	\$850.00	810.0	\$688,500		
Excavation Weathered Rock	CY	\$3.00	3033.0	\$9,099		
Excavation Rock	CY	\$20.00	3033.0	\$60,660		
Cast-in-Place Combined Abut	CY	\$850.00			1260.0	\$1,071,000
SUBTOTAL				\$771,459		\$1,071,000
10% E & C				\$77,146		\$107,100
GRAND TOTAL				\$848,605		\$1,178,100

POSSIBLE COST INCREASE:

\$329,495

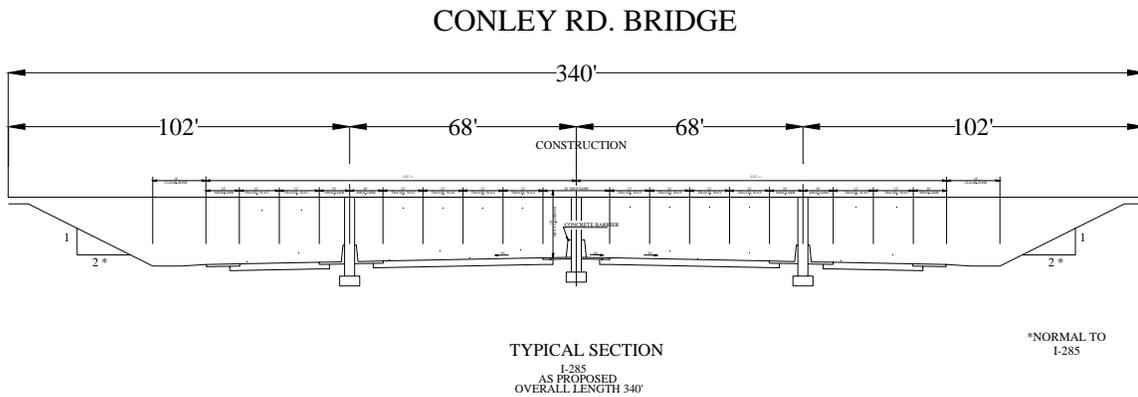
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

D. CONLEY ROAD BRIDGE OVER I-285

“As Proposed”

The “As Proposed” bridge is 103 feet wide and 340 feet long (4 spans @ 102, 68, 68, 102 feet). This length provides for a 48 foot travel way with 10 and 12 foot shoulders, 24 foot CD lanes, and 10 foot shoulders on each side of I-285 centerline. The end slopes are 2:1. The bridge is on an estimated skew of 30 degrees, and the bridge appears to be in at least a partial cut section.



“AS PROPOSED” BRIDGE ELEVATION

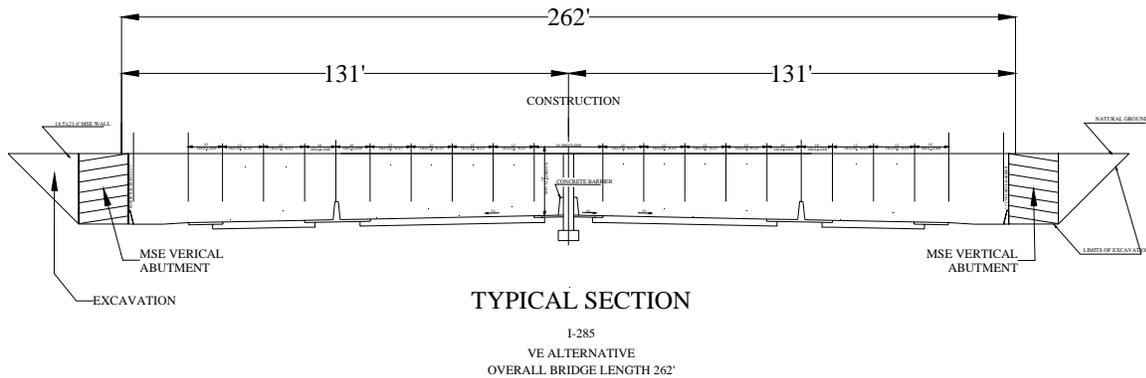
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

