DEPARTMENT OF TRANSPORTATION
395 John Ireland Boulevard
Saint Paul, Minnesota 55155

January 2, 2019

The Honorable Paul Torkelson, Chair
House Transportation Finance Committee
381 State Office Building
Saint Paul, MN 55155

The Honorable Scott Newman, Chair
Senate Transportation Finance & Policy Committee
3105 Minnesota Senate Building
Saint Paul, MN 55155

The Honorable Linda Runbeck, Chair
House Transportation & Regional Governance Policy Committee
417 State Office Building
Saint Paul, MN 55155

The Honorable Scott Dibble
Ranking Minority Member
Senate Transportation Finance & Policy Committee
2213 Minnesota Senate Building
Saint Paul, MN 55155

The Honorable Frank Hornstein, DFL Lead
House Transportation Policy & Finance Committee
243 State Office Building
Saint Paul, MN 55155

The Honorable Connie Bernardy, DFL Lead
House Transportation & Regional Governance Policy Committee
253 State Office Building
Saint Paul, MN 55155

RE: 2018 Life-Cycle Cost Analyses report

Dear Legislators:

The Minnesota Department of Transportation is pleased to provide the annual report on pavement life-cycle cost analysis, as required under Minn. Stat. 174.185, Subd. 3.

In 2018, 40 construction projects were in the reconditioning, resurfacing and road repair funding categories and required a LCCA.

MnDOT has conducted LCCAs on road rehabilitation projects since 1999. In addition, MnDOT is innovating new methods to design and select the most cost-effective pavement structure. Innovations include new pavement design procedures and refining the alternate bidding process to allow bidders of both pavement materials to bid on a project.

Please contact me if you have questions or comments about this report, or you may contact Glenn Engstrom at glenn.engstrom@state.mn.us or 651-366-5531.

Sincerely,

Charles A. Zelle
Commissioner

DEPARTMENT OF TRANSPORTATION

2018 report on the

Life-Cycle Cost Analyses

January 2019

Prepared by:

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Contents

Legislative Request

This report is issued to comply with Minnesota Statutes 174.185.

The statute requires a life-cycle cost analysis for every project in the reconditioning, resurfacing and road repair funding categories constructed after July 1, 2011. The LCCA is a comparison of life-cycle costs among competing paving materials using equal design lives and equal comparison periods. Documentation required by the statute includes:

- Lowest life-cycle cost
- Alternatives considered
- Chosen strategy
- Documented justification, if the chosen strategy is not the low cost option

174.185 PAVEMENT LIFE-CYCLE COST ANALYSIS.

Subdivision 1. Definitions.

For the purposes of this section, the following definitions apply.

(a) "Life-cycle cost" is the sum of the cost of the initial pavement project and all anticipated costs for maintenance, repair, and resurfacing over the life of the pavement. Anticipated costs must be based on Minnesota's actual or reasonably projected maintenance, repair, and resurfacing schedules, and costs determined by the Department of Transportation district personnel based upon recently awarded local projects and experience with local material costs.

(b) "Life-cycle cost analysis" is a comparison of life-cycle costs among competing paving materials using equal design lives and equal comparison periods.

Subd. 2. Required analysis.

For each project in the reconditioning, resurfacing, and road repair funding categories, the commissioner shall perform a life-cycle cost analysis and shall document the lowest life-cycle costs and all alternatives considered. The commissioner shall document the chosen pavement strategy and, if the lowest life cycle is not selected, document the justification for the chosen strategy. A life-cycle cost analysis is required for projects to be constructed after July 1, 2011. For projects to be constructed prior to July 1, 2011, when feasible, the department will use its best efforts to perform life-cycle cost analyses.

Subd. 3. Report.

The commissioner shall report annually to the chairs and ranking minority members of the senate and house of representatives committees with jurisdiction over transportation finance beginning on January 1, 2012, the results of the analyses required in subdivision 2.

The cost of preparing this report is less than $5,000.

Life-Cycle Cost Analysis Report

Implementation

Minn. Stat. 174.185 requires a life-cycle cost analysis for every project in the reconditioning, resurfacing and road repair funding categories constructed after July 1, 2011.

The Minnesota Department of Transportation first implemented a LCCA process for roadway rehabilitation projects in 1999. The LCCA process was modified in 2010 to meet the specific requirements of legislation and was presented in Technical Memorandum 10-04-MAT-01. After the technical memorandum expired, the LCCA process, with some modifications, was incorporated into the MnDOT Pavement Design Manual that went into effect Oct. 31, 2014.

The LCCA process, which is consistent with Federal Highway Administration guidelines, is performed on all pavement projects regardless of funding category, but only the results of projects in the reconditioning, resurfacing and road repair funding categories are included in this report. The LCCA process limits the requirement to perform a LCCA to projects with more than 60,000 square yards of pavement (formerly 30,000 square yards in the technical memorandum) and to projects that include placing more than two-inch thickness of pavement material. Thin overlays (two inches or less) are considered short-term preventive maintenance and do not have a viable concrete alternative with an equal design life.

The LCCA process requires the inclusion of at least one portland cement concrete and one hot-mix asphalt alternate with equal design lives. To best determine the most cost effective design, the LCCA may include additional alternatives with other design lives.

Results

In 2018, 40 construction projects were in the reconditioning, resurfacing and road repair funding categories and required a LCCA according to the MnDOT Pavement Design Manual. One project required two LCCAs for a total of 41 LCCAs.

Additionally, there was one “indefinite delivery/indefinite quantity” project that may have met pavement thickness and quantity requirements to require a LCCA. “Indefinite delivery/indefinite quantity” projects, otherwise referred to as IDIQ, are projects where the contractor is required to furnish a minimum quantity of work but may be ordered to furnish additional amounts up to a stated maximum. Because the minimum was less than the quantity required for an LCCA and the difficulty of calculating a LCCA with unknown quantities, a LCCA was not produced for this project.

The results of the 41 LCCAs are as follows:

- Hot-mix asphalt was the low-cost option for 38 LCCAs. Of these, 30 selected the low-cost option, six selected a different hot-mix asphalt option and two selected a portland cement concrete option. Documented justification for selecting an option that was not the low-cost option is provided.
- Portland cement concrete was the low-cost option for three LCCAs. All three were selected for construction.
- Two LCCAs did not have equal design lives "among competing paving materials".

A table of LCCA results and copies of the LCCAs submitted by MnDOT districts are attached.

Discussion

Hot-mix asphalt is most often the low-cost option in the submitted LCCAs. Portland cement concrete options usually have a greater initial cost than hot-mix asphalt, but become competitive by having lower maintenance costs over the life of the pavement. However, the relatively short design lives of these rehabilitation-type projects do not allow portland cement concrete options to exploit this relative advantage. Portland cement concrete options with longer design lives than hot-mix asphalt alternates are more competitive than the portland cement concrete options with the equal design lives required by the statute.

MnDOT continues to improve and refine its portland cement pavement design procedures. The design program for portland cement pavement thickness design was updated and a research project is developing a new procedure to design portland cement concrete pavements that are built on top of existing portland cement concrete pavements.

No projects used the alternate bidding process in 2018, but MnDOT continued to provide for its use on projects that were likely to have competitive hot-mix asphalt and portland cement concrete options.

The alternate bidding process is similar to using a LCCA to determine the low-cost option. However, instead of using an estimate for the initial cost of an option, alternate bidding uses actual bid prices. The process is as follows:

1. MnDOT lets a project with two options, one hot-mix asphalt and one portland cement concrete.
2. MnDOT calculates a maintenance factor. This is the difference between the maintenance costs of the two options.
3. Each contractor bids on either of the two options.
4. MnDOT adjusts the bids by adding the maintenance factor to the bids of the option with the greater maintenance costs.
5. MnDOT selects the bid with the lowest adjusted bid.

Conclusion

MnDOT implemented the requirements of Minn. Stat. 174.185 and provided the required results in this report. MnDOT continues to work to ensure that all future projects meet the requirements of the legislation. In addition, MnDOT is innovating new pavement design methods to design the most cost-effective pavement structure.

Appendix A: Summary of LCCA Results

State Project Number (SP#)	Existing Pavement Type	Exception for low-cost option?	Design Life (in years)	Option Description	Present Worth	Optional Material (1)	Selected Option (2)	Alternate Bid? (3)
0120-24	PCC	Yes	20	PCC Overlay	$8,184,733	PCC		No
			20	HMA Over CIR	$5,018,769	HMA		
			20	HMA Overlay	$5,442,985	HMA	X	
0304-37	HMA	Yes	20	PCC overlay	$4,650,262	PCC		No
			20	HMA Over FDR	$3,727,391	HMA	X	
			20	HMA Overlay	$3,228,198	HMA		
0411-17	HMA	No	20	HMA Over FDR	$7,138,949	HMA	X	No
			20	New PCC	$18,304,187	PCC		
			35	New PCC	$15,346,021	PCC		
0606-11	HMA	No	15	HMA Overlay	$4,295,769	HMA	X	No
			20	New HMA	$14,055,553	HMA		
			20	PCC Overlay	$8,224,709	PCC		
0702-125	PCC	No	12	HMA Overlay	$2,526,638	HMA		No
			12	HMA Overlay	$2,197,157	HMA	X	
			20	PCC Overlay	$4,596,175	PCC		
1118-21	HMA	No	20	PCC Overlay	$7,171,454	PCC		No
			20	HMA Over FDR	$4,753,393	HMA	X	
			35	PCC Overlay	$5,364,319	PCC		
2208-113	PCC	No	13	HMA Overlay	$1,587,358	HMA	X	No
			20	PCC Overlay	$8,003,206	PCC		
			35	PCC Overlay	$7,745,112	PCC		
2309-30	HMA	No	15	HMA Overlay	$3,456,426	HMA	X	No
			20	HMA Over CIR	$3,529,180	HMA		
			20	PCC Overlay	$4,380,287	PCC		
2609-39	HMA	No	20	New HMA	$839,081	HMA		No
			20	New PCC	$1,122,200	PCC		
			20	New HMA	$456,253	HMA	X	
2706-237	PCC	Yes	20	HMA Over CIR	$1,490,123	HMA		No
			20	PCC Overlay	$3,035,045	PCC		
			20	HMA Overlay	$1,871,976	HMA	X	
2773-10	PCC	No	15	HMA Overlay	$4,767,631	HMA	X	No
			20	New PCC	$10,331,878	PCC		
			20	New HMA	$7,452,323	HMA		
2783-166	PCC	No	15	HMA Overlay	$11,769,088	HMA	X	No
			20	New PCC	$31,237,982	PCC		
			20	New HMA	$27,778,664	HMA		

State Project Number (SP#)	Existing Pavement Type	Exception for low-cost option?	Design Life (in years)	Option Description	Present Worth	Optional Material (1)	Selected Option (2)	Alternate Bid? (3)
3108-70	HMA	No	20	New HMA	$6,804,716	HMA	X	No
			20	New PCC	$9,535,836	PCC		
			35	New PCC	$8,447,151	PCC		
3109-41	HMA	No	20	PCC Overlay	$8,485,937	PCC		No
			20	FDR	$3,105,870	HMA	X	
			35	PCC Overlay	$4,642,751	PCC		
3111-30	HMA	No	15	HMA Overlay	$9,802,145	HMA	X	No
			20	New PCC	$11,923,512	PCC		
			20	New HMA	$21,181,052	HMA		
3302-16	HMA	Yes	13	HMA Overlay	$4,553,222	HMA	X	No
			20	PCC Overlay	$7,021,428	PCC		
			20	HMA Over CIR	$4,114,827	HMA		
3603-14	HMA	No	15	HMA Overlay	$7,512,448	HMA	X	No
			20	New HMA	$13,981,672	HMA		
			20	New PCC	$22,559,178	PCC		
4680-129	PCC	No	20	PCC Overlay	$40,192,066	PCC		No
			20	New HMA	$48,359,842	HMA		
			35	PCC Overlay	$33,555,786	PCC	X	
5507-64	HMA	No	15	HMA Overlay	$4,892,563	HMA	X	No
			20	PCC Overlay	$10,521,708	PCC		
			20	HMA Over CIR	$5,047,587	HMA		
5510-84	HMA	Yes	15	HMA Overlay	$6,537,817	HMA		No
			20	HMA Over CIR	$5,506,915	HMA		
			20	PCC Overlay	$9,309,142	PCC	X	
5622-16	HMA	No	15	HMA Overlay	$2,514,655	HMA		No
			20	HMA Over CIR	$2,443,212	HMA	X	
			20	PCC Overlay	$5,268,102	PCC		
5880-194	PCC	Yes	20	PCC Overlay	$1,139,927	PCC		No
			20	HMA Over Rubblize	$811,748	HMA		
			35	PCC Overlay	$997,908	PCC	X	
6401-37	PCC	No	20	HMA Over CIR	$5,540,896	HMA	X	No
			20	PCC Overlay	$9,901,372	PCC		
			35	PCC Overlay	$7,799,736	PCC		
6607-50	PCC	No	20	New HMA	$1,761,867	HMA	X	No
			20	New PCC	$2,253,674	PCC		
			35	New PCC	$2,080,763	PCC		
6680-113	PCC	No	20	PCC Overlay	$4,410,301	PCC		No
			20	New HMA	$6,628,817	HMA		
			35	PCC Overlay	$3,605,179	PCC	X	

State Project Number (SP#)	Existing Pavement Type	Exception for low-cost option?	Design Life (in years)	Option Description	Present Worth	Optional Material (1)	Selected Option (2)	Alternate Bid? (3)
6928-28	HMA	No	16	HMA Overlay	$156,625	HMA	X	No
			20	HMA Over FDR	$196,456	HMA		
			20	PCC Overlay	$293,703	PCC		
7001-115	HMA	No	20	HMA Over FDR	$3,830,248	HMA	X	No
			20	PCC Overlay	$5,952,790	PCC		
			35	PCC Overlay	$4,463,037	PCC		
7001-116	HMA	No	19	HMA Overlay	$2,016,671	HMA	X	No
			20	HMA Over FDR	$2,144,547	HMA		
			20	PCC Overlay	$3,283,512	PCC		
7002-47	PCC	No	17	HMA Overlay	$2,764,251	HMA	X	No
			20	New HMA	$6,813,427	HMA		
			20	PCC Overlay	$5,683,939	PCC		
7102-133	HMA	No	20	PCC Overlay	$13,190,682	PCC		No
			20	HMA Over FDR	$8,751,440	HMA	X	
			35	PCC Overlay	$10,800,207	PCC		
7303-50	HMA	No	20	PCC Overlay	$1,531,280	PCC		No
			20	HMA Over FDR	$782,946	HMA	X	
			35	PCC Overlay	$1,490,364	PCC		
7611-15	HMA	No	19	HMA Overlay	$4,268,121	HMA	X	No
			20	HMA Over FDR	$5,352,093	HMA		
			20	PCC Overlay	$9,254,557	PCC		
7802-33 (1)	HMA	No	15	HMA Overlay	$2,918,925	HMA		No
			20	HMA Over CIR	$2,716,906	HMA	X	
			20	New PCC	$7,876,513	PCC		
7802-33 (2)	HMA	No	15	HMA Overlay	$4,076,035	HMA		No
			20	HMA Over CIR	$3,713,912	HMA	X	
			20	PCC Overlay	$8,351,061	PCC		
7906-96	HMA	No	20	PCC Overlay	$17,139,273	PCC		No
			15	HMA Overlay	$8,078,847	HMA	X	
			20	HMA Over CIR	$8,337,637	HMA		
7908-35	HMA	Yes	15	HMA Overlay	$3,750,720	HMA	X	No
			20	PCC Overlay	$4,883,038	PCC		
			20	HMA Over CIR	$3,245,548	HMA		
8309-52	PCC	No	20	New HMA	$21,000,515	HMA		No
			20	PCC Overlay	$15,955,869	PCC		
			35	PCC Overlay	$13,910,942	PCC	X	

State Project Number (SP#)	Existing Pavement Type	Exception for low-cost option?	Design Life (in years)	Option Description	Present Worth	Optional Material (1)	Selected Option (2)	Alternate Bid? (3)
8504-79	PCC	No	15	HMA Overlay	$4,792,894	HMA	X	No
			20	HMA Overlay	$5,107,483	HMA		
			20	PCC Overlay	$10,854,498	PCC		
8580-167	PCC	Yes	15	HMA Overlay	$2,559,325	HMA	X	No
			20	HMA Overlay	$2,400,445	HMA		
			20	PCC Overlay	$5,337,533	PCC		
8606-60	HMA	No	20	PCC Overlay	$9,090,451	PCC		No
			20	HMA Over FDR	$5,341,648	HMA	X	
			20	HMA Overlay	$6,905,564	HMA		
8607-63	HMA	No	20	PCC Overlay	$7,317,463	PCC		No
			20	HMA Over FDR	$4,289,987	HMA	X	
			35	PCC Overlay	$5,591,874	PCC		

(1) Option material - The pavement material that each option uses.

(2) Selected Option- This is marked (X) if the pavement option was selected to be constructed.

* If the project uses alternate bidding, more than one option will be marked and the constructed option will be the low-cost option as determined by alternate bidding.

(3) Alternate Bidding? - 'Yes' if the project used alternate bidding to select which option to construct.

