

VALUE ENGINEERING MOD 1 TRAINING REPORT

SR 10 / Memorial Drive – Sidewalk Improvements
Woodcroft Road to Goldsmith Road
Project No. CSHPP-0007-00(131)
DeKalb County
PI No. 0007131
February 18, 2009

OWNER:



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

VALUE ENGINEERING
MOD 1 INSTRUCTOR:



MACTEC Engineering and Consulting, Inc.
3200 Town Point Drive NW, Suite 100
Kennesaw, GA 30144
(770.421.3400)

TABLE OF CONTENTS

VALUE ENGINEERING MOD 1 TRAINING REPORT

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Project No. CSHPP-0007-00(131)
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February 18, 2009

Executive Summary	1
Introduction.....	2
Executive Summary	3
Summary of Cost Savings.....	4
Study Identification.....	5
VE Team Members	6
Project Description.....	6
Project Constraints	6
Project Vicinity Map.....	7
Value Engineering Recommendations.....	8
Appendix	49
Information Phase	50
Sources	51
Cost Model.....	52
Function Analysis	53
Fast Diagram.....	54
Creative Phase/Idea Evaluation	55

EXECUTIVE SUMMARY

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VALUE ENGINEERING MOD 1 TRAINING REPORT

SR 10 / Memorial Drive – Sidewalk Improvements

Project No. CSHPP-0007-00(131)

Dekalb County

PI No. 0007131

February 18, 2009

Introduction

This report summarizes the results of a value engineering (VE) study conducted for the sidewalk improvements on Memorial Drive from Woodcroft Road to Goldsmith Road in Dekalb County. The study was conducted as part of the Mod 1 training session operated for select GDOT staff on January 26 to 30, 2009.

This project is the streetscape design and intersection improvements along SR 154 / Memorial Drive from Woodcroft Drive to Goldsmith Road in Dekalb County for a total of 3.41 miles. Memorial Drive is a multi-lane urban arterial that traverses primarily an east/west direction throughout Dekalb County. Based on historic accident data, the number of accidents, fatalities and injuries along this corridor were higher than the statewide averages. This corridor has significant pedestrian activity based on the well worn pathways along the road. The Dekalb County Economic Development Authority has targeted an 8 mile stretch of Memorial Drive between Candler Road and Stone Mountain for economic revitalization. The purpose of this project is to increase pedestrian safety while creating an attractive and safe environment to spur economic activity.

The proposed construction will include streetscape improvements such as sidewalks, landscape design, lighting, benches, and other pedestrian amenities to improve safety for residents and area businesses. Also included are minor traffic management improvements such as lengthening left turn lanes, adding right turn lanes at select locations and constructing raised, stamped concrete medians. The total estimated construction cost of the project is \$12,300,000.

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.

On Monday, January 26, 2009, the design team gave an overview of the project to the VE team and on Friday, January 30, 2009, the VE Team presented their recommendations.

DEVELOPMENT PHASE - EXECUTIVE SUMMARY	
Project: CSHPP-0007-00(131)	Team: McCook
Location: Memorial Drive Streetscapes, Phase 3	Date: 1-30-09

This project is the streetscape and intersection improvements along SR 154/Memorial Drive from Woodcroft Drive to Goldsmith Road for a total of 3.41 miles. This corridor has been targeted for economic revitalization. The basic function of this project is to provide streetscapes and improve pedestrian/traffic operations.

The VE team identified seven areas of opportunity for project improvement and cost savings. The first area involves the use of standard light luminaires and fixtures instead of the special design light luminaires and fixtures. The second area involves deleting pedestrian benches from the project. The third area of opportunity was earthwork by reducing the shoulder by two feet. The fourth area of opportunity involves removing the proposed signals from the project, the VE team discovered that another project has been let by GDOT that would replace the existing signals with new signals(the VE team recommends that the project coordinate with the project manager for project CSSTP-0007-00(672), P.I. No. 0007672). The fifth area of opportunity involves the proposed pavement structure by reducing the base material from the proposed pavement structure. The sixth area of opportunity involves sidewalks by reducing the proposed width from 6 feet to 5 feet. The seventh area of opportunity involves the proposed median work by retaining the existing median. The eighth area of opportunity involves the proposed landscaping, the VE team recommends reducing the number of plants (trees) by increasing the spacing of each plant.

Changing from the proposed special design lighting standards/fixtures to the standard lighting/fixtures would save \$472,500. Removing the benches from the project would save \$62,376. Removing signals from the project would save \$1,202,602.31. The reduction of shoulder width by two feet would save \$370,500.00. The proposed pavement recommendation would save \$37,608. Reducing the proposed six foot sidewalk to 5 foot would save \$105,000.00. The median recommendation of reducing the amount of median work would save \$1,264,800.00. The recommended landscaping changes would save \$202,990.00.

The implementation of these changes would save a total of \$3,718,375 or 30.3% of the project cost. Depending upon the letting these changes would improve the aesthetics and keep the desired improvements for the traffic and pedestrian needs.

DEVELOPMENT PHASE - SUMMARY OF COST SAVINGS

Project: CSHPP-0007-00(131) Dekalb County – PI 0007131

Team No.: 0007131

Location: Memorial Drive Streetscape Phase 3

Date: 1-29-09

Idea No.	Creative Idea Description	Original Initial Cost	Proposed Initial Cost	Initial Cost Savings	Future Savings	Total Life Cycle Savings
1-B	Standard lighting luminaire & fixture	\$1,102,500	\$630,000	\$472,500		
1-E3	Remove benches from project	\$62,376	\$0.00	\$62,376		
2-A	Reduce shoulder width by 2 feet	\$1,900,000	\$1,529,500	\$370,500		
3-A	Traffic Signal (utilize existing signals)	\$1,202,602	\$0.00	\$1,202,602		
4-A	Reduce pavement section	\$131,628	\$94,020	\$37,608		
5-A	Reduce sidewalk width from 6' to 5'	\$805,000	\$700,000	\$105,000		
7-A	Retain existing concrete median	\$2,561,200	\$1,296,401	\$1,264,799		
7-B	Retain existing concrete median & stain median	\$2,561,200	\$1,401,394	\$1,159,806		
8-A	Increase spacing between trees	\$499,100	\$296,110	\$202,990		
	Total Savings			\$3,718,375		

STUDY IDENTIFICATION

STUDY IDENTIFICATION

Project: CSHPP-0007-00(131)	Date: January 26 – 30, 2009
Location: Memorial Drive from Woodcroft Drive to Goldsmith Road	

VE Team Members

Name:	Position:	Organization:	Telephone:
Jason McCook	Team Leader	GDOT	404-631-1606
David Norwood	Team Member	GDOT	404-631-1581
John Hancock	Team Member	GDOT	404-631-1711
Neal O'Brien	Team Member	GDOT	404-631-1725
Matt Sanders	Team Member	GDOT	404-631-1662

Project Description: Streetscape project on Memorial Drive from Woodcroft Drive to Goldsmith Road. Streetscape improvements include sidewalks, medians, landscaping, pedestrian lighting, wall structures.