D. CONLEY ROAD BRIDGE OVER I-285

Value Engineering Alternative

The Value Engineering Alternative is a 103 foot wide, 2-span (131, 131) 262 foot bridge with vertical MSE abutments. The Value Engineering Alternative bridge length provides for the same travel lanes as the proposed. The MSE walls require a half barrier against the wall and adjacent to the shoulder. The MSE abutment will consist of a rectangular front wall and either swept-back wings or wings parallel to Conley Road. It is assumed that the end bents will be similar to the "As Proposed" design. Excavation will be required to construct the MSE abutments.



VALUE ENGINEERING ALTERNATIVE

**II. CURRENT ALIGNMENT
CONLEY ROAD BRIDGE OVER I-285
VALUE ENGINEERING ALTERNATIVE
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
4 Span Bridge, Spill Through Abuts w/ 2:1 Slopes	SF	\$80.00	35020.0	\$2,801,600		\$0
2Span Bridge, MSE Vertical Abutments	SF	\$80.00			26986.0	\$2,158,880
MSE Vertical Abuts	SF	\$55.00		\$0	6500.0	\$357,500
MSE Wall, Weathered Rock Excavation	CY	\$3.00			5817.0	\$17,451
Pavement	SY	\$40.00		\$0	450.0	\$18,000
Half Barrier	LF	\$75.00		\$0	200.0	\$15,000
Subtotal				\$2,801,600		\$2,566,831
10% E & C				\$280,160		\$256,683
GRAND TOTAL				\$3,081,760		\$2,823,514

POSSIBLE SAVINGS:

\$258,246

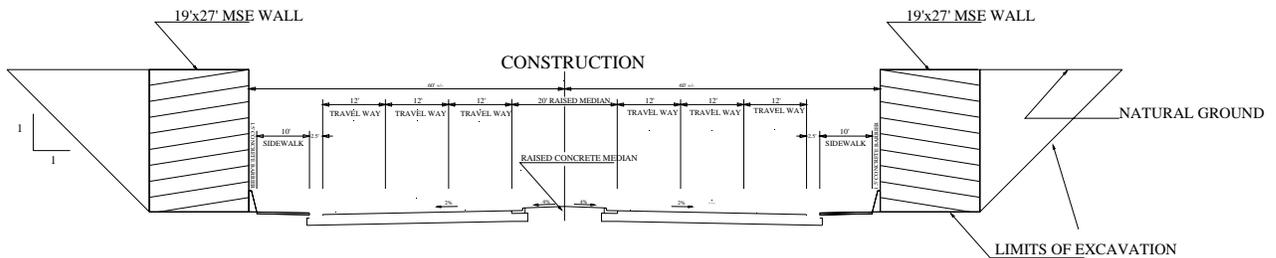
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

E. RETAINING WALLS

“As Proposed”

The “As Proposed” design consists of Conley Road being in a depressed roadway section underneath and adjacent to the Norfolk Southern Railroad and Old Dixie Highway Bridges. This section is approximately 900 feet long and 120 feet wide. The width provides for 6-12 foot travel lanes, a 20 foot raised median, curb and gutter, and 10 foot outside shoulders. For purposes of comparing MSE walls versus a 1:1 cut slope, and versus soil nail walls, the proposed vertical abutments for the bridges are maintained and this length of roadway is not included in the cost analysis. The depth of the box cut below natural ground averages about 30 feet. The depressed box shaped section is formed with vertical retaining walls on both sides. The retaining walls are MSE type constructed from the bottom up. This requires an excavation of at least the width of the proposed MSE wall behind the MSE wall face, and a 1:1 back slope out to natural ground. After the MSE wall is constructed, the 1:1 slope is backfilled. In computing wall and 1:1 cut quantities, a length of 590 feet is used instead of 900 feet to account for the end taper of the wall on the west end and the length of roadway along the bridge abutments. The Norfolk Southern Railroad Bridge will be on reinforced concrete abutments while the Old Dixie Highway Bridge will be on the MSE wall.