Definitions:

HMA = Hot-Mix Asphalt

PCC = Portland Cement Concrete

FDR = Full-Depth Reclamation (recycle existing HMA and Base to use as a new base)

CIR = Cold-in-Place Recycling (Recycle a layer of existing HMA with Cold-Mix Asphalt)

CPR = Concrete Pavement Repair

Rubblize = Break the existing PCC into pieces to act as the new base for HMA pavement

Crack & Seat = Crack and compact the existing PCC pavement to delay reflective cracking in an HMA overlay

Appendix B: Copies of LCCAs

35 Year Analysis: Project # 0120-24 - Hwy 210

35 Year Analysis

Project Number	Analysis Period
0120-24	35
Highway	Discount Rate
210	1.58%
Date	
6/20/2017	
Performed By	
Scott Zeidler	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" Mill w/ 4" Overlay		20 yr HMA		20 yr PCC		14.2
Net Present Cost	$5,442,985.00		$5,018,769.35		$8,184,733.06		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$5,442,985.00		$5,018,769.35		$8,184,733.06	Total
% of Low Cost		108.5%		100.0%		163.1%	14.2

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" Mill with 4" Overlay		20 yr HMA		20 yr PCC		14.2
Net Present Cost	$1,466,591.05		$1,605,943.74		$2,499,092.70		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,466,591.05		$1,605,943.74		$2,499,092.70	Total
Bid Adjustment Factor		$0.00		$139,352.70		$1,032,501.66	14.2

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	14.185			1	14.185			1	14.185		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		3" Mill with 4" Overlay		2		20 yr HMA		3		20 yr PCC	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay, DL > 17 years				20 Year HMA				≥12 Joint spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 20 Years			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Bituminous				Bituminous				PCC			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	3" Mill w/4" HMA	$ 280,323.86	$ 280,323.86	0	1.5" Mill w/3" CIR & 2" HMA	$ 240,593.98	$ 240,593.98	0	6" Unbonded Conc. Overlay	$ 400,820.61	$ 400,820.61
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3	Crack Treatment	$ 2,112.00	$ 2,014.97	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7	Seal	$ 7,200.70	$ 6,452.34	7			$ -	7			$ -
8			$ -	8	Crack Treatment	$ 1,056.00	$ 931.53	8			$ -
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12	Seal	$ 11,520.09	$ 9,544.59	12			$ -
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Overlay 3.5"	$ 145,648.18	$ 106,448.83	20	ML Overlay 3.5	$ 145,648.18	$ 106,448.83	20	1st CPR	$ 241,055.58	$ 176,178.55
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67	23	Crack Treatment	$ 2,112.00	$ 1,472.67	23			$ -
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 7,200.70	$ 4,715.77	27	Seal	$ 7,200.70	$ 4,715.77	27			$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	Remaining Life	$ (30,662.77)	$ (17,714.31)	35	2/17 Remaining Life	$ (17,135.08)	$ (9,899.17)	35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 5,442,985.00	Net Present Cost for Segment			$ 5,018,769.35	Net Present Cost for Segment			$ 8,184,733.06
Maintenance - Net Present Cost for Segment			$ 1,466,591.05	Maintenance - Net Present Cost for Segment			$ 1,605,943.74	Maintenance - Net Present Cost for Segment			$ 2,499,092.70
Equivalent Annual Cost			203,651.34	Equivalent Annual Cost			187,779.16	Equivalent Annual Cost			306,234.89

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		24	2	35		28	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 9.5 Wearing Course Mixture (3,B)		4	2	Type SP 9.5 Wearing Course Mixture (3,B)		4	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N	Type SP 9.5 Wearing Course Mixture (3,B)		1.5	N	Type SP 9.5 Wearing Course Mixture (3,B)		3	Y		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				N				Y	6		
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1.5				1.5				12	13		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	4			20	4				6		

35 Year Analysis: Project # 0304-37 - Hwy 59

35 Year Analysis

Project Number	Analysis Period
0304-37	35
Highway	Discount Rate
59	1.58%
Date	
Performed By	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	4.5" Mill and 6" Concrete Overlay		5" Mill and 6.5" Bit. Overlay		4" Mill, 9" Reclaim, 5.5" Bit. Overlay		6.9
Net Present Cost	$4,650,262.41		$3,228,198.69		$3,727,391.47		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,650,262.41		$3,228,198.69		$3,727,391.47	Total
% of Low Cost		144.1%		100.0%		115.5%	6.9

BID ADJUSTMENT FACTOR SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	4.5" Mill and 6" Concrete Overlay		5" Mill and 6.5" Bit. Overlay		4" Mill, 9" Reclaim, 5.5" Bit. Overlay		6.9
Net Present Cost	$1,276,562.61		$1,009,666.80		$1,009,666.80		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,276,562.61		$1,009,666.80		$1,009,666.80	Total
Bid Adjustment Factor		$266,895.81					6.9

SEGMENT	Length		
1	6.9		
ALTERNATE		Description	
1		4.5" Mill and 6" Concrete Overlay	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Thin Bit			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	4.5" Mill and 6" Conc.	$ 488,942.00	$ 488,942.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 253,137.92	$ 185,009.07
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 4,650,262.41
Maintenance - Net Present Cost for Segment			$ 1,276,562.61
Equivalent Annual Cost			173,991.33

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	4		
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
1	6.9		
ALTERNATE		Description	
2		5" Mill and 6.5" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	5" Mill and 6.5" Bit.	$ 321,526.36	$ 321,526.36
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,602.45	$ 10,441.34
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 193,480.12	$ 141,407.41
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,979.32	$ 5,225.70
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (22,762.37)	$ (13,150.13)
Net Present Cost for Segment			$ 3,228,198.69
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			120,784.28

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
1	6.9		
ALTERNATE		Description	
3		4" Mill, 9" Reclaim, 5.5" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	4", 9" Reclaim, 5.5" Bit.	$ 393,873.14	$ 393,873.14
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,602.45	$ 10,441.34
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 193,480.12	$ 141,407.41
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,979.32	$ 5,225.70
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (22,762.37)	$ (13,150.13)
Net Present Cost for Segment			$ 3,727,391.47
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			139,461.76

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

50 Year Analysis

Project Number	Analysis Period
0411-17	50
Highway	Discount Rate
71	1.32%
Date	
2/7/2018	
Performed By	
KO	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Rural Reclaim		Rural Concrete		Rural Concrete		10.8
Net Present Cost	$ 5,662,010.50		$ 14,755,673.22		$ 12,343,684.39		Miles
Segment #2	Urban Reclaim		Urban Concrete		Urban Concrete		2.4
Net Present Cost	$ 1,476,938.84		$ 3,548,513.96		$ 3,002,337.44		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$7,138,949.35		$18,304,187.18		$15,346,021.83	Total
% of Low Cost		100.0%		256.4%		215.0%	13.2

SEGMENT	Length		
1	10.83		
ALTERNATE		Description	
1		Rural Reclaim	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 3,369,764.51	$ 3,369,764.51
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 11,466.98	$ 10,324.94
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 118,797.08	$ 101,499.42
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 1,631,305.32	$ 1,254,965.05
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 22,933.96	$ 16,962.50
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 71,221.32	$ 49,985.05
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35		$ -	$ -
36		$ -	$ -
37	Mill/Overlay	$ 1,631,305.32	$ 1,004,184.59
38		$ -	$ -
39		$ -	$ -
40	Crack Treatment	$ 22,933.96	$ 13,572.87
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44	Seal	$ 71,221.32	$ 39,996.50
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ (383,836.55)	$ (199,244.92)
Net Present Cost for Segment			$ 4,650,262.41
Maintenance - Net Present Cost for Segment			$ 1,276,562.61
Equivalent Annual Cost			173,991.33

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	4		
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
1	10.83		
ALTERNATE		Description	
2		Rural Concrete	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thin Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 9,282,411.23	$ 9,282,411.23
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 3,042,301.35	$ 2,340,445.91
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	R & R Mainline	$ 6,238,711.40	$ 3,942,426.06
36		$ -	$ -
37		$ -	$ -
38		$ -	$ -
39		$ -	$ -
40		$ -	$ -
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44		$ -	$ -
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ (1,559,677.85)	$ (809,609.97)
Net Present Cost for Segment			$ 3,228,198.69
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			120,784.28

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
1	10.83		
ALTERNATE		Description	
3		Rural Concrete	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 35 years			
Shoulder Category			
Thin Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 9,282,411.23	$ 9,282,411.23
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 2,203,039.08	$ 1,694,800.48
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	2nd CPR	$ 2,162,381.38	$ 1,366,472.68
36		$ -	$ -
37		$ -	$ -
38		$ -	$ -
39		$ -	$ -
40		$ -	$ -
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44		$ -	$ -
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 3,727,391.47
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			139,461.76

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
2	2.36		
ALTERNATE		Description	
1		Urban Reclaim	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 927,966.16	$ 927,966.16
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 2,498.81	$ 2,249.94
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 27,438.13	$ 23,442.95
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 392,401.91	$ 301,875.24
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 4,997.61	$ 3,696.35
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 16,721.84	$ 11,735.84
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35		$ -	$ -
36		$ -	$ -
37	Mill/Overlay	$ 392,401.91	$ 241,551.32
38		$ -	$ -
39		$ -	$ -
40	Crack Treatment	$ 4,997.61	$ 2,957.71
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44	Seal	$ 16,721.84	$ 9,390.66
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ (92,329.86)	$ (47,927.32)
Net Present Cost for Segment			$ 4,650,262.41
Maintenance - Net Present Cost for Segment			$ 1,276,562.61
Equivalent Annual Cost			173,991.33

Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (3,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	4.5		

SEGMENT	Length		
2	2.36		
ALTERNATE		Description	
2		Urban Concrete	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,280,719.30	$ 2,280,719.30
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 678,519.37	$ 521,985.73
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	R & R Mainline	$ 1,485,209.01	$ 938,547.45
36		$ -	$ -
37		$ -	$ -
38		$ -	$ -
39		$ -	$ -
40		$ -	$ -
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44		$ -	$ -
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ (371,302.25)	$ (192,738.52)
Net Present Cost for Segment			$ 3,228,196.69
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			120,784.28

Total Lane Width	# of Lanes	Analysis Period	
25	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
18	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,A)	
Sealed/UTBWC	ML Thickness		
No	6		
ML Top Lift/Jt spacing	# Dowels per Lane		
12			
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
2	2.36		
ALTERNATE		Description	
3		Urban Concrete	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 35 years			
Shoulder Category			
Thin Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,280,719.30	$ 2,280,719.30
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 576,875.11	$ 443,790.68
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	2nd CPR	$ 439,649.42	$ 277,827.46
36		$ -	$ -
37		$ -	$ -
38		$ -	$ -
39		$ -	$ -
40		$ -	$ -
41		$ -	$ -
42		$ -	$ -
43		$ -	$ -
44		$ -	$ -
45		$ -	$ -
46		$ -	$ -
47		$ -	$ -
48		$ -	$ -
49		$ -	$ -
50	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 3,727,391.47
Maintenance - Net Present Cost for Segment			$ 1,009,666.80
Equivalent Annual Cost			139,461.76

Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
18	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,A)	
Sealed/UTBWC	ML Thickness		
No	6		
ML Top Lift/Jt spacing	# Dowels per Lane		
12			
Design Life	Shldr Thickness		
20	3		

35 Year Analysis: Project # 0606-11 - Hwy 28

35 Year Analysis

Project Number	Analysis Period
0606-11	35
Highway	Discount Rate
28	1.74%
Date	
1/22/2016	
Performed By	
KR	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	1.5" mill & 3.0" fill		HMA Reconstruct		5.0" Whitetopping		12.1
Net Present Cost	$4,295,769.07		$14,055,553.40		$8,224,709.21		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,295,769.07		$14,055,553.40		$8,224,709.21	Total
% of Low Cost		100.0%		327.2%		191.5%	12.1

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	1.5" mill & 3.0" fill		HMA Reconstruct		5.0" Whitetopping		12.1
Net Present Cost	$2,461,717.62		$1,548,759.63		$4,430,002.32		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,461,717.62		$1,548,759.63		$4,430,002.32	Total
Bid Adjustment Factor		$912,957.99				$2,881,242.69	12.1

SEGMENT	Length		
1	12.1		
ALTERNATE		Description	
1		1.5" mill & 3.0" fill	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	1.5" Mill, 3.0" Overlay	$ 151,574.50	$ 151,574.50
1			$ -
2			$ -
3	Crack Treatment	$ 2,464.00	$ 2,339.73
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,544.34	$ 7,572.45
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 170,173.25	$ 131,375.78
16			$ -
17			$ -
18	Crack Treatment	$ 2,464.00	$ 1,806.30
19			$ -
20			$ -
21			$ -
22	Seal	$ 8,544.34	$ 5,846.02
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 170,173.25	$ 103,188.44
30			$ -
31			$ -
32	Crack Treatment	$ 2,464.00	$ 1,418.75
33			$ -
34			$ -
35	Remaining Life	$ (91,631.75)	$ (50,099.72)
Net Present Cost for Segment			$ 4,295,769.07
Maintenance - Net Present Cost for Segment			$ 2,461,717.62
Equivalent Annual Cost			164,912.29

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2	TYPE SP 12.5 WEARING COURSE MIXTURE (3,B	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	4.5		

SEGMENT	Length		
1	12.1		
ALTERNATE		Description	
2		HMA Reconstruct	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	HMA Reconstruct	$ 1,033,619.32	$ 1,033,619.32
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,073.19
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,706.22	$ 10,330.37
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 170,173.25	$ 120,519.31
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,657.03
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,544.34	$ 5,362.92
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (20,020.38)	$ (10,946.16)
Net Present Cost for Segment			$ 14,055,553.40
Maintenance - Net Present Cost for Segment			$ 1,548,759.63
Equivalent Annual Cost			539,585.21

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2	TYPE SP 12.5 WEARING COURSE MIXTURE (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	4.5		

SEGMENT	Length		
1	12.1		
ALTERNATE		Description	
3		5.0" Whitetopping	
Pavement Type			
PCC			
Primary Category			
6'X6' ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	5.0" Whitetopping	$ 313,612.14	$ 313,612.14
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 447,472.26	$ 316,906.72
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 386,381.73	$ 230,284.44
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (331,184.34)	$ (181,075.27)
Net Present Cost for Segment			$ 8,224,709.21
Maintenance - Net Present Cost for Segment			$ 4,430,002.32
Equivalent Annual Cost			315,742.21

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	Y		
Sealed/UTBWC	ML Thickness		
N	5.0		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
	4.5		

35 Year Analysis: Project # 0702-125 - Hwy 14

35 Year Analysis

Project Number	Analysis Period
0702-125	35
Highway	Discount Rate
14	1.58%
Date	
7/31/2017	
Performed By	
MPR	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill 2.5, Pave 4		Mill 3, Pave 3		UBOL		2.3
Net Present Cost	$2,526,638.35		$2,197,157.99		$4,596,175.46		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,526,638.35		$2,197,157.99		$4,596,175.46	Total
% of Low Cost		115.0%		100.0%		209.2%	2.3

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill 2.5, Pave 4		Mill 3, Pave 3		UBOL		2.3
Net Present Cost	$1,484,622.04		$1,484,622.04		$1,049,072.45		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,484,622.04		$1,484,622.04		$1,049,072.45	Total
Bid Adjustment Factor		$435,549.59		$435,549.59			2.3

SEGMENT	Length		
1	2.3		
ALTERNATE		Description	
1		Mill 2.5, Pave 4	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 453,050.57	$ 453,050.57
1			$ -
2			$ -
3	Crack Treatment	$ 4,224.00	$ 4,029.95
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12	ML Overlay 3.5"	$ 387,065.78	$ 320,690.63
13			$ -
14			$ -
15	Crack Treatment	$ 4,224.00	$ 3,338.88
16			$ -
17			$ -
18			$ -
19	Seal	$ -	$ -
20			$ -
21			$ -
22			$ -
23	ML Overlay 3.5"	$ 387,065.78	$ 269,895.71
24			$ -
25			$ -
26	Crack Treatment	$ 4,224.00	$ 2,810.03
27			$ -
28			$ -
29			$ -
30	Seal	$ -	$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ 77,413.16	$ 44,722.64
Net Present Cost for Segment			$ 2,526,638.35
Maintenance - Net Present Cost for Segment			$ 1,484,622.04
Equivalent Annual Cost			94,535.13

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4	Type SP 12.5 Wearing Course Mixture (4,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
6	Y	Type SP 12.5 Wearing Course Mixture (3, B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
12	4		

SEGMENT	Length		
1	2.3		
ALTERNATE		Description	
2		Mill 3, Pave 3	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 309,798.24	$ 309,798.24
1			$ -
2			$ -
3	Crack Treatment	$ 4,224.00	$ 4,029.95
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12	ML Overlay 3.5"	$ 387,065.78	$ 320,690.63
13			$ -
14			$ -
15	Crack Treatment	$ 4,224.00	$ 3,338.88
16			$ -
17			$ -
18			$ -
19	Seal	$ -	$ -
20			$ -
21			$ -
22			$ -
23	ML Overlay 3.5"	$ 387,065.78	$ 269,895.71
24			$ -
25			$ -
26	Crack Treatment	$ 4,224.00	$ 2,810.03
27			$ -
28			$ -
29			$ -
30	Seal	$ -	$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ 77,413.16	$ 44,722.64
Net Present Cost for Segment			$ 2,197,157.99
Maintenance - Net Present Cost for Segment			$ 1,484,622.04
Equivalent Annual Cost			82,207.50

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4	Type SP 12.5 Wearing Course Mixture (4,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
6	Y	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
12	4		

SEGMENT	Length		
1	2.3		
ALTERNATE		Description	
3		UBOL	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Thick Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 1,542,218.70	$ 1,542,218.70
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 624,082.23	$ 456,118.45
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 4,596,175.46
Maintenance - Net Present Cost for Segment			$ 1,049,072.45
Equivalent Annual Cost			171,967.64

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
6	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness		
N	6		
ML Top Lift / joint spacing	# Dowels per Lane		
6	11		
Design Life	Shldr Thickness		
	4		

50 Year Analysis

Project Number	Analysis Period
1118-21	50
Highway	Discount Rate
371	1.58%
Date	
8/22/2017	
Performed By	
Samuel Nigon	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill, 8" FDR, 5" HMA (ML), 3" HMA (Shld		5" Mill, 6" PCC		5" Mill, 6" PCC (ML), 3" HMA (Shld)		7.3
Net Present Cost	$ 4,753,393.92		$ 7,171,451.67		$ 5,364,319.59		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,753,393.92		$7,171,451.67		$5,364,319.59	Total
% of Low Cost		100.0%		150.9%		112.9%	7.3

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill, 8" FDR, 5" HMA (ML), 3" HMA (Shld		5" Mill, 6" PCC		5" Mill, 6" PCC (ML), 3" HMA (Shld)		7.3
Net Present Cost	$1,886,810.54		$3,237,413.23		$1,934,080.27		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,886,810.54		$3,237,413.23		$1,934,080.27	Total
Bid Adjustment Factor				$1,350,602.69		$47,269.73	7.3

SEGMENT	Length		
1	7.274		
ALTERNATE		Description	
1		5" Mill, 8" FDR, 5" HMA (ML), 3" HMA (Shld)	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 394,086.25	$ 394,086.25
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,550.74	$ 10,398.51
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 199,618.74	$ 145,893.90
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,999.46	$ 5,238.88
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35			$ -
36			$ -
37	ML Overlay 3.5"	$ 199,618.74	$ 111,762.88
38			$ -
39			$ -
40	Crack Treatment	$ 2,112.00	$ 1,128.15
41			$ -
42			$ -
43			$ -
44	Chip Seal	$ 7,999.46	$ 4,013.28
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	4/17 Remaining Life	$ (46,969.12)	$ (21,448.75)
Net Present Cost for Segment			$ 4,753,393.92
Maintenance - Net Present Cost for Segment			$ 1,886,810.54
Equivalent Annual Cost			138,224.92
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	Type SP 9.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N	Type SP 12.5 Wearing Course Mixture (2,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
1	7.274		
ALTERNATE		Description	
2		5" Mill, 6" PCC	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 540,835.64	$ 540,835.64
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 207,886.27	$ 151,936.33
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remove and Replace	$ 632,359.67	$ 365,322.88
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	5/20 Remaining	$ (158,089.92)	$ (72,192.78)
Net Present Cost for Segment			$ 7,171,451.67
Maintenance - Net Present Cost for Segment			$ 3,237,413.23
Equivalent Annual Cost			208,540.13
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
16	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	Y		
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
	6		

SEGMENT	Length		
1	7.274		
ALTERNATE		Description	
3		5" Mill, 6" PCC (ML), 3" HMA (Shld)	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life 35 Years			
ShoulderCategory			
Thin Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 471,575.38	$ 471,575.38
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 232,008.53	$ 169,566.39
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2nd CPR	$ 166,731.56	$ 96,323.11
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 5,364,319.59
Maintenance - Net Present Cost for Segment			$ 1,934,080.27
Equivalent Annual Cost			155,990.16
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
16	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	Y	Type SP 12.5 Wearing Course Mixture (2,C)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
	3		