Project Constraints: Right of Way acquired. Avoided streams to avoid 404 permit.

**Figure 1
Project Vicinity Map**



County Map of Georgia

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE			
Project: Memorial Drive Streetscape CSHPP-0007-00(131) PI No. 0007131			
Idea No.: 1-B	Sheet No.: 1 of	CREATIVE IDEA: Standard Lighting Luminaire and fixture	
Comp By: Date:		Checked By: Date:	
<p>Original Concept: Place new “special” luminaires and fixtures to for pedestrian lighting.</p> <p>Proposed Change: Place standard luminaries instead of special luminaires.</p> <p>Justification: This would require retaining the existing signals and strain poles and upgrade only the control boxes in order to provide for interconnection of the signal system.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original	1102500.00		
Proposed	630000.00		
Savings	472,500.00		
FUTURE COST: Savings			
TOTAL PRESENT WORTH SAVINGS			472,500.00

SKETCH

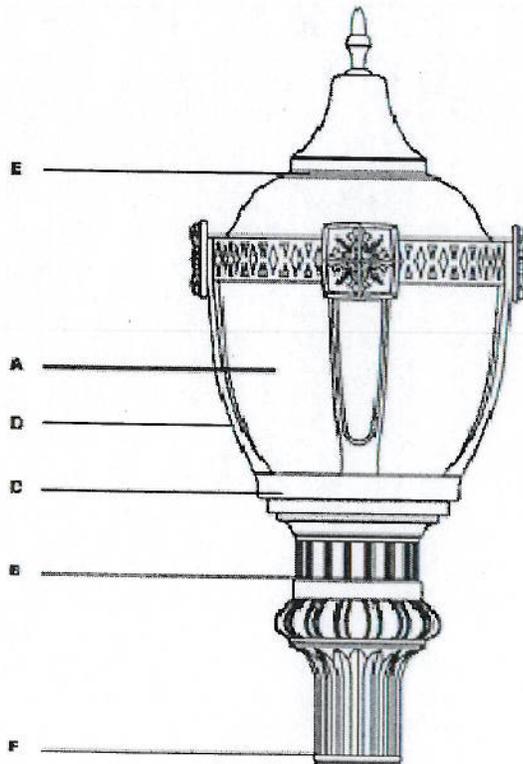
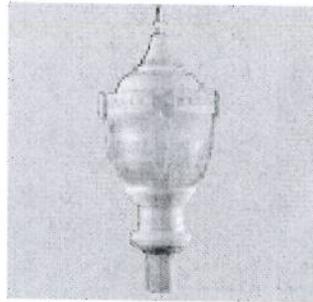
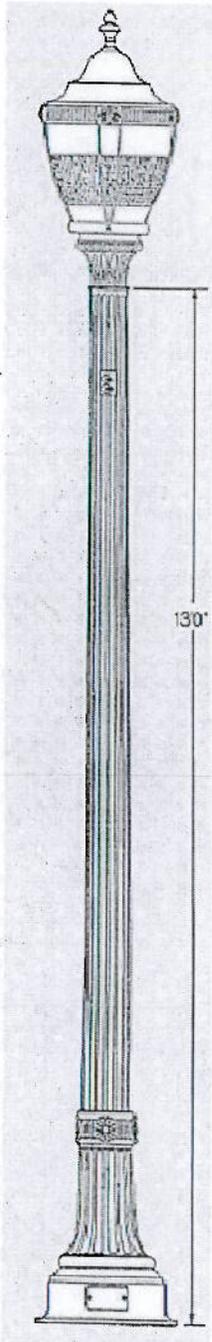
Project: CSHPP-0007-00(131)

Idea No.: 1-B

Client::

Sheet of

Original:



SKETCH

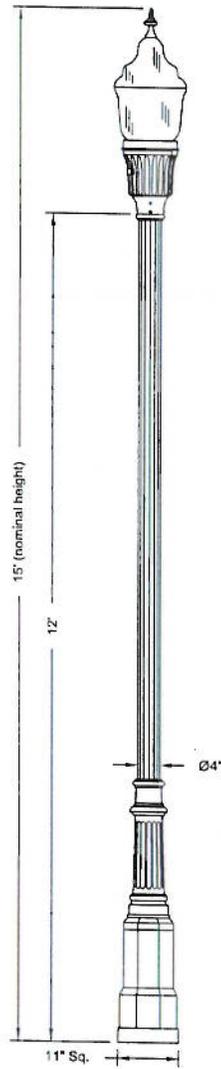
Project: CSHPP-0007-00(131)

Idea No.: 1-B

Client::

Sheet of

Proposed:



CALCULATIONS

Project: CSHPP-0007-00(131)

Idea No.: 1-B
Client:
Sheet of

Proposed Lighting Std. Spcl. Design

315 units @ \$3500 = \$1,102,500.00

VE Recommendation

315 units @ \$2000 = \$630,000.00

DEVELOPMENT AND RECOMMENDATION PHASE

Project: CSHPP-0007-00(131) PI 0007131
 Memorial Drive Streetscape Phase 3

Idea No.: 1-E3	Sheet No.: 1 of 4	CREATIVE IDEA: Remove benches from project
--------------------------	-----------------------------	--

Comp By: WNO Date: Checked By: Date:

Original Concept:

The project included the installation of 24 benches at MARTA bus stops.

Proposed Change:

Eliminate all 24 benches from the project. Eliminate bus stop pad at locations for benches only. Bus stop pads for Marta shelters would remain but no benches would be included on pad.

Justification:

The current corridor does not have benches at the bus stops. The total cost for benches is \$55,200 and the pad for bench only stops is \$7,176. Eliminating benches and concrete pad would eliminate this cost.