AS PROPOSED

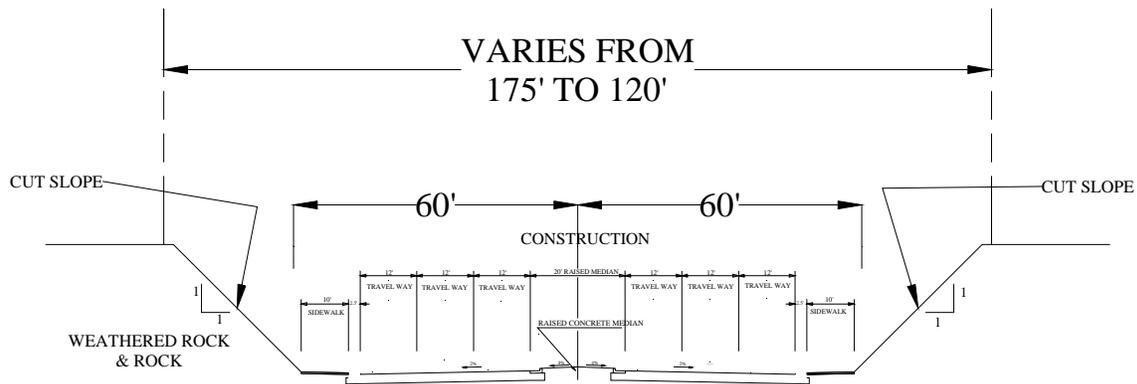
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

E. RETAINING WALLS

Value Engineering Alternative Number 1

The Value Engineering Alternative consists of using 1:1 side slopes in-lieu of MSE walls. The limited subsurface data available indicates that there is a considerable amount of rock or weathered rock on the project. This has been taken into account. This alternative will require additional right-of-way, and the Norfolk Southern Railroad and Old Dixie Highway Bridge abutments will be maintained as proposed and only the lengths of roadway to the west and east of these bridges are considered.



VALUE ENGINEERING ALTERNATIVE NUMBER 1

**II. CURRENT ALIGNMENT
RETAINING WALLS
VALUE ENGINEERING ALTERNATIVE NUMBER 1
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
MSE Walls	SF	\$55.00	35400.0	\$1,947,000		\$0
MSE Wall, Weathered Rock Excavation	CY	\$3.00	26222.0	\$78,666		\$0
MSE Wall, Rock Excavation	CY	\$20.00	26222.0	\$524,440		\$0
Half Barrier	LF	\$75.00	1180.0	\$88,500		\$0
1 to 1 Slope, Weathered Rock Excavation	CY	\$3.00			7965.0	\$23,895
1 to 1 Slope, Rock Excavation	CY	\$20.00			7965.0	\$159,300
Additional Right-of Way	Ac	\$750,000.00			0.7	\$547,500
SUBTOTAL				\$2,638,606		\$730,695
10% E & C				\$263,861		\$73,070
GRAND TOTAL				\$2,902,467		\$803,765

POSSIBLE SAVINGS:

\$2,098,702

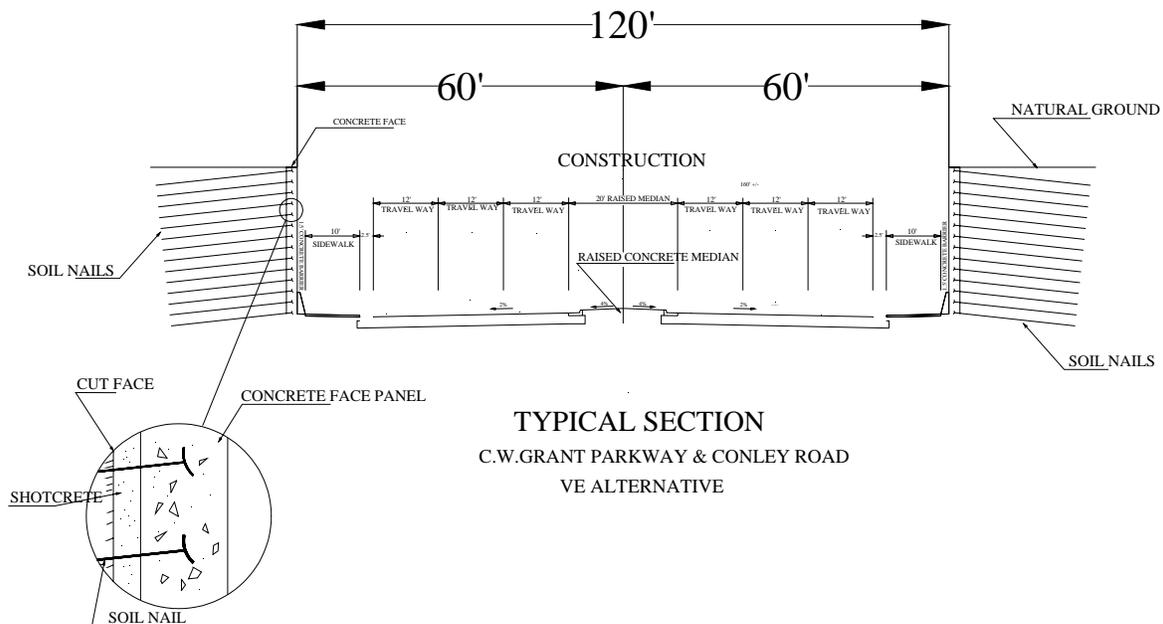
VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

E. RETAINING WALLS

Value Engineering Alternative Number 2

The Value Engineering Alternative Number 2 consists of using soil nail walls with a top-down construction procedure. This type of wall construction does not require excavation behind the wall face. Typically, 5 to 6 feet is excavated at the wall face and a drill machine bores a pattern of approximately 8-inch diameter holes into the excavated vertical face. The spacing of the holes varies from approximately 3 to 5 feet horizontally and vertically. The bored holes are then filled with cement grout and a 1 inch steel bar is inserted into the grout. Next, a thin drainage board is placed at intervals along the vertical face, and the 5 to 6 feet of cut is covered with about 6 inches of shotcrete. The soil nails extend through the shotcrete and are later anchored into a cast-in-place reinforced concrete face, or are attached to precast panels. The facing is not attached or cast until the soil nails and shotcrete procedures have been completed for the entire wall. The wall construction proceeds from the top down in increments of 5 to 6 feet as described. Since the Railroad Bridge will be placed on a reinforced concrete abutment, the length of soil nail walls has been reduced by 70 feet.



VALUE ENGINEERING ALTERNATIVE NUMBER 2

**II. CURRENT ALIGNMENT
RETAINING WALLS
VALUE ENGINEERING ALTERNATIVE NUMBER 2
COST COMPARISON SHEET**

DESCRIPTION	UNITS	UNIT COST	PROP'D QTY.	PROP'D COST	V.E. QTY.	V.E. COST
MSE Walls	SF	\$55.00	49800	\$2,739,000		\$0
MSE Wall, Weathered Rock Excavation	CY	\$3.00	40000	\$120,000		\$0
MSE Wall, Rock Excavation	CY	\$20.00	40000	\$800,000		\$0
Soil Nail Walls	SF	\$75.00		\$0	44820	\$3,361,500
SUBTOTAL				\$3,659,000		\$3,361,500
10% E & C				\$365,900		\$336,150
GRAND TOTAL				\$4,024,900		\$3,697,650