35 Year Analysis

Project Number	Analysis Period
2208-113	35
Highway	Discount Rate
169	1.32%
Date	
8/8/2017	
Performed By	
Mike Schoeb	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	1 3/4" Overlay/UTBWC		6" Unbonded Concrete overlay 12' Joint spa		7" unbonded concret eoverlay		6.5
Net Present Cost	$1,587,358.24		$8,003,206.93		$7,745,112.54		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,587,358.24		$8,003,206.93		$7,745,112.54	Total
% of Low Cost		100.0%		504.2%		487.9%	6.5

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	6.46			1	6.46			1	6.46		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		1 3/4" Overlay/UTBWC		2		6" Unbonded Concrete Overlay 12' Joint spacing		3		7" Unbonded Concrete Overlay	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				> 11' Joint Spacing				> 11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Design Life = 20 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Aggregate				Aggregate				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,239,835.14	$ 1,239,835.14	0	Construction	$ 6,773,980.61	$ 6,773,980.61	0	Construction	$ 6,976,880.60	$ 6,976,880.60
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 15,389.89	$ 14,796.19	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 44,092.45	$ 40,225.17	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12		$ -	$ -	12		$ -	$ -
13	Mill/Overlay	$ 137,066.84	$ 115,583.29	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15		$ -	$ -
16	Crack Treatment	$ 15,389.89	$ 12,477.07	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Seal	$ 44,092.45	$ 33,920.37	20	1st CPR	$ 1,597,848.04	$ 1,229,226.32	20	1st CPR	$ 998,610.16	$ 768,231.94
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25	Mill/Overlay	$ 137,066.84	$ 98,753.59	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27		$ -	$ -	27		$ -	$ -
28	Crack Treatment	$ 15,389.89	$ 10,660.33	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Seal	$ 44,092.45	$ 28,981.33	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (12,460.62)	$ (7,874.24)	35	Remaining Life	$ -	$ -	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 1,587,358.24	Net Present Cost for Segment			$ 8,003,206.93	Net Present Cost for Segment			$ 7,745,112.54
Maintenance - Net Present Cost for Segment			$ 347,523.10	Maintenance - Net Present Cost for Segment			$ 1,229,226.32	Maintenance - Net Present Cost for Segment			$ 768,231.94
Equivalent Annual Cost			56,926.95	Equivalent Annual Cost			287,016.60	Equivalent Annual Cost			277,760.64
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
27	2	35		27	2	35		27	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
3.5	2			17	2			8.5	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
4.5	No			0	Yes			0	Yes		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
Yes				Yes				Yes	7		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
1.75				12				15			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
13	4										

35 Year Analysis

Project Number	Analysis Period
2309-30	35
Highway	Discount Rate
US 52	1.58%
Date	
7/14/2017	
Performed By	
Tyler Mandler	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	15 Year: 1.5" Mill 3" Overlay		20 Year: 4.5" Mill 6.0" Whitetopping		20 Year: 4" CIR 4" Overlay		7.0
Net Present Cost	$3,456,426.43		$4,380,287.66		$3,529,180.53		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,456,426.43		$4,380,287.66		$3,529,180.53	Total
% of Low Cost		100.0%		126.7%		102.1%	7.0

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	15 Year: 1.5" Mill 3" Overlay		20 Year: 4.5" Mill 6.0" Whitetopping		20 Year: 4" CIR 4" Overlay		7.0
Net Present Cost	$1,994,424.82		$1,412,481.67		$1,257,064.17		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,994,424.82		$1,412,481.67		$1,257,064.17	Total
Bid Adjustment Factor		$737,360.65		$155,417.50			7.0

SEGMENT	Length		
1	6.962		
ALTERNATE		Description	
1		15 Year: 1.5" Mill 3" Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 209,997.36	$ 209,997.36
1			$ -
2			$ -
3	Crack Treatment	$ 2,068.35	$ 1,973.33
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,873.63	$ 7,951.41
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 240,066.73	$ 189,761.82
16			$ -
17			$ -
18	Crack Treatment	$ 2,068.35	$ 1,559.83
19			$ -
20			$ -
21			$ -
22	Seal	$ 8,873.63	$ 6,285.22
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 240,066.73	$ 152,368.06
30			$ -
31			$ -
32	Crack Treatment	$ 2,068.35	$ 1,252.45
33			$ -
34			$ -
35	Remaining Life	$ (129,266.70)	$ (74,679.15)
Net Present Cost for Segment			$ 3,456,426.43
Maintenance - Net Present Cost for Segment			$ 1,994,424.82
Equivalent Annual Cost			129,323.50

Total Lane Width	# of Lanes	Analysis Period	
26	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	6.962		
ALTERNATE		Description	
2		20 Year: 4.5" Mill 6.0" Whitetopping	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Thin Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 426,286.41	$ 426,286.41
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 277,595.85	$ 202,884.47
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 4,380,287.66
Maintenance - Net Present Cost for Segment			$ 1,412,481.67
Equivalent Annual Cost			163,890.12

Total Lane Width	# of Lanes	Analysis Period	
26	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	Y	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6.0		
ML Top Lift / joint spacing	# Dowels per Lane		
12	8		
Design Life	Shldr Thickness		
	1.5		

SEGMENT	Length		
1	6.962		
ALTERNATE		Description	
3		20 Year: 4" CIR 4" Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL > 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thin			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 326,359.72	$ 326,359.72
1			$ -
2			$ -
3	Crack Treatment	$ 2,068.35	$ 1,973.33
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,873.63	$ 7,951.41
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Mill 3.5"	$ 268,174.69	$ 195,998.89
21			$ -
22			$ -
23	Crack Treatment	$ 2,068.35	$ 1,442.23
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,873.63	$ 5,811.39
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ (56,457.83)	$ (32,616.46)
Net Present Cost for Segment			$ 3,529,180.53
Maintenance - Net Present Cost for Segment			$ 1,257,064.17
Equivalent Annual Cost			132,045.63

Total Lane Width	# of Lanes	Analysis Period	
26	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	2		

35 Year Analysis: Project # 2609-39 - Hwy 55, Segment 1

35 Year Analysis

Project Number	Analysis Period
2609-39	35
Highway	Discount Rate
55	1.58%
Date	
11/7/2016	
Performed By	
KR	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Bit Replacement		Concrete Reconstruct		HMA		0.3
Net Present Cost	$273,999.25		$540,770.77		$440,542.25		Miles
Segment #2	Mill & Fill		Concrete		HMA		0.2
Net Present Cost	$113,908.88		$363,393.86		$214,645.73		Miles
Segment #3	Mill & Fill		Concrete		HMA		0.12
Net Present Cost	$68,345.33		$218,036.32		$183,893.14		Miles
Project Net Present Cost		$456,253.45		$1,122,200.95		$839,081.12	Total
% of Low Cost		100.0%		246.0%		183.9%	0.7

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Bit Replacement		Concrete Reconstruct		HMA		0.3
Net Present Cost	$54,997.57		$84,674.16		$54,997.57		Miles
Segment #2	Mill & Fill		Concrete		HMA		0.2
Net Present Cost	$46,380.93		$51,317.67		$40,225.31		Miles
Segment #3	Mill & Fill		Concrete		HMA		0.12
Net Present Cost	$27,828.56		$30,790.60		$24,135.18		Miles
Project Net Present Cost		$129,207.05		$166,782.44		$119,358.06	Total
Bid Adjustment Factor		$9,848.99		$47,424.39			0.7

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	0.33			1	0.33			1	0.33		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Bit Replacement		2		Concrete Reconstruct		3		HMA	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20 Year HMA				6'X6' ≥5.5" Thickness				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Urban				Design Life = 20 Years				Urban			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thick				PCC				Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Bit. Replace	$ 663,641.45	$ 663,641.45	0	Concrete	$ 1,382,110.93	$ 1,382,110.93	0	HMA	$ 1,168,317.22	$ 1,168,317.22
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,086.79	8			$ -	8	Crack Treatment	$ 1,232.00	$ 1,086.79
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12	Seal	$ 15,097.99	$ 12,508.95	12			$ -	12	Seal	$ 15,097.99	$ 12,508.95
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Mill 3.0"	$ 218,809.82	$ 159,919.95	20	1st CPR	$ 351,076.00	$ 256,588.37	20	ML Mill 3.0"	$ 218,809.82	$ 159,919.95
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,718.11	23			$ -	23	Crack Treatment	$ 2,464.00	$ 1,718.11
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 9,615.45	$ 6,297.20	27			$ -	27	Seal	$ 9,615.45	$ 6,297.20
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2/17 Remaining Life	$ (25,742.33)	$ (14,871.70)	35	0/0 Remaining	$ -	$ -	35	2/17 Remaining Life	$ (25,742.33)	$ (14,871.70)
Net Present Cost for Segment			$ 273,999.25	Net Present Cost for Segment			$ 540,770.77	Net Present Cost for Segment			$ 440,542.25
Maintenance - Net Present Cost for Segment			$ 54,997.57	Maintenance - Net Present Cost for Segment			$ 84,674.16	Maintenance - Net Present Cost for Segment			$ 54,997.57
Equivalent Annual Cost			10,251.79	Equivalent Annual Cost			20,233.14	Equivalent Annual Cost			16,483.06

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	35		40	2	35		28	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
28	2	Type SP 12.5 Wearing Course Mixture (3,B)		20	2			28	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,B)		0	N			0	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				Y	6			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1.5				12	0			1.5			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	5				6			20	5		

35 Year Analysis: Project # 2609-39 - Hwy 55, Segments 2 and 3

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
2	0.2			2	0.2			2	0.2		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Mill & Fill		2		Concrete		3		HMA	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20 Year HMA				6'X6" ≥5.5" Thickness				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Urban				Design Life = 20 Years				Urban			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thin				PCC				Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Mill & Fill	$ 337,639.75	$ 337,639.75	0	Concrete	$ 1,560,380.95	$ 1,560,380.95	0	HMA	$ 872,102.11	$ 872,102.11
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8	Crack Treatment	$ 1,760.00	$ 1,552.56	8			$ -	8	Crack Treatment	$ 1,760.00	$ 1,552.56
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12	Seal	$ 19,875.10	$ 16,466.86	12			$ -	12	Seal	$ 19,875.10	$ 16,466.86
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Mill 3.0"	$ 306,675.79	$ 224,137.91	20	1st CPR	$ 351,076.00	$ 256,588.37	20	ML Mill 3.0"	$ 260,246.07	$ 190,204.16
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 3,520.00	$ 2,454.45	23			$ -	23	Crack Treatment	$ 3,520.00	$ 2,454.45
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 12,423.91	$ 8,136.48	27			$ -	27	Seal	$ 12,423.91	$ 8,136.48
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2/17 Remaining Life	$ (36,079.50)	$ (20,843.63)	35	0/0 Remaining	$ -	$ -	35	2/17 Remaining Life	$ (30,617.18)	$ (17,687.97)
Net Present Cost for Segment			$ 113,908.88	Net Present Cost for Segment			$ 363,393.86	Net Present Cost for Segment			$ 214,645.73
Maintenance - Net Present Cost for Segment			$ 46,380.93	Maintenance - Net Present Cost for Segment			$ 51,317.67	Maintenance - Net Present Cost for Segment			$ 40,225.31
Equivalent Annual Cost			4,261.94	Equivalent Annual Cost			13,596.52	Equivalent Annual Cost			8,031.05
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
40	2	35		40	2	35		40	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,B)		20	2			20	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N	Type SP 12.5 Wearing Course Mixture (3,B)		0	N			0	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				Y	6			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1.5				12	0			1.5			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	3				6			20	5		

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
3	0.12			3	0.12			3	0.12		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Mill & Fill		2		Concrete		3		HMA	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20 Year HMA				6'X6" ≥5.5" Thickness				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Urban				Design Life = 20 Years				Urban			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thin				PCC				Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Mill & Fill	$ 337,639.75	$ 337,639.75	0	Concrete	$ 1,560,380.95	$ 1,560,380.95	0	HMA	$ 1,331,316.26	$ 1,331,316.26
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8	Crack Treatment	$ 1,760.00	$ 1,552.56	8			$ -	8	Crack Treatment	$ 1,760.00	$ 1,552.56
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12	Seal	$ 19,875.10	$ 16,466.86	12			$ -	12	Seal	$ 19,875.10	$ 16,466.86
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Mill 3.0"	$ 306,675.79	$ 224,137.91	20	1st CPR	$ 351,076.00	$ 256,588.37	20	ML Mill 3.0"	$ 260,246.07	$ 190,204.16
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 3,520.00	$ 2,454.45	23			$ -	23	Crack Treatment	$ 3,520.00	$ 2,454.45
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 12,423.91	$ 8,136.48	27			$ -	27	Seal	$ 12,423.91	$ 8,136.48
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2/17 Remaining Life	$ (36,079.50)	$ (20,843.63)	35	0/0 Remaining	$ -	$ -	35	2/17 Remaining Life	$ (30,617.18)	$ (17,687.97)
Net Present Cost for Segment			$ 68,345.33	Net Present Cost for Segment			$ 218,036.32	Net Present Cost for Segment			$ 183,893.14
Maintenance - Net Present Cost for Segment			$ 27,828.56	Maintenance - Net Present Cost for Segment			$ 30,790.60	Maintenance - Net Present Cost for Segment			$ 24,135.18
Equivalent Annual Cost			2,557.17	Equivalent Annual Cost			8,157.91	Equivalent Annual Cost			6,880.43
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
40	2	35		40	2	35		40	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,B)		20	2			20	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (3,B)		0	N			0	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				Y	6			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1.5				12	0			1.5			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	3				6			20	5		

35 Year Analysis

Project Number	Analysis Period
2706-237	35
Highway	Discount Rate
7	1.58%
Date	
Performed By	
Steve Adamsky	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	4" M&O		BCOA		CIR		3.9
Net Present Cost	$1,871,976.84		$3,035,045.51		$1,490,123.94		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,871,976.84		$3,035,045.51		$1,490,123.94	Total
% of Low Cost		125.6%		203.7%		100.0%	3.9

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	4" M&O		BCOA		CIR		3.9
Net Present Cost	$693,695.04		$1,756,590.15		$642,791.40		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$693,695.04		$1,756,590.15		$642,791.40	Total
Bid Adjustment Factor		$50,903.64		$1,113,798.75			3.9

SEGMENT	Length		
1	3.936		
ALTERNATE		Description	
1		4" M&O	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thin			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 299,360.21	$ 299,360.21
1			$ -
2			$ -
3	Crack Treatment	$ 2,534.40	$ 2,417.97
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5"	$ 310,860.43	$ 227,196.31
21			$ -
22			$ -
23	Crack Treatment	$ 2,534.40	$ 1,767.20
24			$ -
25			$ -
26			$ -
27	Seal	$ -	$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ (412,189.26)	$ (238,127.40)
Net Present Cost for Segment			$ 1,871,976.84
Maintenance - Net Present Cost for Segment			$ 693,695.04
Equivalent Annual Cost			70,040.72

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 12.5 Wearing Course Mixture (4,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (2, B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	4		

SEGMENT	Length		
1	3.936		
ALTERNATE		Description	
2		BCOA	
Pavement Type			
PCC			
Primary Category			
6'X6' ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Thick Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 324,810.81	$ 324,810.81
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 528,692.45	$ 386,401.62
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 461,962.31	$ 288,642.51
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (395,967.69)	$ (228,755.98)
Net Present Cost for Segment			$ 3,035,045.51
Maintenance - Net Present Cost for Segment			$ 1,756,590.15
Equivalent Annual Cost			113,557.38

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 12.5 Wearing Course Mixture (4,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (2, B)	
Sealed/UTBWC	ML Thickness		
N	4.5		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
20	2		

SEGMENT	Length		
1	3.936		
ALTERNATE		Description	
3		CIR	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thin			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 215,277.57	$ 215,277.57
1			$ -
2			$ -
3	Crack Treatment	$ 2,534.40	$ 2,417.97
4			$ -
5			$ -
6			$ -
7	Seal	$ 11,321.20	$ 10,144.60
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5"	$ 257,118.00	$ 187,917.97
21			$ -
22			$ -
23	Crack Treatment	$ 2,534.40	$ 1,767.20
24			$ -
25			$ -
26			$ -
27	Seal	$ 11,321.20	$ 7,414.31
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ (346,504.07)	$ (200,180.16)
Net Present Cost for Segment			$ 1,490,123.94
Maintenance - Net Present Cost for Segment			$ 642,791.40
Equivalent Annual Cost			55,753.55

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 12.5 Wearing Course Mixture (4,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (2, B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	2		

35 Year Analysis

Project Number	Analysis Period
2773-10	35
Highway	Discount Rate
55	1.32%
Date	
11/7/2016	
Performed By	
KR	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Beach Rd to Shady Oak Rd		Beach Rd to Shady Oak Rd		Beach Rd to Shady Oak Rd		1.0
Net Present Cost	$1,566,455.16		$2,244,085.82		$1,018,480.92		Miles
Segment #2	Oak Rd to Tracy Ave		Shady Oak Rd to Tracy Ave		Shady Oak Rd to Tracy Ave		2.54
Net Present Cost	$4,223,193.61		$5,803,105.14		$2,690,068.67		Miles
Segment #3	212		212		212		1.0
Net Present Cost	$1,662,674.65		$2,284,687.06		$1,059,082.16		Miles
Project Net Present Cost		$7,452,323.43		$10,331,878.02		$4,767,631.75	Total
% of Low Cost		156.3%		216.7%		100.0%	4.5

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	1.0			1	1.0			1	1.0		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Beach Rd to Shady Oak Rd		2		Beach Rd to Shady Oak Rd		3		Beach Rd to Shady Oak Rd	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20-year HMA				> 11' Joint Spacing				Overlay			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Rural			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				PCC				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,247,188.36	$ 1,247,188.36	0	Construction	$ 1,924,911.22	$ 1,924,911.22	0	Construction	$ 547,424.33	$ 547,424.33
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3		$ -	$ -	3		$ -	$ -	3	Crack Treatment	$ 5,496.83	$ 5,284.78
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7		$ -	$ -	7		$ -	$ -	7	Seal	$ -	$ -
8	Crack Treatment	$ 2,748.42	$ 2,474.69	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12	Seal	$ 8,904.19	$ 7,607.68	12		$ -	$ -	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15	Mill/Overlay	$ 393,036.36	$ 322,853.14
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18	Crack Treatment	$ 5,496.83	$ 4,341.09
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Mill/Overlay	$ 439,047.40	$ 337,759.67	20	1st CPR	$ 414,889.02	$ 319,174.60	20		$ -	$ -
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22	Seal	$ -	$ -
23	Crack Treatment	$ 5,496.83	$ 4,065.59	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27	Seal	$ -	$ -	27		$ -	$ -	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29	Mill/Overlay	$ 393,036.36	$ 268,702.97
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32		$ -	$ -	32		$ -	$ -	32	Crack Treatment	$ 5,496.83	$ 3,612.99
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (51,652.64)	$ (32,640.83)	35	Remaining Life	$ -	$ -	35	Remaining Life	$ (211,634.96)	$ (133,738.38)
Net Present Cost for Segment			$ 1,566,455.16	Net Present Cost for Segment			$ 2,244,085.82	Net Present Cost for Segment			$ 1,018,480.92
Maintenance - Net Present Cost for Segment			$ 319,266.80	Maintenance - Net Present Cost for Segment			$ 319,174.60	Maintenance - Net Present Cost for Segment			$ 471,056.59
Equivalent Annual Cost			56,177.31	Equivalent Annual Cost			80,478.97	Equivalent Annual Cost			36,525.47
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
48	4	35		48	4	35		48	4	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
28	4	12.5 WE (4,F)		28	4			28	4	12.5 WE (4,F)	
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
6	Yes	12.5 WE (3,C)		6	No			6	Yes	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No	8			No			
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				15				2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	6				8			15	4		