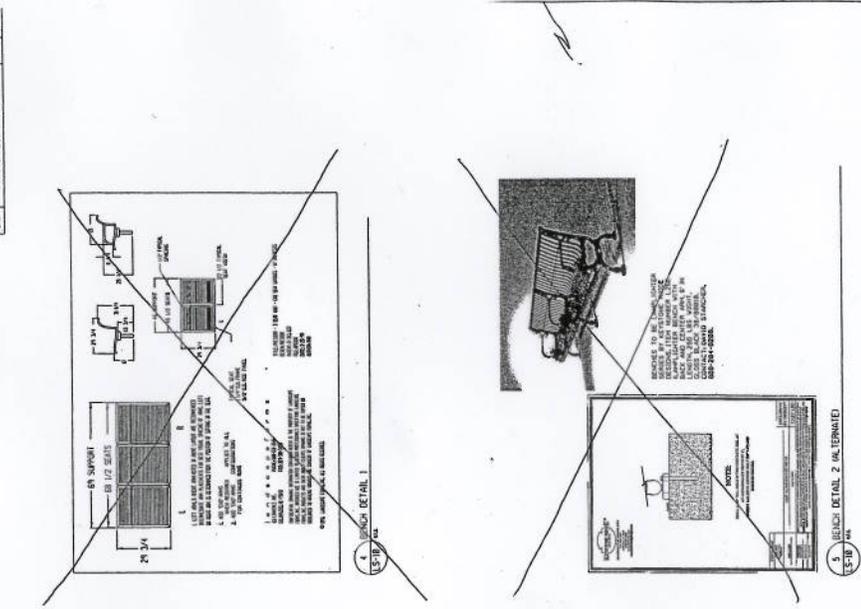
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	\$62,376		
Proposed	\$0		
Savings	\$62,376		
<u>FUTURE COST:</u> Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$62,376

SKETCH

Project: **CSHPP-0007-00(131) PI 0007131**
Memorial Drive Streetscape Phase 3

Idea No.: 1-E3
Client:
Sheet of 2 of 4

DATE	PROJECT NUMBER	SCALE
04	APP-18-205-1053	1/4" = 1'-0"



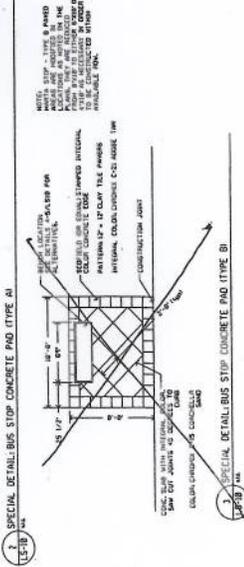
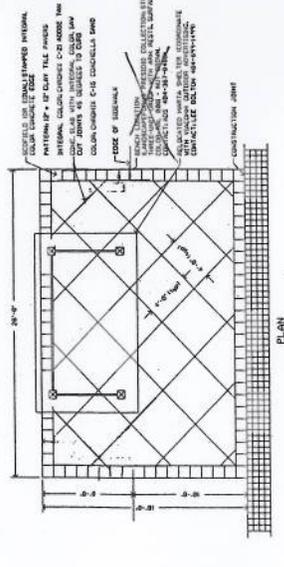
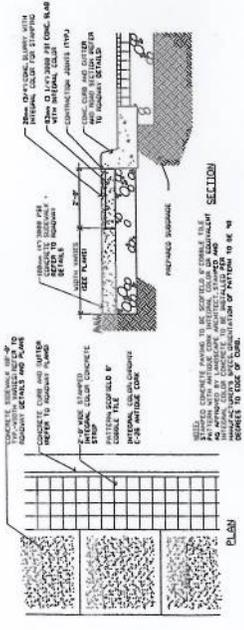
STREETSCAPE PLAN
MEMORIAL DRIVE
STREETSCAPE DETAILS

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
OFFICE OF URBAN DESIGN



DATE	REVISION

DRAWING NO. 29-43



CALCULATIONS

Project: **CSHPP-0007-00(131) PI 0007131**
Memorial Drive Streetscape Phase 3

Idea No.: 1-E3
Client:
Sheet of 4 of 4

Bus Stop Concrete Pad Type A & B = 290 SY

Bus Stop Concrete Pad Type A

(18' x 26') x 1SY/9 SF X 3 = -152 SY

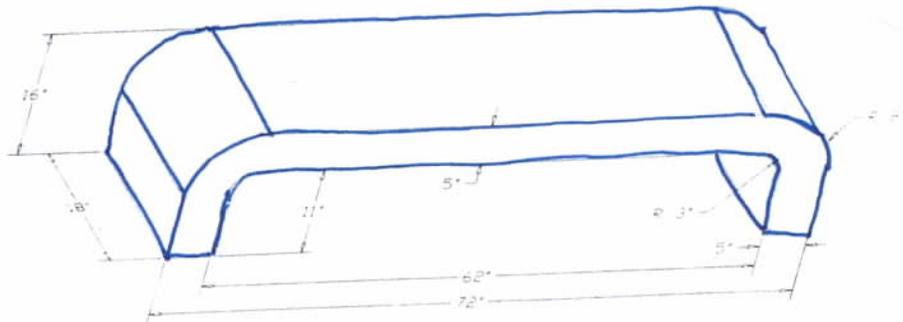
Bus Stop Concrete Pad Type B = 138 SY

DEVELOPMENT AND RECOMMENDATION PHASE			
Project: CSHPP-0007-00(131) PI 0007131			
Memorial Drive Streetscape Phase 3			
Idea No.: 1-E1	Sheet No.: 1 of 4	CREATIVE IDEA: Use Concrete Benches in lieu of Metal Benches	
Comp By: WNO Date:		Checked By: Date:	
<u>Original Concept:</u>			
Install 24 metal benches at bus stops.			
<u>Proposed Change:</u>			
Install 24 backless concrete benches at bus stops.			
<u>Justification:</u>			
The concrete benches will have a less initial cost. The metal benches are to be bolted to the concrete pad. Concrete benches are placed on top of the concrete pad thus installation costs should be reduced to just putting the bench in place. Concrete color selection to match bus stop pad.			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	\$55,200		
Proposed	\$17,520		
Savings	\$37,680		
<u>FUTURE COST:</u> Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$37,680

SKETCH

Project: **CSHPP-0007-00(131) PI 0007131**
Memorial Drive Streetscape Phase 3

Idea No.: 1-E1
Client: :
Sheet of 2 of 4



CALCULATIONS

Project: **CSHPP-0007-00(131) PI 0007131**
Memorial Drive Streetscape Phase 3

Idea No.: 1-E1
Client:
Sheet of 4 of 4

Concrete Bench

Vendor Price - \$510.95/each (Unit price from ParknPool.com)

Shipping - \$115.13/each (based on 24 items)

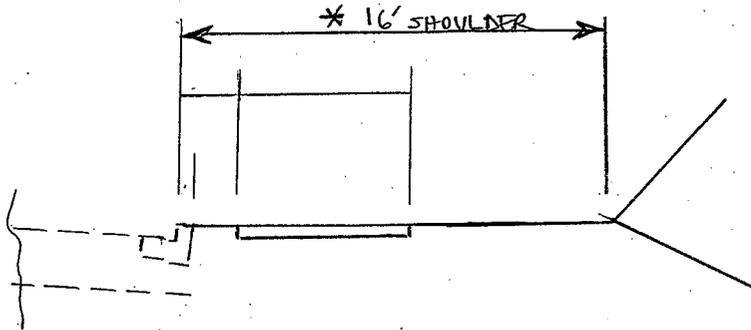
Installation - \$102.20 (Assume 20% of Vendor Price)

Total Unit Price - \$728.28 (Use \$730 for calculations)

SKETCH

Project: CSHPP-0007-00(131) PI# 0007131

Idea No.: 2-A
Client:: GDOT
Sheet of



* REDUCE WIDTH OF SHOULDER BY TWO FEET.