POSSIBLE SAVINGS: \$327,250

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

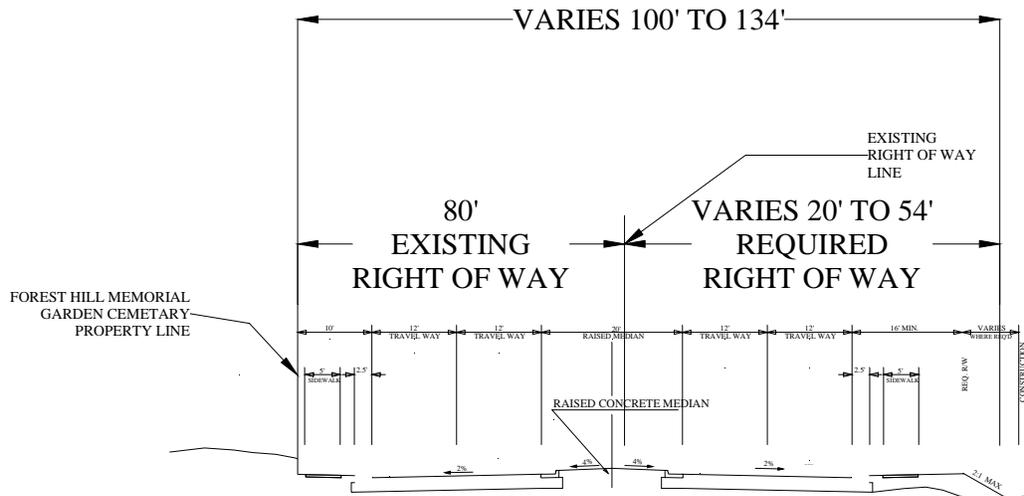
F. CONLEY ROAD EAST OF I-285

“As Proposed”

Project STP-9010(2) is proposed to widen and reconstruct Conley Road from Old Dixie Road to Jonesboro Road. The existing two-lane facility would be reconstructed to an urban section with 2-12-foot lanes in each direction, with turn lanes at intersections. A raised concrete median would separate traffic.

Near the western terminus of this roadway section, single family and multi-family residences front Conley Road on the south, while, to the north, is Forest Hills Memorial Gardens, a large cemetery.

With the input from local residents during public meetings, a commitment was made to reconstruct Conley Road in such a way that it would not impact the Memorial Gardens. When the Department developed the plans in this roadway section under this concept, there was significant impact to the south side of the roadway. The single family units would be impacted in such a manner that they would become total takes with the associated displacement costs. There are at least 4 multi-family units that would also be total takes, as well as some other commercial property on the south side of Conley Road.



**AS PROPOSED TYPICAL SECTION
WEST OF JONESBORO ROAD**

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

F. CONLEY ROAD EAST OF I-285

“As Proposed”