35 Year Analysis: Project # 2773-10 - Hwy ..., Segments 2 and 3

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
2	2.54			2	2.54			2	2.54		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Shady Oak Rd to Tracy Ave		2		Shady Oak Rd to Tracy Ave		3		Shady Oak Rd to Tracy Ave	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20-year HMA				> 11' Joint Spacing				Overlay			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Rural			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				PCC				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,412,255.93	$ 3,412,255.93	0	Construction	$ 4,992,401.65	$ 4,992,401.65	0	Construction	$ 1,493,584.96	$ 1,493,584.96
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3		$ -	$ -	3		$ -	$ -	3	Crack Treatment	$ 13,961.95	$ 13,423.34
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7		$ -	$ -	7		$ -	$ -	7	Seal	$ -	$ -
8	Crack Treatment	$ 6,980.98	$ 6,285.72	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12	Seal	$ 22,616.65	$ 19,323.51	12		$ -	$ -	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15	Mill/Overlay	$ 998,312.33	$ 820,046.95
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18	Crack Treatment	$ 13,961.95	$ 11,026.38
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Mill/Overlay	$ 1,115,180.40	$ 857,909.56	20	1st CPR	$ 1,053,818.12	$ 810,703.48	20		$ -	$ -
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22	Seal	$ -	$ -
23	Crack Treatment	$ 13,961.95	$ 10,326.59	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27	Seal	$ -	$ -	27		$ -	$ -	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29	Mill/Overlay	$ 998,312.33	$ 682,505.54
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32		$ -	$ -	32		$ -	$ -	32	Crack Treatment	$ 13,961.95	$ 9,176.99
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (131,197.69)	$ (82,907.70)	35	Remaining Life	$ -	$ -	35	Remaining Life	$ (537,552.79)	$ (339,695.49)
Net Present Cost for Segment			$ 4,223,193.61	Net Present Cost for Segment			$ 5,803,105.14	Net Present Cost for Segment			$ 2,690,068.67
Maintenance - Net Present Cost for Segment			$ 810,937.68	Maintenance - Net Present Cost for Segment			$ 810,703.48	Maintenance - Net Present Cost for Segment			$ 1,196,483.71
Equivalent Annual Cost			151,455.12	Equivalent Annual Cost			208,115.01	Equivalent Annual Cost			96,473.12
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
48	4	35		48	4	35		48	4	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
28	4	12.5 WE (4,F)		28	4			28	4	12.5 WE (4,F)	
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
6	Yes	12.5 WE (3,C)		6	No			6	Yes	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No	8			No			
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				15				2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	8				8			15	4		

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
3	1			3	1			3	1		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		212		2		212		3		212	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				HMA			
Primary Category				Primary Category				Primary Category			
20-year HMA				> 11' Joint Spacing				Overlay			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Rural			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				PCC				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,343,407.85	$ 1,343,407.85	0	Construction	$ 1,965,512.46	$ 1,965,512.46	0	Construction	$ 588,025.57	$ 588,025.57
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3		$ -	$ -	3		$ -	$ -	3	Crack Treatment	$ 5,496.83	$ 5,284.78
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7		$ -	$ -	7		$ -	$ -	7	Seal	$ -	$ -
8	Crack Treatment	$ 2,748.42	$ 2,474.69	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12	Seal	$ 8,904.19	$ 7,607.68	12		$ -	$ -	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15	Mill/Overlay	$ 393,036.36	$ 322,853.14
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18	Crack Treatment	$ 5,496.83	$ 4,341.09
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Mill/Overlay	$ 439,047.40	$ 337,759.67	20	1st CPR	$ 414,889.02	$ 319,174.60	20		$ -	$ -
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22	Seal	$ -	$ -
23	Crack Treatment	$ 5,496.83	$ 4,065.59	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27	Seal	$ -	$ -	27		$ -	$ -	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29	Mill/Overlay	$ 393,036.36	$ 268,702.97
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32		$ -	$ -	32		$ -	$ -	32	Crack Treatment	$ 5,496.83	$ 3,612.99
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (51,652.64)	$ (32,640.83)	35	Remaining Life	$ -	$ -	35	Remaining Life	$ (211,634.96)	$ (133,738.38)
Net Present Cost for Segment			$ 1,662,674.65	Net Present Cost for Segment			$ 2,284,687.06	Net Present Cost for Segment			$ 1,059,082.16
Maintenance - Net Present Cost for Segment			$ 319,266.80	Maintenance - Net Present Cost for Segment			$ 319,174.60	Maintenance - Net Present Cost for Segment			$ 471,056.59
Equivalent Annual Cost			59,628.00	Equivalent Annual Cost			81,935.04	Equivalent Annual Cost			37,981.55
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
48	4	35		48	4	35		48	4	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
28	4	12.5 WE (4,F)		28	4			28	4	12.5 WE (4,F)	
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
6	Yes	12.5 WE (3,C)		6	No			6	Yes	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No	8			No			
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				15				2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	8				8			15	4		

35 Year Analysis

Project Number	Analysis Period
2783-166	35
Highway	Discount Rate
I-35W	1.58%
Date	
6/24/2017	
Performed By	
TRC	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	15 Yr Bit Overlay		20 Yr Bit Reconstruct		20 Yr Conc Reconstruct		3.4
Net Present Cost	$8,823,456.29		$20,047,691.67		$22,520,030.10		Miles
Segment #2	15 Yr Bit M&O		20 Yr Bit Reconstruct		20 Yr Conc Reconstruct		1.2
Net Present Cost	$236.00		$7,730,972.42		$8,717,952.89		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$8,823,692.29		$27,778,664.09		$31,237,982.99	Total
% of Low Cost		100.0%		126.7%		265.4%	4.6

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	15 Yr Bit Overlay		20 Yr Bit Reconstruct		20 Yr Conc Reconstruct		3.4
Net Present Cost	$3,736,958.54		$2,557,085.39		$2,234,580.67		Miles
Segment #2	15 Yr Bit M&O		20 Yr Bit Reconstruct		20 Yr Conc Reconstruct		1.2
Net Present Cost	$1,491,695.15		$1,019,884.76		$887,846.85		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$5,228,653.69		$3,576,970.15		$3,122,427.52	Total
Bid Adjustment Factor		$2,106,226.17		$454,542.63			4.6

SEGMENT	Length		
1	3.421		
ALTERNATE		Description	
1		15 Yr Bit Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Bit Overlay	$ 1,486,845.29	$ 1,486,845.29
1			$ -
2			$ -
3	Crack Treatment	$ 8,870.40	$ 8,462.89
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 920,262.40	$ 727,425.55
16			$ -
17			$ -
18	Crack Treatment	$ 8,870.40	$ 6,689.53
19			$ -
20			$ -
21			$ -
22	Seal	$ -	$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 4.0"	$ 1,064,260.08	$ 675,475.69
30			$ -
31			$ -
32	Crack Treatment	$ 8,870.40	$ 5,371.31
33			$ -
34			$ -
35	Remaining Life	$ (573,063.12)	$ (331,066.44)
Net Present Cost for Segment			$ 8,823,456.29
Maintenance - Net Present Cost for Segment			$ 3,736,958.54
Equivalent Annual Cost			330,132.96

Total Lane Width	# of Lanes	Analysis Period	
84	7	35	
Total Shldr Width	# of Shldrs	ML Mix	
34	4	Type SP 12.5 Wearing Course Mixture (5,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
Y			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
15	7		

SEGMENT	Length		
1	3.421		
ALTERNATE		Description	
2		20 Yr Bit Reconstruct	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost	Pres. Cost/per Mile
0	Bit Reconstruct	$ 5,112,717.42	$ 5,112,717.42
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 4,435.20	$ 3,912.44
9			$ -
10			$ -
11			$ -
12	Seal	$ -	$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Mill 3.0"	$ 1,112,345.07	$ 812,971.58
21			$ -
22			$ -
23	Crack Treatment	$ 8,870.40	$ 6,185.21
24			$ -
25			$ -
26			$ -
27	Seal	$ -	$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (130,864.13)	$ (75,602.00)
Net Present Cost for Segment			$ 20,047,691.67
Maintenance - Net Present Cost for Segment			$ 2,557,085.39
Equivalent Annual Cost			750,091.97

Total Lane Width	# of Lanes	Analysis Period	
26	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	Y	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6.0		
ML Top Lift / joint spacing	# Dowels per Lane		
12	8		
Design Life	Shldr Thickness		
	1.5		

SEGMENT	Length		
1	3.421		
ALTERNATE		Description	
3		20 Yr Conc Reconstruct	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0	Conc Reconstruct	$ 5,929,684.14	$ 5,929,684.14
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 893,731.64	$ 653,195.17
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 22,520,030.10
Maintenance - Net Present Cost for Segment			$ 2,234,580.67
Equivalent Annual Cost			842,595.45

Total Lane Width	# of Lanes	Analysis Period	
26	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
18	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	2		

SEGMENT	Length		
2	1.19		
ALTERNATE		Description	
1		15 Yr Bit M&O	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Bit M&O	$ 1,221,795.98	$ 1,221,795.98
1			$ -
2			$ -
3	Crack Treatment	$ 10,137.60	$ 9,671.87
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 1,055,948.97	$ 834,679.61
16			$ -
17			$ -
18	Crack Treatment	$ 10,137.60	$ 7,645.17
19			$ -
20			$ -
21			$ -
22	Seal	$ -	$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 4.0"	$ 1,221,795.98	$ 775,462.22
30			$ -
31			$ -
32	Crack Treatment	$ 10,137.60	$ 6,138.64
33			$ -
34			$ -
35	Remaining Life	$ (657,890.14)	$ (380,072.18)
Net Present Cost for Segment			$ 2,945,632.37
Maintenance - Net Present Cost for Segment			$ 1,491,695.15
Equivalent Annual Cost			110,211.95

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4	Type SP 12.5 Wearing Course Mixture (5,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
15	7		

SEGMENT	Length		
2	1.19		
ALTERNATE		Description	
2		20 Yr Bit Reconstruct	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost	Pres. Cost/per Mile
0	Bit Reconstruct	$ 5,639,569.46	$ 5,639,569.46
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 5,068.80	$ 4,471.36
9			$ -
10			$ -
11			$ -
12	Seal	$ -	$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Mill 3.0"	$ 1,275,472.02	$ 932,194.99
21			$ -
22			$ -
23	Crack Treatment	$ 10,137.60	$ 7,068.81
24			$ -
25			$ -
26			$ -
27	Seal	$ -	$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (150,055.53)	$ (86,689.14)
Net Present Cost for Segment			$ 7,730,972.42
Maintenance - Net Present Cost for Segment			$ 1,019,884.76
Equivalent Annual Cost			289,257.26

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4	Type SP 12.5 Wearing Course Mixture (5,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
Y			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	7		

SEGMENT	Length		
3	1.19		
ALTERNATE		Description	
3		20 Yr Conc Reconstruct	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0	Conc Reconstruct	$ 6,579,921.04	$ 6,579,921.04
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 1,020,834.33	$ 746,089.79
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 8,717,952.89
Maintenance - Net Present Cost for Segment			$ 887,846.85
Equivalent Annual Cost			326,185.51

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N		
Sealed/UTBWC	ML Thickness		
N	9.5		
ML Top Lift / joint spacing	# Dowels per Lane		
15	11		
Design Life	Shldr Thickness		
	9.5		

50 Year Analysis

Project Number	Analysis Period
3108-70	50
Highway	Discount Rate
38	1.74%
Date	
2/25/2016	
Performed By	
KO	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	18" regrade HMA		18" Regrade - conc		18" Regrade - Conc		10.3
Net Present Cost	$ 6,804,716.36		$ 9,535,836.73		$ 8,447,151.95		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$6,804,716.36		$9,535,836.73		$8,447,151.95	Total
% of Low Cost		100.0%		140.1%		124.1%	10.3

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
18" regrade HMA	18" regrade HMA		18" Regrade - conc		18" Regrade - Conc		10.3
Net Present Cost	$1,959,762.64		$3,233,651.89		$1,855,482.31		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,959,762.64		$3,233,651.89		$1,855,482.31	Total
Bid Adjustment Factor		$104,280.33		$1,378,169.58			10.3

SEGMENT	Length		
1	10.28		
ALTERNATE		Description	
1		18" regrade HMA	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 471,299.00	$ 471,299.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 919.88
9			$ -
10			$ -
11			$ -
12	Seal	$ 10,856.01	$ 8,826.11
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 149,876.75	$ 106,145.02
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,420.31
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,288.68	$ 4,574.80
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35			$ -
36			$ -
37	ML Overlay 3.5"	$ 149,876.75	$ 79,166.26
38			$ -
39			$ -
40	Crack Treatment	$ 2,112.00	$ 1,059.31
41			$ -
42			$ -
43			$ -
44	Chip Seal	$ 7,288.68	$ 3,412.03
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	4/17 Remaining Life	$ (35,265.12)	$ (14,885.34)
Net Present Cost for Segment			$ 6,804,716.36
Maintenance - Net Present Cost for Segment			$ 1,959,762.64
Equivalent Annual Cost			204,882.61
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
2	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	5		

SEGMENT	Length		
1	10.28		
ALTERNATE		Description	
2		18" Regrade - conc	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 613,053.00	$ 613,053.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 194,652.48	$ 137,855.87
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remove and Replace	$ 400,478.74	$ 218,962.03
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	5/20 Remaining	$ (100,119.69)	$ (42,260.32)
Net Present Cost for Segment			$ 6,804,716.36
Maintenance - Net Present Cost for Segment			$ 1,959,762.64
Equivalent Annual Cost			204,882.61
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
2	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N		
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
	6		

SEGMENT	Length		
1	10.28		
ALTERNATE		Description	
3		18" Regrade - conc	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life 35 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 641,213.00	$ 641,213.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 134,568.72	$ 95,303.63
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2nd CPR	$ 155,812.80	$ 85,190.75
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 8,447,151.95
Maintenance - Net Present Cost for Segment			$ 1,855,482.31
Equivalent Annual Cost			254,334.57
Total Lane Width	# of Lanes	Analysis Period	
24	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
2	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N		
Sealed/UTBWC	ML Thickness		
Y	6.5		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
35	6.5		

35 Year Analysis

Project Number	Analysis Period
3109-41	35
Highway	Discount Rate
46	1.74%
Date	
3/1/2016	
Performed By	
KO	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" mill & 3" overlay		5.0" BCOA		Reclaim		6.6
Net Present Cost	$1,417,789.58		$5,487,879.26		$2,956,546.97		Miles
Segment #2	Reclaim		5" BCOA		Reclaim		3.6
Net Present Cost	$1,688,080.79		$2,998,058.22		$1,686,204.05		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,105,870.37		$8,485,937.48		$4,642,751.02	Total
% of Low Cost		100.0%		273.2%		149.5%	10.2

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" mill & 3" overlay		5.0" BCOA		Reclaim		6.6
Net Present Cost	$415,223.18		$2,391,740.06		$858,764.36		Miles
Segment #2	Reclaim		5" BCOA		Reclaim		3.6
Net Present Cost	$543,835.73		$1,309,255.02		$541,958.99		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$959,058.91		$3,700,995.08		$1,400,723.35	Total
Bid Adjustment Factor				$2,741,936.17		$441,664.44	10.2

SEGMENT	Length		
1	6.6		
ALTERNATE		Description	
1		3" mill & 3" overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL > 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 151,904.00	$ 151,904.00
1			$ -
2			$ -
3	Crack Treatment	$ 2,464.00	$ 2,339.73
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,544.34	$ 7,572.45
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17	ML Overlay 3.5"	$ 56,016.97	$ 41,779.20
18			$ -
19			$ -
20	Crack Treatment	$ 2,464.00	$ 1,745.04
21			$ -
22			$ -
23			$ -
24	Seal	$ 8,544.34	$ 5,647.77
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ 7,002.12	$ 3,828.41
Net Present Cost for Segment			$ 1,417,789.58
Maintenance - Net Present Cost for Segment			$ 415,223.18
Equivalent Annual Cost			54,428.19
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
17	0		

SEGMENT	Length		
1	6.6		
ALTERNATE		Description	
2		5.0" BCOA	
Pavement Type			
PCC			
Primary Category			
6"X6" ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 469,112.00	$ 469,112.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 444,414.67	$ 314,741.29
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 374,088.91	$ 222,957.89
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (320,647.64)	$ (175,314.32)
Net Present Cost for Segment			$ 5,487,879.26
Maintenance - Net Present Cost for Segment			$ 2,391,740.06
Equivalent Annual Cost			210,676.76
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N		
Sealed/UTBWC	ML Thickness		
Y	5		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
20	5.0		

SEGMENT	Length		
1	6.6		
ALTERNATE		Description	
3		Reclaim	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 317,845.85	$ 317,845.85
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,073.19
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,706.22	$ 10,330.37
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 173,464.41	$ 122,850.16
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,657.03
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,544.34	$ 5,362.92
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (20,407.58)	$ (11,157.86)
Net Present Cost for Segment			$ 2,956,546.97
Maintenance - Net Present Cost for Segment			$ 858,764.36
Equivalent Annual Cost			113,500.26
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
4	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	5		

SEGMENT	Length		
2	3.6		
ALTERNATE		Description	
1		Reclaim	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 317,845.85	$ 317,845.85
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,073.19
9			$ -
10			$ -
11			$ -
12	Seal	$ 13,107.41	$ 10,655.53
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 205,190.79	$ 145,319.26
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,657.03
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,855.26	$ 5,558.07
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (24,140.09)	$ (13,198.61)
Net Present Cost for Segment			$ 1,688,080.79
Maintenance - Net Present Cost for Segment			$ 543,835.73
Equivalent Annual Cost			64,804.52
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
4	N		
Sealed/UTBWC	ML Thickness		
N	5		
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1		

SEGMENT	Length		
2	3.6		
ALTERNATE		Description	
2		5" BCOA	
Pavement Type			
PCC			
Primary Category			
6"X6" ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 469,112.00	$ 469,112.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 444,414.67	$ 314,741.29
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 384,273.45	$ 229,027.89
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (329,377.24)	$ (180,087.23)
Net Present Cost for Segment			$ 2,998,058.22
Maintenance - Net Present Cost for Segment			$ 1,309,255.02
Equivalent Annual Cost			115,093.86
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
4	Y		
Sealed/UTBWC	ML Thickness		
Y	5		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
20	5		

SEGMENT	Length		
3	3.6		
ALTERNATE		Description	
3		Reclaim	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 317,845.85	$ 317,845.85
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,073.19
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,706.22	$ 10,330.37
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 205,190.79	$ 145,319.26
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,657.03
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,544.34	$ 5,362.92
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (24,140.09)	$ (13,198.61)
Net Present Cost for Segment			$ 1,686,204.05
Maintenance - Net Present Cost for Segment			$ 541,958.99
Equivalent Annual Cost			64,732.48
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
4	N		
Sealed/UTBWC	ML Thickness		
N	5		
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	5		