CALCULATIONS

Project: **CSHPP-0007-00(131) PI# 0007131**

Idea No.: 2-A
Client: GDOT
Sheet of

A graphical representation of the cross section shoulder reduction yielded a 26% savings in earthwork. However, a mathematical or ratio approach computed to a 13% reduction in quantities. For estimation purposes an average of these two was used by the VE team. Once this recommendation is implemented the actual amount of savings will be realized when the engineering has revised the typical sections but these calculations were based on the following volumes:

Total Cut = 18,367 cubic yards
Total Fill = 23,633 cubic yards

\$ 1,900,000.00 (19.5%) = \$ 370,500

DEVELOPMENT AND RECOMMENDATION PHASE			
Project:			
Idea No.: 3-A	Sheet No.: 1 of	CREATIVE IDEA: Traffic Signal(utilize existing signals)	
Comp By:	Date:	Checked By:	Date:
<p><u>Original Concept:</u> Remove and upgrade signals.</p> <p><u>Proposed Change:</u> Eliminate all signals and coordinate with GDOT project CSSTP-0007-00(672).</p> <p><u>Justification:</u> Project CSSTP-0007-00(672) is currently under construction, this project will replace and upgrade all proposed signals as proposed in the original concept.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	1,202,602.31		
Proposed	0.0		
Savings	1,202,602.31		
<u>FUTURE COST:</u> Savings		0.0	0.0
TOTAL PRESENT WORTH SAVINGS			1,202,602.31

CALCULATIONS

Project: CSHPP-0007-00(131)

Idea No.: 3-A

Client:

Sheet of

Directional Bore – 3 in. 3040 lf @ \$11.49/lf = \$34929.60
Directional Bore – 5 in. 410 lf @ \$11.49/lf = \$4710.90
Steel Wire Strand Cable, 3/8 in. 1360 lf @ \$3.83/lf = \$5208.80
Strain Pole, TP III 10 ea @ \$6360.35/per = \$63603.50
Strain Pole, TP IV 47 ea @ \$6200/per = \$291400.00
Traffic Signal Installation, 12 LS @ \$60,000 /ea = \$720,000.00
Pull Box, PB-4 17 ea @ \$1405.63/per = \$23,895.71
Outside Plant Fiber Optic Cable, 3200 lf @ \$3.00/lf = \$9600.00
Testing 1 ea. @ \$6400/per = \$6400

Total - \$1,202,602.31

The signals planned for this corridor will be implemented by another project: CSSTP-0007-00(672).

DEVELOPMENT AND RECOMMENDATION PHASE

Project: CSHPP-0007-00(131)

Idea No.:
4-A

Sheet No.:
of

CREATIVE IDEA: Reduce Pavement Structure

Comp By: DAN

Date: 1/29/09

Checked By:

Date:

Original Concept:

Full-Depth Pavement structure:

1.5" of 12.5 mm SP, 2" of 19 mm SP, 7" of 25 mm SP & 12" of GAB

Proposed Change:

5" of s5 mm SP

Justification:

The original pavement structure was based on the design from a project on this corridor. A pavement design was not performed on this project. The original pavement structure is 5.4% oversized. The proposed pavement structure is 5.7% under designed.

LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	\$131,628		
Proposed	\$94,020		
Savings	\$37,608		
<u>FUTURE COST:</u> Savings			
TOTAL PRESENT WORTH SAVINGS			\$37,608

SKETCH

Project: CSHPP-0007-00(131)

Idea No.: 4-A
 Client: GDOT
 Sheet 2 of 4

FLEXIBLE PAVEMENT DESIGN ANALYSIS

Project: CSHPP-007-00(131) **County:** Dekalb
P.I. no.: 0007131
Description: Memorial Drive Streetscape

Traffic Data (NOTE: AADTs are one-way)
 24-hour Truck Percentage: 3.00%
 AADT initial year of design period: 23,700 vpd (2009)
 AADT final year of design period: 31,800 vpd (2029)
 Mean AADT (one-way): 27,750 vpd

Design Loading

Mean AADT	LDL	Trucks	18-K ESAL	Total Daily Loads
27,750	* 0.60	* 0.030	* 0.95	= 476

Total predicted design period loading = 476 * 20 * 365 = 3,474,800

Design Data
 Terminal Serviceability Index: 2.50
 Soil Support: 2.50
 Regional Factor: 1.60

PROPOSED FLEXIBLE PAVEMENT STRUCTURE

Material	Thickness Inches	Thickness (mm)	Structural Coefficient	Structural Value
12.5 mm Superpave	1.50	(38)	0.44	0.66
19 mm Superpave	2.00	(51)	0.44	0.88
25 mm Superpave	1.00	(25)	0.44	0.44
Graded Aggregate Base	4.00	(102)	0.30	1.20
Graded Aggregate Base	12.00	(305)	0.16	1.92

Required SN = 5.41 Proposed SN = 5.10

>>> Proposed pavement is 5.7% Underdesign <<<

Remarks: Modified Design using 5" of 25mm SP

Prepared by David Norwood - VE Team January 29, 2009
Date

Recommended _____
Date
 State Materials & Research Engineer

Approved _____
Date
 District Engineer

CALCULATIONS

Project: CSHPP-0007-00(131)