AS PROPOSED RIGHT OF WAY TAKES

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

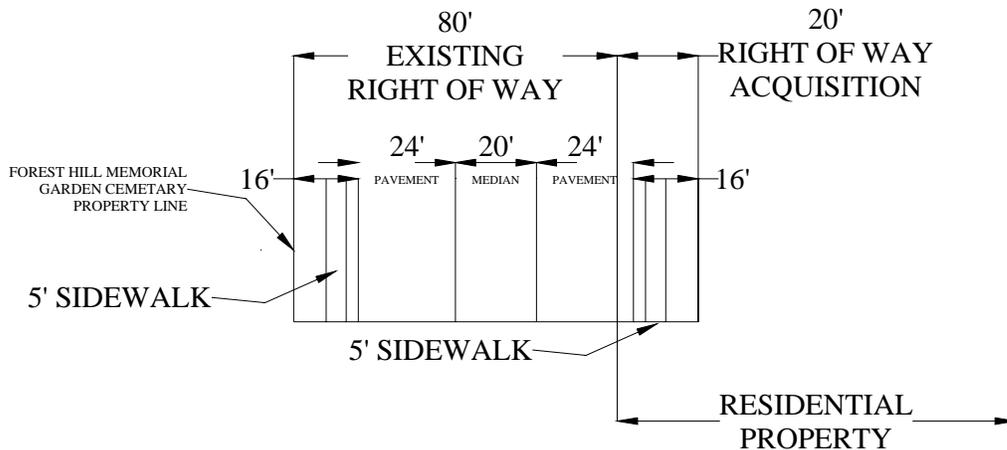
F. CONLEY ROAD EAST OF I-285

VALUE ENGINEERING ALTERNATIVE

The preliminary right-of-way cost estimate for Project STP- 9010(2) is for \$30,455,420. This very high cost can be mostly attributed to the displacements of the 15-single family, 4-multi-family units, and the commercial development in the southwest corner at Jonesboro Road. Staying away from Forest Hills Memorial Gardens directly impacts almost all of this.

The study team decided to investigate the possibility of shifting the reconstruction of Conley Road to the north toward Memorial Gardens and reducing the impact to the south. This shift would be accomplished by using walls or other devices to have the northern right-of-way coincide with the shoulder break point of the construction and with the property line of Memorial Gardens. The construction would not encroach any further into the Gardens so as to not disturb any grave sites.

After making this alignment shift, it was determined that the impact to the south would not be eliminated. The taking of the residencies and commercial property would still be required. Therefore, it was decided to not pursue this alternative.



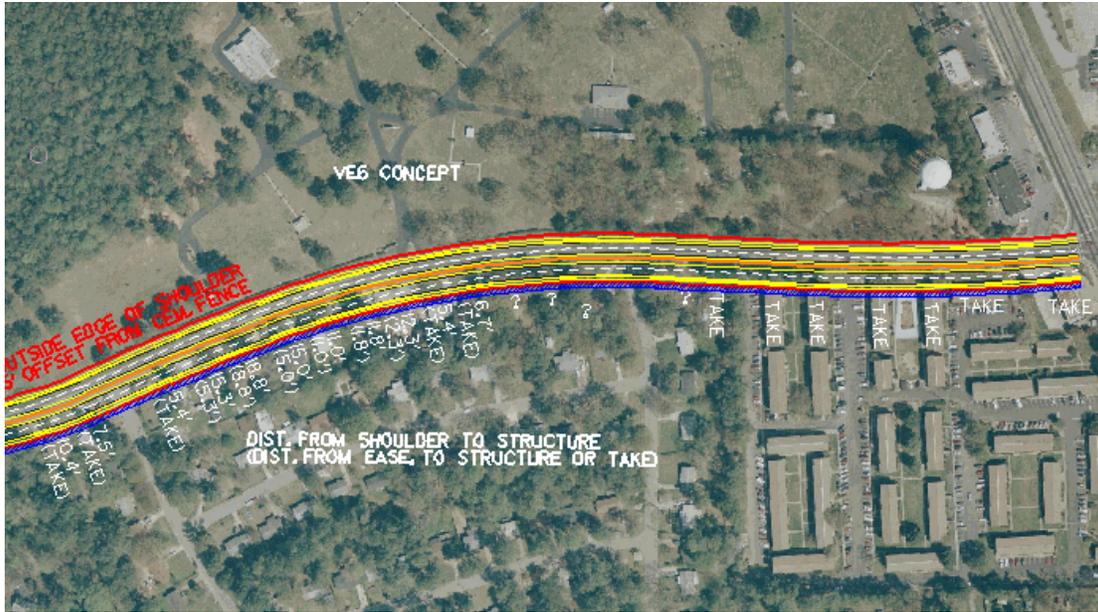
**VALUE ENGINEERING ALTERNATIVE TYPICAL SECTION
WEST OF JONESBORO ROAD**

VII. DEVELOPMENT PHASE

II. CURRENT ALIGNMENT

F. CONLEY ROAD EAST OF I-285

VALUE ENGINEERING ALTERNATIVE



**RIGHT OF WAY TAKES
ALONG SOUTH SIDE OF CONLEY ROAD**

VIII. SUMMARY OF RECOMMENDATIONS

It is the recommendation of the Value Engineering Team that the following Value Engineering Alternatives be carried into the Project Development process for further development.