35 Year Analysis: Project # 3111-30

35 Year Analysis

Project Number	Analysis Period
3111-30	35
Highway	Discount Rate
65	1.74%
Date	
5/1/2016	
Performed By	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill and Overlay						24.8
Net Present Cost	$8,944,583.34						Miles
Segment #2	0		HMA 20 Yr		PCC 20 Yr		25.9
Net Present Cost	0		21181052.43		11923512.27		Miles
Segment #3	Subcut Areas		0		0		1
Net Present Cost	857562.3317		0		0		Miles
Project Net Present Cost		$9,802,145.68		$21,181,052.43		$11,923,512.27	Total
% of Low Cost		100.0%		216.1%		121.6%	51.7

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill and Overlay						25.9
Net Present Cost	$4,686,609.27						Miles
Segment #2	0		HMA 20 Yr		PCC 20 Yr		0
Net Present Cost	0		$3,422,046.80		$8,091,655.31		Miles
Segment #3	Subcut Areas		0		0		0
Net Present Cost	$138,549.23		0		0		Miles
Project Net Present Cost		$4,825,158.50		$3,422,046.80		$8,091,655.31	Total
Bid Adjustment Factor		$1,403,111.70				$4,669,608.51	25.9

SEGMENT	Length		
1	24.813		
ALTERNATE		Description	
1		Mill and overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Mill and Overlay	$ 171,602.55	$ 171,602.55
1			$ -
2			$ -
3	Crack Treatment	$ 2,112.00	$ 2,005.48
4			$ -
5			$ -
6			$ -
7	Seal	$ 7,740.04	$ 6,859.64
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 158,630.16	$ 122,464.37
16			$ -
17			$ -
18	Crack Treatment	$ 2,112.00	$ 1,548.26
19			$ -
20			$ -
21			$ -
22	Seal	$ 7,740.04	$ 5,295.72
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 158,630.16	$ 96,189.02
30			$ -
31			$ -
32	Crack Treatment	$ 2,112.00	$ 1,216.07
33			$ -
34			$ -
35	Remaining Life	$ (85,416.24)	$ (46,701.39)
Net Present Cost for Segment			$ 8,944,583.34
Maintenance - Net Present Cost for Segment			$ 4,686,609.27
Equivalent Annual Cost			343,377.79

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
6	2	Type SP 9.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	N	Type SP 9.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness		
N	4		
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
15	4		

SEGMENT	Length		
1	24.813		
ALTERNATE		Description	
2			
Pavement Type			
Primary Category			
Secondary Category			
ShoulderCategory			

Year	Activity	Cost	Pres. Cost/per Mile
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost			

Total Lane Width	# of Lanes	Analysis Period	
Total Shldr Width	# of Shldrs	ML Mix	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
Sealed/UTBWC	ML Thickness		
ML Top Lift / joint spacing	# Dowels per Lane		
Design Life	Shldr Thickness		

SEGMENT	Length		
1	24.813		
ALTERNATE		Description	
3			
Pavement Type			
Primary Category			
Secondary Category			
ShoulderCategory			

Year	Activity	Cost	Pres. Cost/per Mile
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost			

Total Lane Width	# of Lanes	Analysis Period	
Total Shldr Width	# of Shldrs	ML Mix	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
Sealed/UTBWC	ML Thickness		
ML Top Lift / joint spacing	# Dowels per Lane		
Design Life	Shldr Thickness		

35 Year Analysis: Project 3111-30, Segments 2 and 3

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
2	25.86			2	25.86			2	25.86		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1				2		HMA 20 Yr		3		PCC 20 Yr	
Pavement Type				Pavement Type				Pavement Type			
				HMA				PCC			
Primary Category				Primary Category				Primary Category			
				20 Year HMA				6'X6' ≤ 5.0" Thickness			
Secondary Category				Secondary Category				Secondary Category			
				Rural				Design Life = 20 Years			
Shoulder Category				ShoulderCategory				ShoulderCategory			
				Bituminous				PCC			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0				0	HMA 20 Yr	$ 686,736.49	$ 686,736.49	0	PCC 20 Yr	$ 148,176.99	$ 148,176.99
1				1			$ -	1			$ -
2				2			$ -	2			$ -
3				3			$ -	3			$ -
4				4			$ -	4			$ -
5				5			$ -	5			$ -
6				6			$ -	6			$ -
7				7			$ -	7			$ -
8				8	Crack Treatment	$ 1,056.00	$ 919.88	8			$ -
9				9			$ -	9			$ -
10				10			$ -	10			$ -
11				11			$ -	11			$ -
12				12	Seal	$ 11,438.41	$ 9,299.61	12			$ -
13				13			$ -	13			$ -
14				14			$ -	14			$ -
15				15			$ -	15			$ -
16				16			$ -	16			$ -
17				17			$ -	17			$ -
18				18			$ -	18			$ -
19				19			$ -	19			$ -
20				20	ML Overlay 4	$ 179,893.33	$ 127,403.21	20	1st CPR	$ 383,812.00	$ 271,821.55
21				21			$ -	21			$ -
22				22			$ -	22			$ -
23				23	Crack Treatment	$ 2,112.00	$ 1,420.31	23			$ -
24				24			$ -	24			$ -
25				25			$ -	25			$ -
26				26			$ -	26			$ -
27				27	Seal	$ 7,740.04	$ 4,858.10	27			$ -
28				28			$ -	28			$ -
29				29			$ -	29			$ -
30				30			$ -	30	Remove and Replace	$ 322,559.37	$ 192,246.16
31				31			$ -	31			$ -
32				32			$ -	32			$ -
33				33			$ -	33			$ -
34				34			$ -	34			$ -
35				35	2/17 Remaining Life	$ (21,163.92)	$ (11,571.39)	35	30/35 Remaining	$ (276,479.46)	$ (151,165.33)
Net Present Cost for Segment				Net Present Cost for Segment			$ 21,181,052.43	Net Present Cost for Segment			$ 11,923,512.27
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			$ 3,422,046.80	Maintenance - Net Present Cost for Segment			$ 8,091,655.31
Equivalent Annual Cost				Equivalent Annual Cost			813,129.33	Equivalent Annual Cost			457,737.29
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
				24	2	35		24	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
				6	2	Type 9.5 SP Wearing Course Mixture (3,B)		6	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
				1.5	N	Type 9.5 SP Wearing Course Mixture (3,B)		1.5	Y		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
				N	4			N	4.5		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
				2				6	0		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
				20	4				4.5		

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
3	1.047			3	1.047			3	1.047		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Subcut Areas		2				3			
Pavement Type				Pavement Type				Pavement Type			
HMA											
Primary Category				Primary Category				Primary Category			
20 Year HMA											
Secondary Category				Secondary Category				Secondary Category			
Rural											
ShoulderCategory				Shoulder Category				Shoulder Category			
Bituminous											

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Subcut Areas	$ 686,736.49	$ 686,736.49	0				0			
1			$ -	1				1			
2			$ -	2				2			
3			$ -	3				3			
4			$ -	4				4			
5			$ -	5				5			
6			$ -	6				6			
7			$ -	7				7			
8	Crack Treatment	$ 1,056.00	$ 919.88	8				8			
9			$ -	9				9			
10			$ -	10				10			
11			$ -	11				11			
12	Seal	$ 11,438.41	$ 9,299.61	12				12			
13			$ -	13				13			
14			$ -	14				14			
15			$ -	15				15			
16			$ -	16				16			
17			$ -	17				17			
18			$ -	18				18			
19			$ -	19				19			
20	ML Overlay 4	$ 179,893.33	$ 127,403.21	20				20			
21			$ -	21				21			
22			$ -	22				22			
23	Crack Treatment	$ 2,112.00	$ 1,420.31	23				23			
24			$ -	24				24			
25			$ -	25				25			
26			$ -	26				26			
27	Seal	$ 7,740.04	$ 4,858.10	27				27			
28			$ -	28				28			
29			$ -	29				29			
30			$ -	30				30			
31			$ -	31				31			
32			$ -	32				32			
33			$ -	33				33			
34			$ -	34				34			
35	2/17 Remaining Life	$ (21,163.92)	$ (11,571.39)	35				35			
Net Present Cost for Segment			$ 857,562.33	Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment			$ 138,549.23	Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost			32,921.36	Equivalent Annual Cost				Equivalent Annual Cost			
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35									
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
6	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)									
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
1.5	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)									
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N	4										
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2											
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	4										

35 Year Analysis

Project Number	Analysis Period
3302-16	35
Highway	Discount Rate
TH 23	1.58%
Date	
1/7/2017	
Performed By	
Samuel Nigon	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill & Overlay		Mill, CIR, Overlay - Full Width		6.0" UBOL, HMA SHLD		9.9
Net Present Cost	$4,324,632.64		$3,947,334.40		$6,699,776.69		Miles
Segment #2	Mill & Fill		Mill, CIR, Overlay - Full Width		6.0" UBOL, HMA SHLD		0.5
Net Present Cost	$228,589.36		$167,493.29		$321,651.76		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,553,222.00		$4,114,827.69		$7,021,428.45	Total
% of Low Cost		110.7%		100.0%		170.6%	10.4

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill & Overlay		Mill, CIR, Overlay - Full Width		6.0" UBOL, HMA SHLD		9.9
Net Present Cost	$2,703,140.62		$1,447,151.65		$1,938,953.85		Miles
Segment #2	Mill & Fill		Mill, CIR, Overlay - Full Width		6.0" UBOL, HMA SHLD		0.5
Net Present Cost	$134,613.14		$72,066.40		$96,557.56		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,837,753.76		$1,519,218.05		$2,035,511.41	Total
Bid Adjustment Factor		$1,318,535.71				$516,293.36	10.4

SEGMENT	Length		
1	9.94		
ALTERNATE		Description	
		Mill & Overlay	
Pavement Type			
HMA			
Primary Category		Notes:	
Overlay, DL =13 to 17 years		2.0" Mill & Fill - Mainline	
Secondary Category		1.5" Overlay - Full Width	
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 163,127.97	$ 163,127.97
1			$ -
2			$ -
3	Crack Treatment	$ 2,112.00	$ 2,014.97
4			$ -
5			$ -
6			$ -
7	Seal	$ 7,999.46	$ 7,168.08
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13	ML Overlay 3.5"	$ 173,098.60	$ 141,184.44
14			$ -
15			$ -
16	Crack Treatment	$ 2,112.00	$ 1,643.47
17			$ -
18			$ -
19			$ -
20	Seal	$ 7,999.46	$ 5,846.50
21			$ -
22			$ -
23			$ -
24			$ -
25	ML Overlay 3.5"	$ 173,098.60	$ 116,973.73
26			$ -
27			$ -
28	Crack Treatment	$ 2,112.00	$ 1,361.65
29			$ -
30			$ -
31			$ -
32	Seal	$ 7,999.46	$ 4,843.93
33			$ -
34			$ -
35	Remaining Life	$ (15,736.24)	$ (9,091.04)
Net Present Cost for Segment			$ 4,324,632.64
Maintenance - Net Present Cost for Segment			$ 2,703,140.62
Equivalent Annual Cost			161,807.77

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	Type SP 9.5 Wearing Course Mixture (4,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
13	1.5		

SEGMENT	Length		
2	9.94		
ALTERNATE		Description	
		Mill, CIR, Overlay - Full Width	
Pavement Type			
HMA			
Primary Category		Notes:	
20 Year HMA		1.5" Mill - Full Width	
Secondary Category		3.0" CIR - Full Width	
Rural		2.0" HMA Overlay - Full Width	
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 251,527.44	$ 251,527.44
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,550.74	$ 10,398.51
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 4	$ 192,408.80	$ 140,624.42
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,999.46	$ 5,238.88
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (22,636.33)	$ (13,077.32)
Net Present Cost for Segment			$ 3,947,334.40
Maintenance - Net Present Cost for Segment			$ 1,447,151.65
Equivalent Annual Cost			147,691.01

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	Type SP 9.5 Wearing Course Mixture (4,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	2		

SEGMENT	Length		
3	9.94		
ALTERNATE		Description	
		6.0" UBOL, HMA SHLD	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		1.5" Mill - Full Width	
Secondary Category		6.0" UBOL - 28' Width mainline	
Design Life = 20 Years		6.0" HMA - 12' Width Shld	
ShoulderCategory			
Thick Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 478,956.02	$ 478,956.02
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 266,897.96	$ 195,065.78
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 6,699,776.69
Maintenance - Net Present Cost for Segment			$ 1,938,953.85
Equivalent Annual Cost			250,674.68

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
12	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	6		
Design Life	Shldr Thickness		
	6		

SEGMENT	Length		
2	0.495		
ALTERNATE		Description	
		Mill & Fill	
Pavement Type			
HMA			
Primary Category		Notes:	
Overlay, DL =13 to 17 years		3.0" Mill & Fill - Full Width	
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 189,850.95	$ 189,850.95
1			$ -
2			$ -
3	Crack Treatment	$ 2,112.00	$ 2,014.97
4			$ -
5			$ -
6			$ -
7	Seal	$ 7,999.46	$ 7,168.08
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13	ML Overlay 3.5"	$ 173,098.60	$ 141,184.44
14			$ -
15			$ -
16	Crack Treatment	$ 2,112.00	$ 1,643.47
17			$ -
18			$ -
19			$ -
20	Seal	$ 7,999.46	$ 5,846.50
21			$ -
22			$ -
23			$ -
24			$ -
25	ML Overlay 3.5"	$ 173,098.60	$ 116,973.73
26			$ -
27			$ -
28	Crack Treatment	$ 2,112.00	$ 1,361.65
29			$ -
30			$ -
31			$ -
32	Seal	$ 7,999.46	$ 4,843.93
33			$ -
34			$ -
35	Remaining Life	$ (15,736.24)	$ (9,091.04)
Net Present Cost for Segment			$ 228,589.36
Maintenance - Net Present Cost for Segment			$ 134,613.14
Equivalent Annual Cost			8,552.76

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	Type SP 9.5 Wearing Course Mixture (4,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
13	1.5		

SEGMENT	Length		
2	0.495		
ALTERNATE		Description	
		Mill, CIR, Overlay - Full Width	
Pavement Type			
HMA			
Primary Category		Notes:	
20 Year HMA		1.5" Mill - Full Width	
Secondary Category		3.0" CIR - Full Width	
Rural		2.0" HMA Overlay - Full Width	
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 192,781.58	$ 192,781.58
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,550.74	$ 10,398.51
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 4	$ 192,408.80	$ 140,624.42
21			$ -
22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,999.46	$ 5,238.88
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (22,636.33)	$ (13,077.32)
Net Present Cost for Segment			$ 167,493.29
Maintenance - Net Present Cost for Segment			$ 72,066.40
Equivalent Annual Cost			6,266.82

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	Type SP 9.5 Wearing Course Mixture (4,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	3.5		

SEGMENT	Length		
3	0.495		
ALTERNATE		Description	
		6.0" UBOL, HMA SHLD	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		1.5" Mill - Full Width	
Secondary Category		6.0" UBOL - 28' Width mainline	
Design Life = 20 Years		6.0" HMA - 12' Width Shld	
ShoulderCategory			
Thick Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 454,735.76	$ 454,735.76
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 266,897.96	$ 195,065.78
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 321,651.76
Maintenance - Net Present Cost for Segment			$ 96,557.56
Equivalent Annual Cost			12,034.72

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
12	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 9.5 Wearing Course Mixture (4,B)	
Sealed/UTBWC	ML Thickness		
N	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	6		
Design Life	Shldr Thickness		
	6		

35 Year Analysis

Project Number	Analysis Period
3603-14	35
Highway	Discount Rate
6	1.32%
Date	
8/16/2018	
Performed By	
Thorson	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" milll, 4" overlay		20 year HMA - 1' wide agg shoulder		new concrete		5.3
Net Present Cost	$1,779,534.22		$3,034,776.03		$4,603,372.40		Miles
Segment #2	2" mill, 3" overlay, 1.5 ' agg shoulders		20 year HMA - 1.5 ' wide agg shoulder		new concrete		13.2
Net Present Cost	$4,054,535.89		$7,767,607.69		$12,708,931.91		Miles
Segment #3	2" mill, 3" overlay, 1.0 ' agg shoulders		20 year HMA - 1' agg shoulders		new concrete		5.5
Net Present Cost	$1,678,378.16		$3,179,289.13		$5,246,874.46		Miles
Project Net Present Cost		$7,512,448.28		$13,981,672.86		$22,559,178.77	Total
% of Low Cost		100.0%		186.1%		300.3%	24.0

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	5.25			1	5.25			1	5.25		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		2" milll, 4" overlay		2		20 year HMA - 1' wide agg shoulder		3		new concrete	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				20-year HMA				6'x6', 5.5 in. or Thicker			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Bituminous				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 781,209.20	$ 781,209.20	0	Construction	$ 2,324,713.52	$ 2,324,713.52	0	Construction	$ 4,577,129.82	$ 4,577,129.82
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 11,117.57	$ 10,688.68	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 32,386.82	$ 29,546.22	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8	Crack Treatment	$ 5,558.78	$ 5,005.16	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12	Seal	$ 54,828.93	$ 46,845.47	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15	Mill/Overlay	$ 787,872.95	$ 647,185.04	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18	Crack Treatment	$ 11,117.57	$ 8,780.04	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20		$ -	$ -	20	Mill/Overlay	$ 902,587.61	$ 694,361.68	20	1st CPR	$ 34,112.23	$ 26,242.58
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22	Seal	$ 32,386.82	$ 24,270.25	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23	Crack Treatment	$ 11,117.57	$ 8,222.82	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27	Seal	$ 32,386.82	$ 22,729.94	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29	Mill/Overlay	$ 787,872.95	$ 538,636.69	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Crack Treatment	$ 11,117.57	$ 7,307.42	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (424,239.28)	$ (268,089.34)	35	Remaining Life	$ (106,186.78)	$ (67,102.56)	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 1,779,534.22	Net Present Cost for Segment			$ 3,034,776.03	Net Present Cost for Segment			$ 4,603,372.40
Maintenance - Net Present Cost for Segment			$ 998,325.02	Maintenance - Net Present Cost for Segment			$ 710,062.51	Maintenance - Net Present Cost for Segment			$ 26,242.58
Equivalent Annual Cost			63,818.90	Equivalent Annual Cost			108,835.26	Equivalent Annual Cost			165,089.36
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		24	2	35		26	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
2	2	9.5 WE (3,B)		2	2	9.5 WE (3,B)		0			
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
2	No	9.5 WE (3,B)		2	No	9.5 WE (3,B)		2	No		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				2				6			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	4			20	5						