Idea No.: 4-A
Client: GDOT
Sheet 4 of 4

Original Design for 25 mm Superpave = 2100 tons
2100 tons at 7" = 300 tons/in

Proposed Design for 25 mm Superpave:
5" x 300 tons/in = 1500 tons

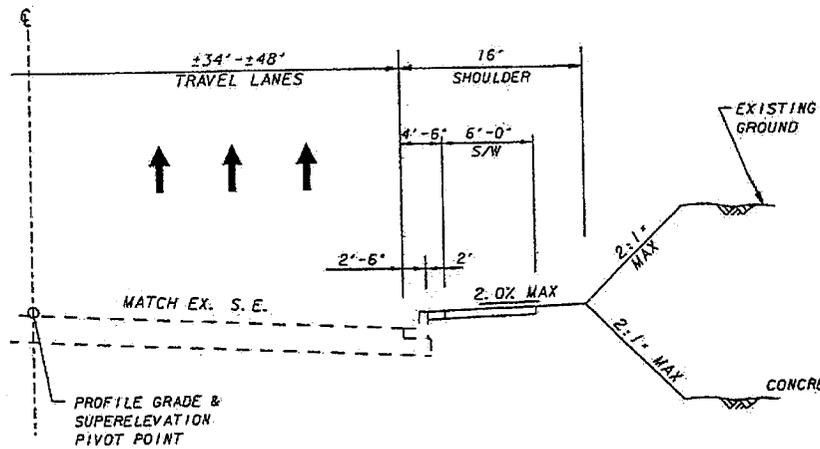
DEVELOPMENT AND RECOMMENDATION PHASE			
Project: CSHPP-0007-00(131) PI 0007131			
Memorial Drive Streetscape Phase 3			
Idea No.: 5-A	Sheet No.: 1 of 4	CREATIVE IDEA: Reduce sidewalk width from 6' to 5'	
Comp By:WNO Date:		Checked By: Date:	
<p><u>Original Concept:</u> The project has 10' sidewalk at the beginning of the project that matches an adjoining project the 10' sidewalk is carried forward for 2040' then changes to 6' wide and 5' wide sidewalk for the remainder of the project, a distance of 48,905'.</p> <p><u>Proposed Change:</u> The VE concept is to maintain the 10' wide sidewalk as in the plans. The engineers had stated there is a future trail project this would tie to. After the 10' wide sidewalk ends the remainder of the sidewalk will all be 5' wide.</p> <p><u>Justification:</u> The 1' reduction will provide reduced cost of the sidewalk and still maintain a comfortable walking width for pedestrians.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	\$805,000		
Proposed	\$700,000		
Savings	\$105,000		
<u>FUTURE COST:</u> Savings		\$0	\$0
TOTAL PRESENT WORTH SAVINGS			\$105,000

SKETCH

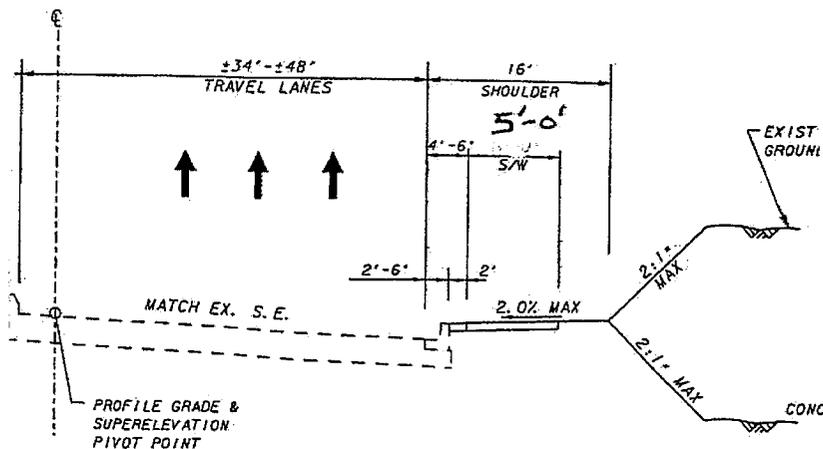
Project: **CSHPP-0007-00(131) PI 0007131**
Memorial Drive Streetscape Phase 3

Idea No.: 5-A
Client:
Sheet of 2 of 4

Original



VE Concept



CALCULATIONS

Project: **CSHPP-0007-00(131) PI 0007131**
 Memorial Drive Streetscape Phase 3

Idea No.: 5-A
 Client:
 Sheet of 4 OF 4

4" Concrete Sidewalk (from summary of quantities does not include stamped colored concrete)
 Total Quantity – 23,000 SY (22,319 calculated + 681 as directed by engineer at 3%)

6' wide sidewalk
 Length = 26,109'
 $(6' \times 26,109') / 9 = 17,406 \text{ SY}$

6' wide reduce to 5' wide sidewalk
 $(5' \times 26,109') / 9 = 14,505 \text{ SY}$

10' wide & 5' wide sidewalk currently in project
 $22,319 \text{ SY} - 17,406 = 4,913 \text{ SY}$

Revised quantity for 10' wide & 5' wide sidewalk
 $14,505 \text{ SY} + 4,913 \text{ SY} = 19,418 \text{ SY}$

Revised as directed by engineer quantity
 $19,418 \text{ SY} \times 3\% = 582 \text{ SY}$

Revised Total Quantity for Sidewalk (10' & 5' wide only)
 $19,418 \text{ SY} + 582 \text{ SY} = 20,000 \text{ SY}$

DEVELOPMENT AND RECOMMENDATION PHASE			
Project: CSHPP-0007-00(131)			
Idea No.: 7-A	Sheet No.: of	CREATIVE IDEA: Retain existing Concrete Median	
Comp By: DAN		Date: 1/29/09	
		Checked By: Date:	
<p><u>Original Concept:</u> Replace all existing raised concrete median w/ stamped colored concrete.</p> <p><u>Proposed Change:</u> Only replace the existing median in locations where left-turn lanes are being extended and replace w/ standard concrete median.</p> <p><u>Justification:</u> Existing raised concrete median appears to be in good condition & does not require replacement.</p>			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
<u>INITIAL COST:</u> Original	\$2,561,200		
Proposed	\$1,296,401		
Savings	\$1,264,799		
<u>FUTURE COST:</u> Savings			
TOTAL PRESENT WORTH SAVINGS			\$1,264,799

SKETCH

Project: CSHPP-0007-00(131)