I. NEW ALIGNMENT

Recommendation Number 1: C.W. GRANT/CONLEY ROAD ALIGNMENT

The Value Engineering Team recommends that Value Engineering Alternative Number 3 be implemented. This alternative maintains the existing Conley Road alignment, carries Conley Road over the Railroad and Old Dixie Highway, and connects to C.W. Grant Parkway.

If this recommendation can be implemented, there is a possible savings of **\$ 5,617,206.**

If this recommendation cannot be implemented, the Value Engineering Team recommends that Value Engineering Alternative Number 2 be implemented. This alternative eliminates the Old Dixie Highway realignment, and carries Conley Road under the railroad and Old Dixie Highway.

If this recommendation can be implemented, there is a possible savings of **\$ 6,630,621.**

IF THE DEPARTMENT DECIDES NOT TO PURSUE EITHER OF THE NEW ALIGNMENT RECOMMENDATIONS BY THE VALUE ENGINEERING TEAM, THEN THE VALUE ENGINEERING TEAM RECOMMENDS THE CHANGES, (TO THE CURRENT ALIGNMENT) AS SHOWN ON THE FOLLOWING PAGES.

VIII. SUMMARY OF RECOMMENDATIONS

II. CURRENT ALIGNMENT

Recommendation Number 1: TYPICAL SECTION

The Value Engineering Team recommends that the Value Engineering Alternative be implemented. This alternative removes the concrete pavement in the median and replaces it with grass.

If this recommendation can be implemented, there is a possible savings of **\$ 602,356**.

Recommendation Number 2: OLD DIXIE HIGHWAY BRIDGE

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative eliminates the bridge at Old Dixie Highway and cul-de-sacs Old Dixie Highway.

If this recommendation can be implemented, there is a possible savings of **\$ 427,999**.

Recommendation Number 3: RETAINING WALLS AT THE RAILROAD AND OLD DIXIE HIGHWAY BRIDGE

The Value Engineering Team recommends that the Value Engineering Alternative Number 2 be implemented. This alternative uses all MSE walls.

If this recommendation can be implemented, there is a possible savings of **\$ 391,225**.

If Value Engineering Alternative Number 2 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 1 be implemented. This alternative uses all soil nail walls.

If this recommendation can be implemented, there is a possible savings of **\$ 273,855**.

If Value Engineering Alternative Number 1 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 3 be implemented. This alternative uses all cast-in-place walls.

If this recommendation can be implemented, there is a possible cost increase of **\$ 329,495**.

VIII. SUMMARY OF RECOMMENDATIONS

***Recommendation Number 4:* CONLEY ROAD BRIDGE OVER I-285**

The Value Engineering Team recommends that Value Engineering Alternative be implemented. This alternative uses vertical abutments, mechanically stabilized earth walls, and a two-span bridge.

If this recommendation can be implemented, there is a possible savings of **\$ 258,246.**

***Recommendation Number 5:* RETAINING WALLS IN CUT SECTIONS**

The Value Engineering Team recommends that Value Engineering Alternative Number 1 be implemented. This alternative eliminates the retaining walls and uses 1:1 back slopes.

If this recommendation can be implemented, there is a possible savings of **\$ 2,098,702.**

If Value Engineering Alternative Number 1 cannot be implemented, then the Value Engineering Team recommends that Value Engineering Alternative Number 2 be implemented. This alternative uses soil nail walls.

If this recommendation can be implemented, there is a possible savings of **\$ 327,250.**