35 Year Analysis: Project 3603-14 - Hwy 6, Segments 2 and 3

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
2	13.2			2	13.2			2	13.2		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		2" mill, 3" overlay, 1.5 ' agg shoulders		2		20 year HMA - 1.5 ' wide agg shoulder		3		new concrete	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				20-year HMA				6'x6', 5.5 in. or Thicker			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Bituminous				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,534,734.42	$ 1,534,734.42	0	Construction	$ 5,976,504.32	$ 5,976,504.32	0	Construction	$ 11,624,645.32	$ 11,624,645.32
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 27,952.74	$ 26,874.41	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 81,429.71	$ 74,287.65	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8	Crack Treatment	$ 13,976.37	$ 12,584.41	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12	Seal	$ 137,855.59	$ 117,782.89	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15	Mill/Overlay	$ 1,989,288.44	$ 1,634,067.69	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18	Crack Treatment	$ 27,952.74	$ 22,075.53	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20		$ -	$ -	20	Mill/Overlay	$ 2,277,713.79	$ 1,752,247.83	20	1st CPR	$ 1,409,443.62	$ 1,084,286.59
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22	Seal	$ 81,429.71	$ 61,022.35	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23	Crack Treatment	$ 27,952.74	$ 20,674.51	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27	Seal	$ 81,429.71	$ 57,149.57	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29	Mill/Overlay	$ 1,989,288.44	$ 1,359,995.61	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Crack Treatment	$ 27,952.74	$ 18,372.94	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (1,071,155.31)	$ (676,894.69)	35	Remaining Life	$ (267,966.33)	$ (169,335.84)	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 4,054,535.89	Net Present Cost for Segment			$ 7,767,607.69	Net Present Cost for Segment			$ 12,708,931.91
Maintenance - Net Present Cost for Segment			$ 2,519,801.48	Maintenance - Net Present Cost for Segment			$ 1,791,103.37	Maintenance - Net Present Cost for Segment			$ 1,084,286.59
Equivalent Annual Cost			145,406.60	Equivalent Annual Cost			278,567.38	Equivalent Annual Cost			455,776.60
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		24	2	35		26	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
2	2	9.5 WE (3.B)		2	2	9.5 WE (3.B)					
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	9.5 WE (3.B)		3	No	9.5 WE (3.B)		3	No		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				2				6			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	3			20	5						

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
3	5.5			3	5.5			3	5.5		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		2" mill, 3" overlay, 1.0 ' agg shoulders		2		20 year HMA - 1' agg shoulders		3		new concrete	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				20-year HMA				6'x6', 5.5 in. or Thicker			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Bituminous				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 632,513.83	$ 632,513.83	0	Construction	$ 2,435,414.16	$ 2,435,414.16	0	Construction	$ 4,795,088.39	$ 4,795,088.39
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 11,646.98	$ 11,197.67	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 33,929.05	$ 30,953.19	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8	Crack Treatment	$ 5,823.49	$ 5,243.51	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12	Seal	$ 57,439.83	$ 49,076.20	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15	Mill/Overlay	$ 825,390.73	$ 678,003.40	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18	Crack Treatment	$ 11,646.98	$ 9,198.14	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20		$ -	$ -	20	Mill/Overlay	$ 945,567.91	$ 727,426.48	20	1st CPR	$ 587,268.18	$ 451,786.08
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22	Seal	$ 33,929.05	$ 25,425.98	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23	Crack Treatment	$ 11,646.98	$ 8,614.38	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27	Seal	$ 33,929.05	$ 23,812.32	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29	Mill/Overlay	$ 825,390.73	$ 564,286.08	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Crack Treatment	$ 11,646.98	$ 7,655.39	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (444,441.16)	$ (280,855.50)	35	Remaining Life	$ (111,243.28)	$ (70,297.92)	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 1,678,378.16	Net Present Cost for Segment			$ 3,179,289.13	Net Present Cost for Segment			$ 5,246,874.46
Maintenance - Net Present Cost for Segment			$ 1,045,864.33	Maintenance - Net Present Cost for Segment			$ 743,874.97	Maintenance - Net Present Cost for Segment			$ 451,786.08
Equivalent Annual Cost			60,191.17	Equivalent Annual Cost			114,017.89	Equivalent Annual Cost			188,167.08
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		24	2	35		26	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
2	2	9.5 WE (3,B)		2	2	9.5 WE (3.B)					
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
2	No	9.5 WE (3,B)		2	No	9.5 WE (3.B)		2	No		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
1.5				2				6			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	3			20	5						

50 Year Analysis: Project # 4680-129 - Hwy 90

50 Year Analysis

Project Number	Analysis Period
4680-129	50
Highway	Discount Rate
90	1.58%
Date	
Performed By	
Charles Kremer	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	35 yr concrete		20 yr concrete		20 HMA		34.0
Net Present Cost	$ 33,555,786.38		$ 40,192,066.78		$ 48,359,842.77		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$33,555,786.38		$40,192,066.78		$48,359,842.77	Total
% of Low Cost		100.0%		119.8%		144.1%	34.0

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	35 yr concrete		20 yr concrete		20 HMA		34.0
Net Present Cost	$7,432,218.16		$16,128,984.76		$9,933,734.02		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$7,432,218.16		$16,128,984.76		$9,933,734.02	Total
Bid Adjustment Factor				$8,696,766.60		$2,501,515.86	34.0

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	34			1	34			1	34		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		35 yr concrete		2		20 yr concrete		3		20 HMA	
Pavement Type				Pavement Type				Pavement Type			
PCC				PCC				HMA			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				≥12 Joint spacing				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Design Life = 20 Years				Rural			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
PCC				PCC				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	initial construction	$ 768,340.24	$ 768,340.24	0	initial construction	$ 656,062.65	$ 707,737.71	0	initial construction	$ 1,130,179.67	$ 1,130,179.67
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8			$ -	8	Crack Treatment	$ 1,188.00	$ 1,047.97
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12			$ -	12	Seal	$ 5,411.23	$ 4,483.30
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 151,698.62	$ 110,870.87	20	1st CPR	$ 227,860.86	$ 166,535.02	20	ML Overlay 4	$ 249,601.55	$ 182,424.47
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23			$ -	23	Crack Treatment	$ 2,376.00	$ 1,656.75
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27			$ -	27	Seal	$ -	$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 186,465.66	$ 107,723.78	35	Remove and Replace	$ 664,107.70	$ 383,664.15	35			$ -
36			$ -	36			$ -	36			$ -
37			$ -	37			$ -	37	ML Overlay 3.5"	$ 223,871.72	$ 125,341.68
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40			$ -	40	Crack Treatment	$ 2,376.00	$ 1,269.17
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44			$ -	44	Chip Seal	$ -	$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	5/20 Remaining	$ (166,026.93)	$ (75,817.26)	50	4/17 Remaining Life	$ (52,675.70)	$ (24,054.70)
Net Present Cost for Segment			$ 33,555,786.38	Net Present Cost for Segment			$ 40,192,066.78	Net Present Cost for Segment			$ 48,359,842.77
Maintenance - Net Present Cost for Segment			$ 7,432,218.16	Maintenance - Net Present Cost for Segment			$ 16,128,984.76	Maintenance - Net Present Cost for Segment			$ 9,933,734.02
Equivalent Annual Cost			975,775.65	Equivalent Annual Cost			1,168,753.41	Equivalent Annual Cost			1,406,265.86
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	50		28	2	50		27	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
9	1			9	1			10	1	Type SP 12.5 Wearing Course Mixture (5,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N			3	N			3	Y	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N	8			N	7.5			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
15	6			15	6			2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
35	6			20	6			20	4		

35 Year Analysis

Project Number	Analysis Period
2311-31/5507-64	35
Highway	Discount Rate
US 52	1.32%
Date	
9/20/2017	
Performed By	
trm	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	1.5" Mill and 3" Bit. Overlay-15 YR FIX		6" UBOL-20 YR FIX		CIR 4" and 3" Overlay-20 YR FIX		11.2
Net Present Cost	$4,892,563.14		$10,521,708.52		$5,047,587.66		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,892,563.14		$10,521,708.52		$5,047,587.66	Total
% of Low Cost		100.0%		215.1%		103.2%	11.2

SEGMENT	Length		
1	11.219		
ALTERNATE		Description	
1		1.5" Mill and 3" Bit. Overlay-15 YR FIX	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 2,034,467.72	$ 2,034,467.72
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 30,834.48	$ 29,644.97
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 79,492.51	$ 72,520.36
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 2,276,518.74	$ 1,870,008.21
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 30,834.48	$ 24,351.37
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 79,492.51	$ 59,570.63
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 2,276,518.74	$ 1,556,363.29
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 30,834.48	$ 20,267.06
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (1,225,817.78)	$ (774,630.47)
Net Present Cost for Segment			$ 4,892,563.14
Maintenance - Net Present Cost for Segment			$ 2,858,095.41
Equivalent Annual Cost			175,460.52
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	3		

SEGMENT	Length		
1	11.219		
ALTERNATE		Description	
2		6" UBOL-20 YR FIX	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thin Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 7,496,671.40	$ 7,496,671.40
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 3,932,188.52	$ 3,025,037.12
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 10,521,708.52
Maintenance - Net Present Cost for Segment			$ 3,025,037.12
Equivalent Annual Cost			377,336.87
Total Lane Width	# of Lanes	Analysis Period	
27	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
17	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No	6		
ML Top Lift/Jt spacing	# Dowels per Lane		
15			
Design Life	Shldr Thickness		
	3		

SEGMENT	Length		
1	11.219		
ALTERNATE		Description	
3		CIR 4" and 3" Overlay-20 YR FIX	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,261,585.08	$ 3,261,585.08
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 15,417.24	$ 13,881.78
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 130,435.74	$ 111,443.42
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 2,276,518.74	$ 1,751,328.47
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 30,834.48	$ 22,805.91
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 79,492.51	$ 55,789.99
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (267,825.73)	$ (169,246.99)
Net Present Cost for Segment			$ 5,047,587.66
Maintenance - Net Present Cost for Segment			$ 1,786,002.58
Equivalent Annual Cost			181,020.12
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3		

35 Year Analysis: Project # 5510-84 - TH 63

35 Year Analysis

Project Number	Analysis Period
5510-84	35
Highway	Discount Rate
TH 63 from CSAH 33 to TH 60	1.58%
Date	
2/9/2017	
Performed By	
TRM	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" mill and 3.5" Bit. Overlay		CIR and 3" Bit. Overlay		5" Whitetopping		12.8
Net Present Cost	$6,537,817.76		$5,506,915.94		$9,309,142.21		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$6,537,817.76		$5,506,915.94		$9,309,142.21	Total
% of Low Cost		118.7%		100.0%		169.0%	12.8

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" mill and 3.5" Bit. Overlay		CIR and 3" Bit. Overlay		5" Whitetopping		12.8
Net Present Cost	$3,552,954.01		$2,176,485.45		$4,253,299.79		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,552,954.01		$2,176,485.45		$4,253,299.79	Total
Bid Adjustment Factor		$1,376,468.56				$2,076,814.34	12.8

SEGMENT	Length		
1	12.838		
ALTERNATE		Description	
1		2" mill and 3.5" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 232,502.24	$ 232,502.24
1			$ -
2			$ -
3	Crack Treatment	$ 1,909.25	$ 1,821.54
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,297.40	$ 7,435.06
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 232,502.17	$ 183,782.39
16			$ -
17			$ -
18	Crack Treatment	$ 1,909.25	$ 1,439.84
19			$ -
20			$ -
21			$ -
22	Seal	$ 8,297.40	$ 5,877.07
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 232,502.17	$ 147,566.91
30			$ -
31			$ -
32	Crack Treatment	$ 1,909.25	$ 1,156.11
33			$ -
34			$ -
35	Remaining Life	$ (125,193.48)	$ (72,325.99)
Net Present Cost for Segment			$ 6,537,817.76
Maintenance - Net Present Cost for Segment			$ 3,552,954.01
Equivalent Annual Cost			244,614.93

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	12.838		
ALTERNATE		Description	
2		CIR and 3" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 259,419.73	$ 259,419.73
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 954.62	$ 842.11
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,965.81	$ 10,742.40
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 228,067.02	$ 166,685.69
21			$ -
22			$ -
23	Crack Treatment	$ 1,909.25	$ 1,331.29
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,297.40	$ 5,434.01
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (26,831.41)	$ (15,500.88)
Net Present Cost for Segment			$ 5,506,915.94
Maintenance - Net Present Cost for Segment			$ 2,176,485.45
Equivalent Annual Cost			206,043.34

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
1	12.838		
ALTERNATE		Description	
3		5" Whitetopping	
Pavement Type			
PCC			
Primary Category			
6'X6' ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Thick Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 393,818.54	$ 393,818.54
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 360,528.31	$ 263,496.71
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 523,074.19	$ 326,826.33
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (448,349.31)	$ (259,017.56)
Net Present Cost for Segment			$ 9,309,142.21
Maintenance - Net Present Cost for Segment			$ 4,253,299.79
Equivalent Annual Cost			348,305.08

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
20	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	Y	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	5		
ML Top Lift / joint spacing	# Dowels per Lane		
6			
Design Life	Shldr Thickness		
	2		

35 Year Analysis

Project Number	Analysis Period
5622.16	35
Highway	Discount Rate
106	1.74%
Date	
2/4/2016	
Performed By	
KR	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" MILL & 3.0" OVERLAY		3" MILL, 3" CIR, 3" PAVE		4.5" WHITETOP		7.4
Net Present Cost	$2,514,655.89		$2,443,212.97		$5,268,102.15		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,514,655.89		$2,443,212.97		$5,268,102.15	Total
% of Low Cost		102.9%		100.0%		215.6%	7.4

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" MILL & 3.0" OVERLAY		3" MILL, 3" CIR, 3" PAVE		4.5" WHITETOP		7.4
Net Present Cost	$1,457,574.11		$918,720.58		$2,633,865.27		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,457,574.11		$918,720.58		$2,633,865.27	Total
Bid Adjustment Factor		$538,853.53				$1,715,144.69	7.4

SEGMENT	Length		
1	7.403		
ALTERNATE		Description	
1		3" MILL & 3.0" OVERLAY	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	3.0" MILL AND OVERLAY	$ 142,791.00	$ 142,791.00
1			$ -
2			$ -
3	Crack Treatment	$ 2,464.00	$ 2,339.73
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,544.34	$ 7,572.45
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 164,123.25	$ 126,705.11
16			$ -
17			$ -
18	Crack Treatment	$ 2,464.00	$ 1,806.30
19			$ -
20			$ -
21			$ -
22	Seal	$ 8,544.34	$ 5,846.02
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 164,123.25	$ 99,519.88
30			$ -
31			$ -
32	Crack Treatment	$ 2,464.00	$ 1,418.75
33			$ -
34			$ -
35	Remaining Life	$ (88,374.06)	$ (48,318.58)
Net Present Cost for Segment			$ 2,514,655.89
Maintenance - Net Present Cost for Segment			$ 1,457,574.11
Equivalent Annual Cost			96,536.30

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
0	0	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	0		

SEGMENT	Length		
1	7.403		
ALTERNATE		Description	
2		3" MILL, 3" CIR, 3" PAVE	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	3" MILL, 3" CIR, 3" PAVE	$ 205,929.00	$ 205,929.00
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,073.19
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,706.22	$ 10,330.37
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 164,123.25	$ 116,234.61
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,657.03
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,544.34	$ 5,362.92
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (19,308.62)	$ (10,557.00)
Net Present Cost for Segment			$ 2,443,212.97
Maintenance - Net Present Cost for Segment			$ 918,720.58
Equivalent Annual Cost			93,793.65

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
0	0	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	0		

SEGMENT	Length		
1	7.403		
ALTERNATE		Description	
3		4.5" WHITETOP	
Pavement Type			
PCC			
Primary Category			
6'X6' ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	4.5" WHITETOP	$ 355,833.70	$ 355,833.70
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 447,472.26	$ 316,906.72
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 305,253.62	$ 181,931.88
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (261,645.96)	$ (143,055.11)
Net Present Cost for Segment			$ 5,268,102.15
Maintenance - Net Present Cost for Segment			$ 2,633,865.27
Equivalent Annual Cost			202,239.64

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
0	0		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	Y		
Sealed/UTBWC	ML Thickness		
Y	4.5		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
	0		

50 Year Analysis: Project # 5880-194 (5880-191) - Hwy 35

50 Year Analysis

Project Number	Analysis Period
5880-191 (5880-194)	50
Highway	
35	2.00%
Date	
3/17/2015	
Performed By	
Tim Andersen	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	UBOL		UBOL		6" HMA & Rubblized PCC		1.0
Net Present Cost	$ 997,908.46		$ 1,139,926.67		$ 811,784.25		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$997,908.46		$1,139,926.67		$811,784.25	Total
% of Low Cost		122.9%		140.4%		100.0%	1.0

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	UBOL		UBOL		6" HMA & Rubblized PCC		1.0
Net Present Cost	$200,511.42		$399,216.30		$247,513.87		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$200,511.42		$399,216.30		$247,513.87	Total
Bid Adjustment Factor				$198,704.88		$47,002.45	1.0

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	1			1	1			1	1		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		UBOL		2		UBOL		3		6" HMA & Rubblized PCC	
Pavement Type				Pavement Type				Pavement Type			
PCC				PCC				HMA			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				≥12 Joint spacing				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Design Life = 20 Years				Rural			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thick Bit				Thick Bit				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	8" UBOL	$ 797,397.04	$ 797,397.04	0	7.5" UBOL	$ 740,710.37	$ 740,710.37	0	6" HMA & Rubblized PCC	$ 564,270.38	$ 564,270.38
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8			$ -	8	Crack Treatment	$ 1,551.62	$ 1,324.29
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12			$ -	12	Seal	$ 13,173.66	$ 10,387.34
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 164,034.58	$ 110,390.57	20	1st CPR	$ 237,797.36	$ 160,030.80	20	ML Overlay 3.5	$ 209,943.17	$ 141,285.74
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23			$ -	23	Crack Treatment	$ 3,103.23	$ 1,967.93
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27			$ -	27	Seal	$ 8,558.55	$ 5,014.13
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 180,231.74	$ 90,120.85	35	Remove and Replace	$ 587,469.13	$ 293,750.79	35			$ -
36			$ -	36			$ -	36			$ -
37			$ -	37			$ -	37	ML Overlay 3.5"	$ 209,943.17	$ 100,900.98
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40			$ -	40	Crack Treatment	$ 3,103.23	$ 1,405.42
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44			$ -	44	Chip Seal	$ 8,558.55	$ 3,580.90
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	5/20 Remaining	$ (146,867.28)	$ (54,565.29)	50	4/17 Remaining Life	$ (49,398.39)	$ (18,352.88)
Net Present Cost for Segment			$ 997,908.46	Net Present Cost for Segment			$ 1,139,926.67	Net Present Cost for Segment			$ 811,784.25
Maintenance - Net Present Cost for Segment			$ 200,511.42	Maintenance - Net Present Cost for Segment			$ 399,216.30	Maintenance - Net Present Cost for Segment			$ 247,513.87
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
29	2	50		29	2	50		29	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
9	1			9	1	SP 12.5 Wearing Course (3,B)		9	1	SP 12.5 Wearing Course (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N	SP 12.5 Wearing Course (3,B)			N	SP 12.5 Wearing Course (3,B)		3	N	SP 12.5 Wearing Course (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
Y	8			Y				N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
15	11			15	11			1.5			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
35	4			20	4			20	4		

50 Year Analysis

Project Number	Analysis Period
6401-37	50
Highway	Discount Rate
14	1.58%
Date	
7/6/2017	
Performed By	
Cody Brand	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3.0" CIR & 3.0" HMA		6.0" PCC UBOL		6.0" PCC UBOL		11.8
Net Present Cost	$ 5,540,896.88		$ 9,901,372.12		$ 7,799,736.47		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$5,540,896.88		$9,901,372.12		$7,799,736.47	Total
% of Low Cost		100.0%		178.7%		140.8%	11.8