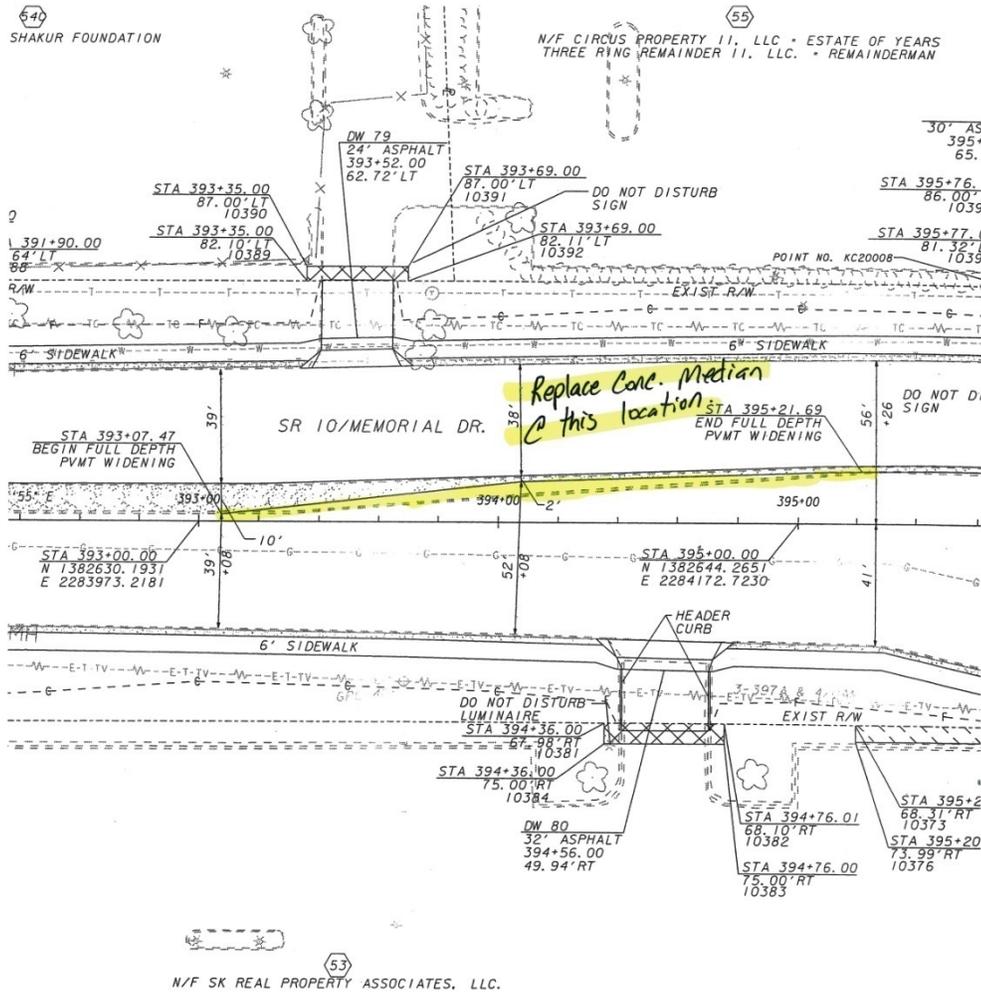
Idea No.: 7-A
Client:: GDOT
Sheet 2 of 6



SKETCH

Project: CSHPP-0007-00(131)

Idea No.: 7-A
 Client:: GDOT
 Sheet 3 of 6



ED.

GIN LIMIT OF ACCESS BLA
 D LIMIT OF ACCESS ELA
 MIT OF ACCESS
 O'D R/W AND LIMIT OF ACCESS
 ISTING R/W LINE
 POSED
 AMPED CONCRETE



NOT RELEASED
 FOR CONSTRUCTION
 SCALE IN FEET
 0 20 40 80

REVI

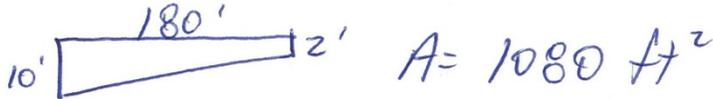
See Calculations for all locations.

CALCULATIONS

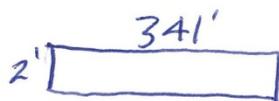
Project: CSHPP-0007-00(131)

Idea No.: 7-A
 Client: GDOT
 Sheet 5 of 6

- STA 322+79 to STA 328+00



$A = 1080 \text{ ft}^2$



$A = \frac{682}{2} \text{ ft}^2$

Total A = 1705 ft^2
 = 190 SY

- STA 335+~~00~~⁰⁴ to STA 336+49



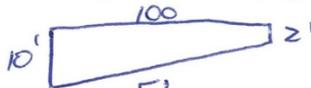
$A = 600 \text{ ft}^2$



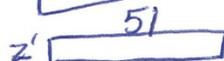
$A = 90 \text{ ft}^2$

Total A = 690 ft^2
 = 77 SY

- STA 338+74 to STA 340+25



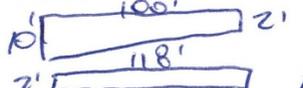
$A = \frac{600}{2} \text{ ft}^2$



$A = 102 \text{ ft}^2$

Total A = 702 ft^2
 = 78 SY

- STA 393+08 to STA 395+26



$A = \frac{600}{2} \text{ ft}^2$



$A = \frac{236}{2} \text{ ft}^2$

Total A = 836 ft^2
 = 93 SY

- STA 471+80 to STA 476+40



$A = 1080 \text{ ft}^2$



$= 540 \text{ ft}^2$

Total A = 1620 ft^2

= 180 SY

TOTAL = 618 SY

CALCULATIONS

Project: CSHPP-0007-00(131)

Idea No.: 7-A
Client: GDOT
Sheet 6 of 6

Grading Complete:

Removal of existing median \$59.29 /SY.

Total median to be removed 11400 yd² in original design:

$$11400 \text{ SY} \times \$59.29/\text{SY} = \$675,906$$

Total Median to be removed recommended design:

$$618 \text{ SY} \times \$59.29/\text{SY} = 36,641.22$$

$$\text{Difference} = \$675,906 - \$36,641.22 = \$639,264.78$$

$$\$1,900,000 - \$639,264.78 = \$1,260,735.22$$

DEVELOPMENT AND RECOMMENDATION PHASE			
Project: CSHPP-0007-00(131) PI 0001731			
Memorial Drive Streetscape Phase 3			
Idea No.: 7-B	Sheet No.: 1 of 3	CREATIVE IDEA: Retain existing median and stain median to match sidewalk to achieve desire aesthetics.	
Comp By: JDH		Date: 1/29/09	Checked By: Date:
Original Concept: Remove existing median and replace with new color stamped concrete.			
Proposed Change: Retain existing median and apply concrete stain to achieve desired color.			
Justification: Existing median appears to be in good shape. DeKalb desires to have aesthetic median to match new sidewalk on each side. To achieve the same desire finished, existing median can be stain to colored finished.			
LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original	\$2,561,200		
Proposed	\$1,401,394		
Savings	\$1,159,806		
FUTURE COST: Savings			
TOTAL PRESENT WORTH SAVINGS			\$1,159,806

CALCULATIONS

Project: CSHPP-0007-00(131) PI 0001731
Memorial Drive Streetscape Phase 3

Idea No.: 7-B
Client:
Sheet 3 of 3

Spread rate for stain 75 ft² to 100 ft² per gallon. 8.33 yd² to 11.11 yd²

Using 9 yd²/gal

From cost estimate 11400 yd² for construction of new median.

$11400 \text{ yd}^2 / 9 \text{ yd}^2/\text{gal} = 1266.67 \text{ gallons}$

Material sold in 5 gallon container. $1266.67/5 = 253.33 \text{ containers}$

$254 \text{ containers} \times \$175 = \$44450 \times 2 \text{ coats} = \$88,900 \text{ material cost}$

Profit \$8,900

Labor 250 hours \times \$20/hour = \$5000. Assuming an application rate of 50yd²/hour.

Miscellaneous expense \$2200.00

Total cost \$105,000.

$\$105,000/11400 = \$9.21/\text{yd}^2$.

Removal of existing median \$59.29 /yd².

Total median to remove 11400 yd² plus 618 additional. Total to remove 12018 yd².