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3.0" CIR & 3.0" HMA		6.0" PCC UBOL		6.0" PCC UBOL		11.8
Net Present Cost	$3,103,846.95		$4,811,193.53		$2,709,557.89		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,103,846.95		$4,811,193.53		$2,709,557.89	Total
Bid Adjustment Factor		$394,289.06		$2,101,635.64			11.8

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	11.792			1	11.792			1	11.792		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		3.0" CIR & 3.0" HMA		2		6.0" PCC UBOL		3		6.0" PCC UBOL	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				PCC			
Primary Category				Primary Category				Primary Category			
20 Year HMA				≥12 Joint spacing				≥12 Joint spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 Years				Design Life 35 Years			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Aggregate				Aggregate				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	3.0" CIR & 3.0" HMA	$ 206,669.77	$ 206,669.77	0	3.0" Mill & 6.0" PCC	$ 431,663.72	$ 431,663.72	0	3.0" Mill & 6.0" PCC	$ 431,663.72	$ 431,663.72
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,086.79	8			$ -	8			$ -
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12	Seal	$ 12,148.14	$ 10,064.94	12			$ -	12			$ -
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Overlay 3	$ 192,920.51	$ 140,998.42	20	1st CPR	$ 235,141.98	$ 171,856.52	20	1st CPR	$ 161,246.62	$ 117,849.15
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,718.11	23			$ -	23			$ -
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 6,914.52	$ 4,528.35	27			$ -	27			$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35			$ -	35	Remove and Replace	$ 509,434.89	$ 294,307.54	35	2nd CPR	$ 193,746.78	$ 111,930.18
36			$ -	36			$ -	36			$ -
37	ML Overlay 3.5"	$ 221,103.55	$ 123,791.83	37			$ -	37			$ -
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40	Crack Treatment	$ 2,464.00	$ 1,316.17	40			$ -	40			$ -
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44	Chip Seal	$ 6,914.52	$ 3,468.97	44			$ -	44			$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	4/17 Remaining Life	$ (52,024.36)	$ (23,757.26)	50	5/20 Remaining	$ (127,358.72)	$ (58,159.18)	50	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 5,540,896.88	Net Present Cost for Segment			$ 9,901,372.12	Net Present Cost for Segment			$ 7,799,736.47
Maintenance - Net Present Cost for Segment			$ 3,103,846.95	Maintenance - Net Present Cost for Segment			$ 4,811,193.53	Maintenance - Net Present Cost for Segment			$ 2,709,557.89
Equivalent Annual Cost			161,124.89	Equivalent Annual Cost			287,924.05	Equivalent Annual Cost			226,810.15

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	50		28	2	50		28	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
10	2	Type SP 12.5 Wearing Course Mixture (3,B)		10	2			10	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N			3	N			3			
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				N	6				6		
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1				12	6			12	6		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	3				6				6		

50 Year Analysis

Project Number	Analysis Period
6607-50	50
Highway	Discount Rate
TH 60	1.58%
Date	
6/5/2017	
Performed By	
TRM	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Concrete		HMA		Concrete		0.7
Net Present Cost	$ 2,080,763.03		$ 1,761,867.19		$ 2,253,674.44		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,080,763.03		$1,761,867.19		$2,253,674.44	Total
% of Low Cost		118.1%		100.0%		127.9%	0.7

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Concrete		HMA		Concrete		0.7
Net Present Cost	$328,848.80		$437,810.90		$501,760.21		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$328,848.80		$437,810.90		$501,760.21	Total
Bid Adjustment Factor				$108,962.10		$172,911.41	0.7

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	0.699			1	0.699			1	0.699		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Concrete		2		HMA		3		Concrete	
Pavement Type				Pavement Type				Pavement Type			
PCC				HMA				PCC			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				20 Year HMA				≥12 Joint spacing			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Urban				Design Life = 20 Years			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
PCC				Thick				PCC			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0		$ 2,506,315.07	$ 2,506,315.07	0		$ 1,894,215.00	$ 1,894,215.00	0		$ 2,506,315.07	$ 2,506,315.07
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8	Crack Treatment	$ 2,386.56	$ 2,105.26	8			$ -
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12	Seal	$ 30,387.29	$ 25,176.39	12			$ -
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 328,842.50	$ 240,338.74	20	ML Mill 3.0"	$ 454,518.80	$ 332,190.86	20	1st CPR	$ 393,731.59	$ 287,763.76
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23	Crack Treatment	$ 4,773.12	$ 3,328.23	23			$ -
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27	Seal	$ 19,172.38	$ 12,556.09	27			$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 398,324.16	$ 230,117.34	35			$ -	35	Remove and Replace	$ 927,758.25	$ 535,978.70
36			$ -	36			$ -	36			$ -
37			$ -	37	ML Overlay 3.5"	$ 527,843.30	$ 295,529.81	37			$ -
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40	Crack Treatment	$ 4,773.12	$ 2,549.61	40			$ -
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44	Seal	$ 19,172.38	$ 9,618.67	44			$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	0/0 Remaining Life	$ (124,198.42)	$ (56,716.01)	50	5/20 Remaining	$ (231,939.56)	$ (105,916.69)
Net Present Cost for Segment			$ 2,080,763.03	Net Present Cost for Segment			$ 1,761,867.19	Net Present Cost for Segment			$ 2,253,674.44
Maintenance - Net Present Cost for Segment			$ 328,848.80	Maintenance - Net Present Cost for Segment			$ 437,810.90	Maintenance - Net Present Cost for Segment			$ 501,760.21
Equivalent Annual Cost			60,506.94	Equivalent Annual Cost			51,233.70	Equivalent Annual Cost			65,535.06

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
60	5	50		60	5	50		48	4	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
0	2			0	2	TYPE SP 12.5 WEARING COURSE MIXTURE (4,F)		0	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N			0	N			0	N		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
Y	7			N				Y	6		
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
15	11			2				15	11		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
	0			20	0				0		

50 Year Analysis

Project Number	Analysis Period
6680-113	50
Highway	Discount Rate
I-35	1.58%
Date	
7/21/2017	
Performed By	
TRM	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	8.5" Unbonded Overlay(35 PCC)		8" Unbonded Overlay(20 YR PCC)		Reconstruct w/ Bit.(20 YR HMA)		3.8
Net Present Cost	$ 3,605,178.61		$ 4,410,300.51		$ 6,628,817.35		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,605,178.61		$4,410,300.51		$6,628,817.35	Total
% of Low Cost		100.0%		122.3%		183.9%	3.8

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	8.5" Unbonded Overlay(35 PCC)		8" Unbonded Overlay(20 YR PCC)		Reconstruct w/ Bit.(20 YR HMA)		3.8
Net Present Cost	$936,996.88		$1,864,478.86		$1,241,927.58		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$936,996.88		$1,864,478.86		$1,241,927.58	Total
Bid Adjustment Factor				$927,481.99		$304,930.71	3.8

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	3.762			1	3.762			1	3.762		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		8.5" Unbonded Overlay(35 PCC)		2		8" Unbonded Overlay(20 YR PCC)		3		Reconstruct w/ Bit.(20 YR HMA)	
Pavement Type				Pavement Type				Pavement Type			
PCC				PCC				HMA			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				≥12 Joint spacing				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Design Life = 20 Years				Rural			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thick Bit				Thick Bit				Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0		$ 709,245.54	$ 709,245.54	0		$ 676,720.27	$ 676,720.27	0		$ 1,431,921.79	$ 1,431,921.79
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8			$ -	8	Crack Treatment	$ 1,113.73	$ 982.46
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12			$ -	12	Seal	$ 5,324.85	$ 4,411.73
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 187,991.89	$ 137,396.27	20	1st CPR	$ 266,324.00	$ 194,646.29	20	ML Overlay 3.5	$ 272,110.39	$ 198,875.35
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23			$ -	23	Crack Treatment	$ 2,227.46	$ 1,553.17
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27			$ -	27	Seal	$ -	$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 193,300.83	$ 111,672.54	35	Remove and Replace	$ 649,255.44	$ 375,083.79	35			$ -
36			$ -	36			$ -	36			$ -
37			$ -	37			$ -	37	ML Overlay 3.5"	$ 272,110.39	$ 152,349.63
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40			$ -	40	Crack Treatment	$ 2,227.46	$ 1,189.82
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44			$ -	44	Chip Seal	$ -	$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	5/20 Remaining	$ (162,313.86)	$ (74,121.67)	50	4/17 Remaining Life	$ (64,025.97)	$ (29,237.87)
Net Present Cost for Segment			$ 3,605,178.61	Net Present Cost for Segment			$ 4,410,300.51	Net Present Cost for Segment			$ 6,628,817.35
Maintenance - Net Present Cost for Segment			$ 936,996.88	Maintenance - Net Present Cost for Segment			$ 1,864,478.86	Maintenance - Net Present Cost for Segment			$ 1,241,927.58
Equivalent Annual Cost			104,835.73	Equivalent Annual Cost			128,248.04	Equivalent Annual Cost			192,760.75

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
30	2	50		30	2	50		28	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
8	1			8	2	Type SP 12.5 Wearing Course Mixture (4,E)		10	1	Type SP 12.5 Wearing Course Mixture (4,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (2,B)		3	N	Type SP 12.5 Wearing Course Mixture (2,B)		3	Y	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N	8.5			N	8			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
15	8			15	8			1.5			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
	3.5			20	3.5			20	4		

35 Year Analysis: Project # 6928-28

District	1
Performed By	CM
Analysis Period	35
Discount Rate	1.1

Project Number	SP 6928-28
Date	4/8//2013
Funding Category	0
Low Cost Option #	2
Chosen Option #	

#	Description	Cost/ Lane Mile	Design Life
AA	Crack Treatment	$1,100	
AB	Surface Treatment	$9,500	
AC	1.5" Overlay	$38,000	
AD	2" Overlay	$50,000	
AE	3" Overlay	$76,000	
AF	4" Overlay	$101,000	
AG	4.5" Overlay	$113,000	
AH	2" Mill & 2" Overlay	$55,000	15
AI	1.5" Mill & 3" Overlay	$79,000	
AJ	2" Mill & 3" Overlay	$80,000	
AK	3" Mill & 3" Overlay	$82,000	
AL	2" Mill & 4.5" Overlay	$118,000	
AM	3" Mill & 4.5" Overlay	$120,000	
AN	Reseal Joints (6'X6')	$59,000	
AO	Reseal Joints (15')	$10,000	
AP	Minor CPR (6'X6')		
AQ	Minor CPR (15')	$125,000	13
AR	Major CPR (6'X6')	$119,000	
AS	Major CPR (15')	$180,000	
AT	CIR w/New Structure		
AU	FDR w/New Structure		
AV	SFDR w/New Structure		
AW	New Concrete Structure		
AX	Concrete Whitetopping		
AY	Unbonded Concrete Overlay		
AZ	New Bituminous Structure		
BA	Thin Mill and Overlay - 1.5/3"	$79,000	
BB	Medium M&O - 2/4.5"	$120,000	
BC	Light Crack Treatment	$825	
BD	Chipseal	$7,744	
BE	Crack fill	$6,700	
BF	Microsurface	$27,300	
BG	2nd 2" Mill & 2" Overlay	$55,000	14
BH	12" FDR & 6" Bituminous	162,000	
BI	6" Unbonded PCC Overlay	171,000	
BJ	12" FDR and 6" PCC Pavement	168,000	
BK	6" PCC Overlay (whitetopping)	156,000	
BL	9" FDR and 5" Bituminous	135,000	
BM	9" FDR and 6"x6'x6' PCC Pavement	152,000	
BN			
BP			
BQ			
BR			
BS			
BT			
BU			
BV			
BW			
BX			
BY			
BZ			

Yellow Cells are unprotected for input.
Light Blue contain Formulas but are unprotected.
White Cells are protected from input.

OPTION #1					OPTION #2					OPTION #3				
DESCRIPTION					DESCRIPTION					DESCRIPTION				
9" FDR and 5" Bituminous					1.5" Mill & 3" Overlay					9" FDR and 6"x6'x6' PCC Pavement				
			DESIGN LIFE	TYPE				DESIGN LIFE	TYPE				DESIGN LIFE	TYPE
			20	0				16	0				20	0
Year	#	Life	Description	Cost/Mile	Year	#	Life	Description	Cost/Mile	Year	#	Life	Description	Cost/Mile
0	BL		9" FDR and 5" Bituminous	$ 135,000	0	AI		1.5" Mill & 3" Overlay	$ 79,000	0	BM		9" FDR and 6"x6'x6' PCC Pavement	$ 152,000
1				$ -	1				$ -	1				$ -
2				$ -	2				$ -	2				$ -
3				$ -	3	AA		Crack Treatment	$ 1,100	3				$ -
4				$ -	4				$ -	4				$ -
5				$ -	5				$ -	5				$ -
6				$ -	6				$ -	6				$ -
7				$ -	7	AB		Surface Treatment	$ 9,500	7				$ -
8	AA		Crack Treatment	$ 1,100	8				$ -	8				$ -
9				$ -	9				$ -	9				$ -
10				$ -	10				$ -	10				$ -
11				$ -	11				$ -	11				$ -
12	AB		Surface Treatment	$ 9,500	12				$ -	12				$ -
13				$ -	13				$ -	13	AN		Reseal Joints (6'X6')	$ 59,000
14				$ -	14				$ -	14				$ -
15				$ -	15				$ -	15				$ -
16				$ -	16	BG		2nd 2" Mill & 2" Overlay	$ 55,000	16				$ -
17				$ -	17				$ -	17				$ -
18				$ -	18				$ -	18				$ -
19				$ -	19	AA		Crack Treatment	$ 1,100	19				$ -
20	AH		2" Mill & 2" Overlay	$ 55,000	20				$ -	20				$ -
21				$ -	21				$ -	21				$ -
22				$ -	22				$ -	22				$ -
23	AA		Crack Treatment	$ 1,100	23	AB		Surface Treatment	$ 9,500	23				$ -
24				$ -	24				$ -	24				$ -
25				$ -	25				$ -	25	AR		Major CPR (6'X6')	$ 119,000
26				$ -	26				$ -	26				$ -
27	AB		Surface Treatment	$ 9,500	27				$ -	27				$ -
28				$ -	28				$ -	28				$ -
29				$ -	29				$ -	29				$ -
30				$ -	30				$ -	30				$ -
31				$ -	31	BG		2nd 2" Mill & 2" Overlay	$ 55,000	31				$ -
32				$ -	32				$ -	32				$ -
33				$ -	33				$ -	33				$ -
34				$ -	34	AA		Crack Treatment	$ 1,100	34				$ -
35	AH	0%	Remaining Service Life Value**	$ -	35	BG	71%	Remaining Service Life Value**	$ (39,050)	35	AR	0%	Remaining Service Life Value**	$ -
			Total Present Worth	$ 196,456				Total Present Worth	$ 156,625				Total Present Worth	$ 293,703
			Eq. Annual Cost*	$6,793				Eq. Annual Cost*	$5,416				Eq. Annual Cost*	$10,156
			% of Low Cost	125%				% of Low Cost	100%				% of Low Cost	188%

* Equivalent Annual Cost is included for information only.
**Remaining Service Life Value is reported as a negative value.

50 Year Analysis

Project Number	Analysis Period
7001-115	50
Highway	Discount Rate
13	1.32%
Date	
12/19/2017	
Performed By	
HFM	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	FDR		PCC…20yr….7.0"		PCC…35yr….7.5"		4.5
Net Present Cost	$ 3,830,248.19		$ 5,952,790.72		$ 4,463,037.13		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,830,248.19		$5,952,790.72		$4,463,037.13	Total
% of Low Cost		100.0%		155.4%		116.5%	4.5

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	4.49			1	4.49			1	4.49		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		FDR		2		PCC….20yr….7.0"		3		PCC…35yr….7.5"	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				PCC			
Primary Category				Primary Category				Primary Category			
20-year HMA				> 11' Joint Spacing				> 11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Thick Bit.				Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,240,092.92	$ 2,240,092.92	0	Construction	$ 3,320,162.59	$ 3,320,162.59	0	Construction	$ 3,365,179.92	$ 3,365,179.92
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3		$ -	$ -	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7		$ -	$ -	7		$ -	$ -	7		$ -	$ -
8	Crack Treatment	$ 6,170.19	$ 5,555.68	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12	Seal	$ -	$ -	12		$ -	$ -	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Mill/Overlay	$ 1,283,504.11	$ 987,401.18	20	1st CPR	$ 1,129,895.58	$ 869,229.96	20	1st CPR	$ 822,775.91	$ 632,962.45
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22		$ -	$ -
23	Crack Treatment	$ 12,340.39	$ 9,127.24	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27	Seal	$ -	$ -	27		$ -	$ -	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32		$ -	$ -	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35		$ -	$ -	35	R & R Mainline	$ 3,511,643.20	$ 2,219,111.09	35	2nd CPR	$ 735,674.98	$ 464,894.76
36		$ -	$ -	36		$ -	$ -	36		$ -	$ -
37	Mill/Overlay	$ 1,176,994.61	$ 724,524.00	37		$ -	$ -	37		$ -	$ -
38		$ -	$ -	38		$ -	$ -	38		$ -	$ -
39		$ -	$ -	39		$ -	$ -	39		$ -	$ -
40	Crack Treatment	$ 12,340.39	$ 7,303.34	40		$ -	$ -	40		$ -	$ -
41		$ -	$ -	41		$ -	$ -	41		$ -	$ -
42		$ -	$ -	42		$ -	$ -	42		$ -	$ -
43		$ -	$ -	43		$ -	$ -	43		$ -	$ -
44	Seal	$ -	$ -	44		$ -	$ -	44		$ -	$ -
45		$ -	$ -	45		$ -	$ -	45		$ -	$ -
46		$ -	$ -	46		$ -	$ -	46		$ -	$ -
47		$ -	$ -	47		$ -	$ -	47		$ -	$ -
48		$ -	$ -	48		$ -	$ -	48		$ -	$ -
49		$ -	$ -	49		$ -	$ -	49		$ -	$ -
50	Remaining Life	$ (276,939.91)	$ (143,756.17)	50	Remaining Life	$ (877,910.80)	$ (455,712.91)	50	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 3,830,248.19	Net Present Cost for Segment			$ 5,952,790.72	Net Present Cost for Segment			$ 4,463,037.13
Maintenance - Net Present Cost for Segment			$ 1,590,155.27	Maintenance - Net Present Cost for Segment			$ 2,632,628.14	Maintenance - Net Present Cost for Segment			$ 1,097,857.21
Equivalent Annual Cost			105,132.06	Equivalent Annual Cost			163,391.28	Equivalent Annual Cost			122,500.76
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	50		30	2	50		24	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (3,C)		8	2	Type SP 12.5 Wearing Course Mixture (4,E)		16	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (3,C)		3	N	Type SP 12.5 Wearing Course Mixture (2,B)		3	No	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
Yes				N	8			No	7.5		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
2				15	8			15			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	5			20	3.5				5		