$10782 \text{ yd}^2 \times 59.29/\text{yd}^2 = \$639,264.78$

$\$1,900,000 - \$639,264.78 = \$1,260,735.22$.

SKETCH	
Project: CSHPP-0007-00(131) PI# 0007131	Idea No.: 8-A Client: GDOT Sheet of
<p>Please see the mark-ups on the plans that provide possible locations where some of the trees can be eliminated and more appropriately spaced. This approach has been studied at length, but a more thorough review will need to be done once this recommendation has been implemented.</p>	

CALCULATIONS

Project: **CSHPP-0007-00(131) PI# 0007131**

Idea No.: 8-A
Client: GDOT
Sheet of

The number of plantings was calculated for each sheet after going through the plans to target areas where the trees needed to be eliminated. For example, the potential for proposed lighting and utilities were examined as well as areas that had plantings placed in front of some guardrail locations. See cost worksheet for new quantities for this item.

APPENDIX

INFORMATION PHASE - SOURCES

Approving/Authorizing Persons

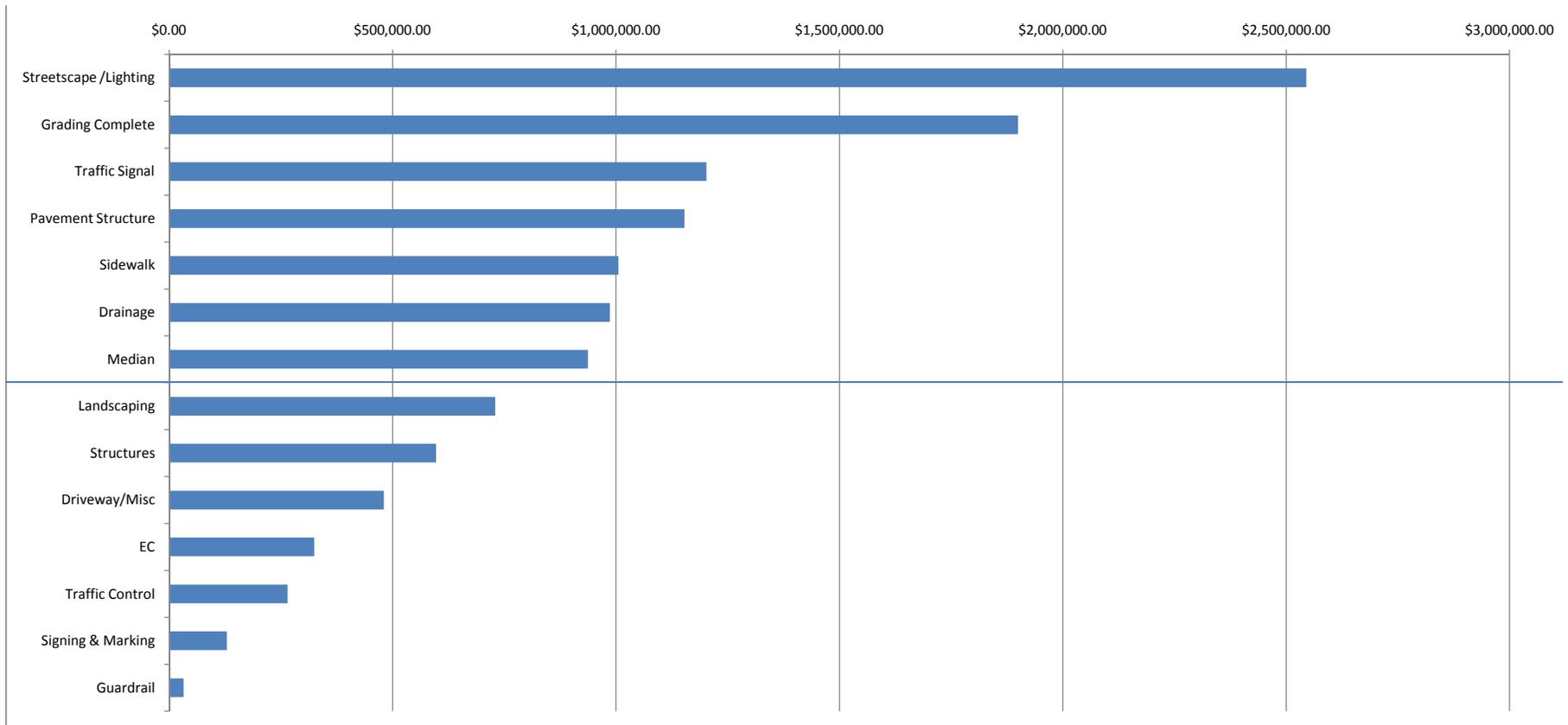
Name:	Position:	Telephone:
Gerald Ross	Chief Engineer	

Personal Contacts

Name:	Telephone:	Notes:
Mike Lobdell	7)986-1257	GDOT Project Manager
Ken Anderson	6)333-0642	JJ&G Project Manager
Steve Lindsey	7)933-0280	PBS&J County Consultant
Melvin Waldrop	7)986-1257	GDOT Design (D7)
Scott Lee	7)986-1257	GDOT Design (D7)

Documents/Abstracts

Reference:	Notes:
Cost Estimate	
Final Plans	
Concept Report	
Roll Plot	
Plans PI0007672	

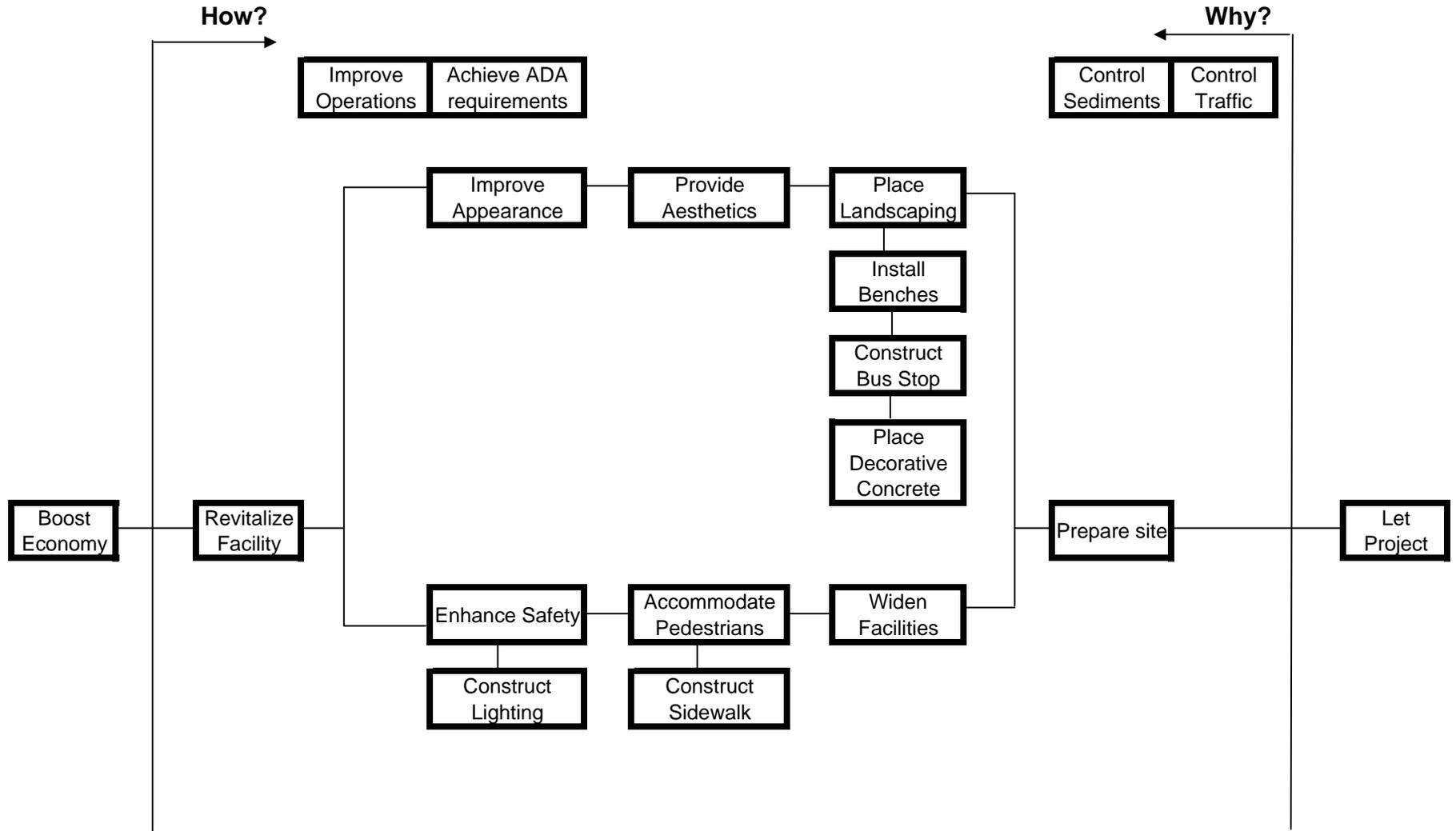


INFORMATION PHASE – FUNCTION ANALYSIS

Project:
Function:

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS		
		Verb	Noun	Cost	Worth	Comment
1	Streetscape/Lighting	enhance	safety	2,544,739.17	1.5 million	Std. light /rem. Jack & bore item
		provide	aesthetics			
2	Grading Complete	prepare	site	1,900,000.00	1.5 million	Reduce shldr./reduce excav.
		achieve	grade			
3	Traffic Signal	control	traffic	1,202,602.31	300 k	Reduce signal install
4	Pavement Structure	support	load	1,153,371.00	1.1 million	Reduce asph. Base/turn lane width
5	Sidewalk	accommodate	pedestrians	1,005,580.00	0	Eliminate sidewalk
6	Drainage	remove	water	986,293.99	No change	No change
7	Median	improve	operations	936,800.00	100 k	Repl. Median @ new const.
8	Landscaping	improve	appearance	729,350.00	500k	Reduce landscaping & change type
9	Structures	reduce	footprint	597,126.31	200 k	Use earth embank.
10	Driveway/Misc.	accommodate	pedestrians	480,386.00	0	Retain exist.
11	Erosion Control	contain	sediment	324,527.70	324 k	No change
12	Traffic Control	increase	safety	264,490.00	264,490	No change
13	Signing & Marking	communicate	information	128,641.44		
14	Guardrail	enhance	safety	31,877.00		

INVESTIGATION PHASE - FAST DIAGRAM



CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
1	Lighting/Streetscape		
1-A	Solar Lighting	High startup cost, low operation costs	8
1-B	Std. Lighting	Low startup cost availability, less aesthetics	9
1-C	Sidewalk level lighting	High vandalism risk, high maintenance, more fixtures, no landscaping interference, low costs	3
1-D	High Mast Lights	High costs, more efficient, light intrusion	1
1-E.1	Concrete Benches	Low theft, high vandalism, most durable	8
1-E.2	Aluminum Benches	Less durable, low cost, theft risk, heat/cold issues	4
1-E.3	No Benches	No cost or maintenance issues	8
2	Grading Complete		
2-A	Reduce Shoulder	Less cost, less time to construct, less landscaping space	9
3	Traffic Signal		
3-A	Use existing signals	Less costs, less construction time	7
3-B	Reduce intersections	Less costs, public issues, increase pedestrian hazards, increase side road volumes	1
4	Pavement Structure		

4-A	Less base	Less costs, less support, no time construction saving	9
4-B	RCC	Lower maintenance, constructability ease,	7
4-C	Conc. Base	Constructability ease, same riding surface	8
4-D	Narrow Lanes	Less material. Lower costs, possible safety effects	4
4-E	PCC	Lower maintenance, constructability ease	8
4-F	No build(new pavement)	Less costs, less construction, operational effects due to volume requirements	7
4-G	Recycled Matl. From conc. median	Less costs, construction issues	3
5	Sidewalk		
5-A	Reduce Width	Less costs, less material, provides more landscaping area, higher pedestrian conflict	8
5-B	Thinner Depth	Less costs, durability issues, maintenance issues	4
5-C	One-side only	Less costs, pedestrian access issues, less construction time, community issues	3
5-D	Mid-block crossing	Increase safety, increase costs, driver expectancy issue	5
5-E	Block-outs on 4' sidewalk	Less material than 5' sidewalk, reduces pedestrian conflict if 5-A is used	3
7	Median		
7-A	No change	Less costs, less construction time, no aesthetic improvements, no change in traffic operations, higher safety during construction	8

7-B	Retain & Stain	Improve aesthetics, reduce costs, reduce construction time, no change in traffic operations	8
7-C	Striping only	Safety issues, less costs, less construction, no protected pedestrian refuge, no aesthetic value	1
7-D	Landscaping for guardrail	Improve aesthetics, safety issues, maintenance issue, more construction time, sight issues,	3
8	Landscaping		
8-A	Increase Spacing of trees	Less costs, less maintenance, less construction time, less conflict with lighting, less aesthetic value	8
8-B	Change type	Less costs, less conflict with lighting, less maintenance, better sight distance, less conflict with overhead utilities	8
8-C	Add artwork	Less maintenance, less conflict with lighting & overhead utilities, potential vandalism, possible donation from community	6
8-D	Planters	Potential vandalism, more maintenance, low initial conflict, less utility conflicts, flexibility in locations	4