35 Year Analysis: Project # 7001-116 - Hwy 13

35 Year Analysis

Project Number	Analysis Period
7001-116	35
Highway	Discount Rate
13	1.58%
Date	
11/7/2016	
Performed By	
CC	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Full Depth Reclamation		Whitetopping		Mill and Overlay		1.9
Net Present Cost	$2,144,547.53		$3,283,812.67		$2,016,671.21		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,144,547.53		$3,283,812.67		$2,016,671.21	Total
% of Low Cost		106.3%		162.8%		100.0%	1.9

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Full Depth Reclamation		Whitetopping		Mill and Overlay		1.9
Net Present Cost	$581,340.58		$711,571.47		$659,756.38		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$581,340.58		$711,571.47		$659,756.38	Total
Bid Adjustment Factor				$130,230.89		$78,415.80	1.9

SEGMENT	Length		
1	1.9		
ALTERNATE		Description	
1		Full Depth Reclamation	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 822,740.50	$ 822,740.50
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 2,534.40	$ 2,235.68
9			$ -
10			$ -
11			$ -
12	Seal	$ 32,116.78	$ 26,609.30
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Mill 3.0"	$ 390,348.63	$ 285,291.28
21			$ -
22			$ -
23	Crack Treatment	$ 5,068.80	$ 3,534.41
24			$ -
25			$ -
26			$ -
27	Seal	$ 22,642.40	$ 14,828.62
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (45,923.37)	$ (26,530.56)
Net Present Cost for Segment			$ 2,144,547.53
Maintenance - Net Present Cost for Segment			$ 581,340.58
Equivalent Annual Cost			80,239.06

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4	Type SP 12.5 Wearing Course Mixture (4,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N	Type SP 12.5 Wearing Course Mixture (4,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	5		

SEGMENT	Length		
1	1.9		
ALTERNATE		Description	
2		Whitetopping	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,353,811.16	$ 1,353,811.16
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 512,423.57	$ 374,511.30
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 3,283,812.67
Maintenance - Net Present Cost for Segment			$ 711,571.47
Equivalent Annual Cost			122,865.09

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	Y		
Sealed/UTBWC	ML Thickness		
N	7.5		
ML Top Lift / joint spacing	# Dowels per Lane		
15	8		
Design Life	Shldr Thickness		
	7.5		

SEGMENT	Length		
1	1.9		
ALTERNATE		Description	
3		Mill and Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL > 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 714,165.70	$ 714,165.70
1			$ -
2			$ -
3	Crack Treatment	$ 5,068.80	$ 4,835.94
4			$ -
5			$ -
6			$ -
7	Seal	$ 22,642.40	$ 20,289.20
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19	ML Mill 3.5"	$ 447,438.75	$ 332,183.17
20			$ -
21			$ -
22	Crack Treatment	$ 5,068.80	$ 3,590.25
23			$ -
24			$ -
25			$ -
26	Seal	$ 22,642.40	$ 15,062.92
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ (49,715.42)	$ (28,721.28)
Net Present Cost for Segment			$ 2,016,671.21
Maintenance - Net Present Cost for Segment			$ 659,756.38
Equivalent Annual Cost			75,454.52

Total Lane Width	# of Lanes	Analysis Period	
48	4	35	
Total Shldr Width	# of Shldrs	ML Mix	
26	4	Type SP 9.5 Wearing Course Mixture (4,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
	N	Type SP 9.5 Wearing Course Mixture (4,C)	
Sealed/UTBWC	ML Thickness		
Y			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
19	4		

35 Year Analysis

Project Number	Analysis Period
7002-47	35
Highway	Discount Rate
21	1.32%
Date	
Performed By	
Howard McDermott	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	HMA Bit Overlay		HMA		UBCO		5.5
Net Present Cost	$2,541,046.90		$5,960,806.53		$4,947,164.78		Miles
Segment #2							1.1
Net Present Cost	$223,204.59		$852,621.22		$736,774.45		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,764,251.49		$6,813,427.75		$5,683,939.23	Total
% of Low Cost		100.0%		246.5%		205.6%	6.6

SEGMENT	Length		
1	5.5		
ALTERNATE		Description	
1		HMA Bit Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 1,444,414.49	$ 1,444,414.49
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 15,116.29	$ 14,533.15
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 37,850.09	$ 34,530.32
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17	Mill/Overlay	$ 1,118,828.04	$ 895,251.92
18		$ -	$ -
19		$ -	$ -
20	Crack Treatment	$ 15,116.29	$ 11,628.98
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24	Seal	$ 37,850.09	$ 27,630.11
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33	Mill/Overlay	$ 1,118,828.04	$ 725,809.02
34		$ -	$ -
35	Remaining Life	$ (969,650.96)	$ (612,751.09)
Net Present Cost for Segment			$ 2,541,046.90
Maintenance - Net Present Cost for Segment			$ 1,096,632.41
Equivalent Annual Cost			91,128.80

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (3,C)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
17	4		

SEGMENT	Length		
1	5.5		
ALTERNATE		Description	
2		HMA	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 5,061,855.36	$ 5,061,855.36
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 7,558.14	$ 6,805.40
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 62,499.24	$ 53,398.93
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 1,152,593.38	$ 886,691.41
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 15,116.29	$ 11,180.37
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 37,850.09	$ 26,564.22
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (135,599.22)	$ (85,689.15)
Net Present Cost for Segment			$ 5,960,806.53
Maintenance - Net Present Cost for Segment			$ 898,951.17
Equivalent Annual Cost			213,770.61

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (3,C)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
1.5	No	9.5 WE (3,C)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	4		

SEGMENT	Length		
1	5.5		
ALTERNATE		Description	
3		UBCO	
Pavement Type			
PCC			
Primary Category			
6'x6', 5.5 in. or Thicker			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,853,707.87	$ 3,853,707.87
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 1,421,363.95	$ 1,093,456.91
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 4,947,164.78
Maintenance - Net Present Cost for Segment			$ 1,093,456.91
Equivalent Annual Cost			177,418.68

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness		
Yes	6		
ML Top Lift/Jt spacing	# Dowels per Lane		
6			
Design Life	Shldr Thickness		
	4		

SEGMENT	Length		
2	1.19		
ALTERNATE		Description	
1		15 Yr Bit M&O	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Bit M&O	$ 1,221,795.98	$ 1,221,795.98
1			$ -
2			$ -
3	Crack Treatment	$ 10,137.60	$ 9,671.87
4			$ -
5			$ -
6			$ -
7	Seal	$ -	$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 1,055,948.97	$ 834,679.61
16			$ -
17			$ -
18	Crack Treatment	$ 10,137.60	$ 7,645.17
19			$ -
20			$ -
21			$ -
22	Seal	$ -	$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 4.0"	$ 1,221,795.98	$ 775,462.22
30			$ -
31			$ -
32	Crack Treatment	$ 10,137.60	$ 6,138.64
33			$ -
34			$ -
35	Remaining Life	$ (657,890.14)	$ (380,072.18)
Net Present Cost for Segment			$ 2,945,632.37
Maintenance - Net Present Cost for Segment			$ 1,491,695.15
Equivalent Annual Cost			110,211.95

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4	Type SP 12.5 Wearing Course Mixture (S,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
15	7		

SEGMENT	Length		
2	1.19		
ALTERNATE		Description	
2		20 Yr Bit Reconstruct	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Urban			
ShoulderCategory			
Thick			

Year	Activity	Cost	Pres. Cost/per Mile
0	Bit Reconstruct	$ 5,639,569.46	$ 5,639,569.46
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 5,068.80	$ 4,471.36
9			$ -
10			$ -
11			$ -
12	Seal	$ -	$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Mill 3.0"	$ 1,275,472.02	$ 932,194.99
21			$ -
22			$ -
23	Crack Treatment	$ 10,137.60	$ 7,068.81
24			$ -
25			$ -
26			$ -
27	Seal	$ -	$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (150,055.53)	$ (86,689.14)
Net Present Cost for Segment			$ 2,730,972.42
Maintenance - Net Present Cost for Segment			$ 1,019,884.76
Equivalent Annual Cost			289,257.26

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4	Type SP 12.5 Wearing Course Mixture (S,F)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	Y	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
Y			
ML Top Lift / joint spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	7		

SEGMENT	Length		
3	1.19		
ALTERNATE		Description	
3		20 Yr Conc Reconstruct	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0	Conc Reconstruct	$ 6,579,921.04	$ 6,579,921.04
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 1,020,834.33	$ 746,089.79
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 8,717,952.89
Maintenance - Net Present Cost for Segment			$ 887,846.85
Equivalent Annual Cost			326,185.51

Total Lane Width	# of Lanes	Analysis Period	
96	8	35	
Total Shldr Width	# of Shldrs	ML Mix	
40	4		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N		
Sealed/UTBWC	ML Thickness		
N	9.5		
ML Top Lift / joint spacing	# Dowels per Lane		
15	11		
Design Life	Shldr Thickness		
	9.5		

50 Year Analysis

Project Number	Analysis Period
7102-133	50
Highway	Discount Rate
10	1.58%
Date	
5/10/2017	
Performed By	
Scott Zeidler	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill w/6.5" White-Topping & Bit Outside Shld.		5" Mill w/ 8" FDR & Bit. Shld.		5" Mill w/ 6" White-Topping & Bit Outside Shld.		14.3
Net Present Cost	$ 10,800,207.36		$ 8,751,440.19		$ 13,190,682.40		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$10,800,207.36		$8,751,440.19		$13,190,682.40	Total
% of Low Cost		123.4%		100.0%		150.7%	14.3

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill w/6.5" White-Topping & Bit Outside Shld.		5" Mill w/ 8" FDR & Bit. Shld.		5" Mill w/ 6" White-Topping & Bit Outside Shld.		14.3
Net Present Cost	$3,823,918.33		$3,580,782.12		$6,591,127.73		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,823,918.33		$3,580,782.12		$6,591,127.73	Total
Bid Adjustment Factor		$243,136.21				$3,010,345.61	14.3

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	14.3			1	14.3			1	14.3		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		5" Mill w/6.5" Whitetopping, Bit Outside Shld.		2		5" Mill w/ 8" FDR & Bit. Shld.		3		5" Mill w/ 6" Whitetopping, Bit Outside Shld.	
Pavement Type				Pavement Type				Pavement Type			
PCC				HMA				PCC			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				20 Year HMA				≥12 Joint spacing			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Rural				Design Life = 20 Years			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thin Bit				Bituminous				Thin Bit			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	5" Mill w/6.5" White-Topping & B	$ 487,852.38	$ 487,852.38	0	5" Mill w/8" FDR (Full Width)	$ 361,584.48	$ 361,584.48	0	45" Mill w/6" White-Topping & Bi	$ 461,507.32	$ 461,507.32
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8	Crack Treatment	$ 1,056.00	$ 931.53	8			$ -
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12	Seal	$ 12,207.19	$ 10,113.87	12			$ -
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 212,635.31	$ 155,407.23	20	ML Overlay 3.5	$ 192,524.89	$ 140,709.27	20	1st CPR	$ 286,530.67	$ 209,414.60
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23	Crack Treatment	$ 2,112.00	$ 1,472.67	23			$ -
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27	Seal	$ 7,733.20	$ 5,064.51	27			$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 193,867.03	$ 111,999.65	35			$ -	35	Remove and Replace	$ 542,559.86	$ 313,444.29
36			$ -	36			$ -	36			$ -
37			$ -	37	ML Overlay 3.5"	$ 192,524.89	$ 107,791.17	37			$ -
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40	Crack Treatment	$ 2,112.00	$ 1,128.15	40			$ -
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44	Chip Seal	$ 7,733.20	$ 3,879.70	44			$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	4/17 Remaining Life	$ (45,299.97)	$ (20,686.52)	50	5/20 Remaining	$ (135,639.96)	$ (61,940.86)
Net Present Cost for Segment			$ 10,800,207.36	Net Present Cost for Segment			$ 8,751,440.19	Net Present Cost for Segment			$ 13,190,682.40
Maintenance - Net Present Cost for Segment			$ 3,823,918.33	Maintenance - Net Present Cost for Segment			$ 3,580,782.12	Maintenance - Net Present Cost for Segment			$ 6,591,127.73
Equivalent Annual Cost			314,061.46	Equivalent Annual Cost			254,484.94	Equivalent Annual Cost			383,574.58

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	50		24	2	50		28	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
8	1	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)		12	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)		8	1		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
1.5	Y	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)		1.5	N	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)		1.5	Y	TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
Y	6.5			N				Y	6		
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
12	11			1.5				12	11		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
35	3			20	3				3		

50 Year Analysis

Project Number	Analysis Period
7303-50	50
Highway	Discount Rate
15	1.32%
Date	
1/23/2018	
Performed By	
Scott Zeidler	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	20 yr HMA (SFDR)		20 yr PCC (6" White-Topping)		35 yr PCC (6.5" Concrete Reconstruct)		1.0
Net Present Cost	$ 782,946.61		$ 1,531,280.43		$ 1,490,364.36		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$782,946.61		$1,531,280.43		$1,490,364.36	Total
% of Low Cost		100.0%		195.6%		190.4%	1.0

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	1			1	1			1	1		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		20 yr HMA (SFDR)		2		20 yr PCC (6" White-Topping)		3		35 yr PCC (6.5" Concrete Reconstruct)	
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				PCC			
Primary Category				Primary Category				Primary Category			
20-year HMA				> 11' Joint Spacing				> 11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Thin Bit.				Thin Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 445,980.03	$ 445,980.03	0	Construction	$ 842,305.32	$ 842,305.32	0	Construction	$ 1,176,370.40	$ 1,176,370.40
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3		$ -	$ -	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7		$ -	$ -	7		$ -	$ -	7		$ -	$ -
8	Crack Treatment	$ 1,058.82	$ 953.36	8		$ -	$ -	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12	Seal	$ 11,551.23	$ 9,869.30	12		$ -	$ -	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15		$ -	$ -	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18		$ -	$ -	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20	Mill/Overlay	$ 249,020.00	$ 191,571.37	20	1st CPR	$ 320,489.89	$ 246,553.24	20	1st CPR	$ 242,995.69	$ 186,936.86
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22		$ -	$ -	22		$ -	$ -	22		$ -	$ -
23	Crack Treatment	$ 2,117.63	$ 1,566.25	23		$ -	$ -	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27	Seal	$ 7,027.33	$ 4,931.97	27		$ -	$ -	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29		$ -	$ -	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32		$ -	$ -	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35		$ -	$ -	35	R & R Mainline	$ 881,041.94	$ 556,756.44	35	2nd CPR	$ 201,062.14	$ 127,057.10
36		$ -	$ -	36		$ -	$ -	36		$ -	$ -
37	Mill/Overlay	$ 249,020.00	$ 153,289.54	37		$ -	$ -	37		$ -	$ -
38		$ -	$ -	38		$ -	$ -	38		$ -	$ -
39		$ -	$ -	39		$ -	$ -	39		$ -	$ -
40	Crack Treatment	$ 2,117.63	$ 1,253.27	40		$ -	$ -	40		$ -	$ -
41		$ -	$ -	41		$ -	$ -	41		$ -	$ -
42		$ -	$ -	42		$ -	$ -	42		$ -	$ -
43		$ -	$ -	43		$ -	$ -	43		$ -	$ -
44	Seal	$ 7,027.33	$ 3,946.41	44		$ -	$ -	44		$ -	$ -
45		$ -	$ -	45		$ -	$ -	45		$ -	$ -
46		$ -	$ -	46		$ -	$ -	46		$ -	$ -
47		$ -	$ -	47		$ -	$ -	47		$ -	$ -
48		$ -	$ -	48		$ -	$ -	48		$ -	$ -
49		$ -	$ -	49		$ -	$ -	49		$ -	$ -
50	Remaining Life	$ (58,592.94)	$ (30,414.89)	50	Remaining Life	$ (220,260.49)	$ (114,334.56)	50	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 782,946.61	Net Present Cost for Segment			$ 1,531,280.43	Net Present Cost for Segment			$ 1,490,364.36
Maintenance - Net Present Cost for Segment			$ 336,966.58	Maintenance - Net Present Cost for Segment			$ 688,975.11	Maintenance - Net Present Cost for Segment			$ 313,993.96
Equivalent Annual Cost			21,490.20	Equivalent Annual Cost			42,030.35	Equivalent Annual Cost			40,907.29
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	50		26	2	50		26	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
16	2	9.5 WE (4,F)		14	2			14	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)		3	Yes	12.5 WE (2,B)		3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				Yes	6			Yes	6.5		
ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane			ML Top Lift/Jt spacing	# Dowels per Lane		
1.5				12				12			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	3				3				3		

35 Year Analysis

Project Number	Analysis Period
7611-15	35
Highway	Discount Rate
	1.58%
Date	
Performed By	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" Mill and Overlay		3.5" Mill and FDR + 4" HMA		4" Mill and 4.5" PCC		14.3
Net Present Cost	$4,268,121.98		$5,352,093.39		$9,254,557.06		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,268,121.98		$5,352,093.39		$9,254,557.06	Total
% of Low Cost		100.0%		125.4%		216.8%	14.3

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	3" Mill and Overlay		3.5" Mill and FDR + 4" HMA		4" Mill and 4.5" PCC		14.3
Net Present Cost	$2,025,777.59		$2,020,659.72		$4,977,902.97		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,025,777.59		$2,020,659.72		$4,977,902.97	Total
Bid Adjustment Factor		$5,117.87				$2,957,243.25	14.3

SEGMENT	Length		
1	14.3		
ALTERNATE		Description	
1		3" Mill and Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL > 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	3" M/O	$ 156,807.30	$ 156,807.30
1			$ -
2			$ -
3	Crack Treatment	$ 2,464.00	$ 2,350.80
4			$ -
5			$ -
6			$ -
7	Seal	$ 6,914.52	$ 6,195.90
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19	ML Overlay 3.5"	$ 186,917.10	$ 138,769.19
20			$ -
21			$ -
22	Crack Treatment	$ 2,464.00	$ 1,745.26
23			$ -
24			$ -
25			$ -
26	Seal	$ 6,914.52	$ 4,599.90
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remaining Life	$ (20,768.57)	$ (11,998.29)
Net Present Cost for Segment			$ 4,268,121.98
Maintenance - Net Present Cost for Segment			$ 2,025,777.59
Equivalent Annual Cost			159,693.40

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
6	2	Type SP 9.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
19	3		

SEGMENT	Length		
1	14.3		
ALTERNATE		Description	
2		3.5" Mill and FDR + 4" HMA	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	FDR + 4" HMA	$ 232,967.39	$ 232,967.39
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,232.00	$ 1,086.79
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,148.14	$ 10,064.94
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 186,917.10	$ 136,610.74
21			$ -
22			$ -
23	Crack Treatment	$ 2,464.00	$ 1,718.11
24			$ -
25			$ -
26			$ -
27	Seal	$ 6,914.52	$ 4,528.35
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (21,990.25)	$ (12,704.07)
Net Present Cost for Segment			$ 5,352,093.39
Maintenance - Net Present Cost for Segment			$ 2,020,659.72
Equivalent Annual Cost			200,250.60

Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
6	2	Type SP 9.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N		
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
1	14.3		
ALTERNATE		Description	
3		4" Mill and 4.5" PCC	
Pavement Type			
PCC			
Primary Category			
6'X6' ≤ 5.0" Thickness			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	4.5" PCC	$ 299,066.72	$ 299,066.72
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 404,955.18	$ 295,966.66
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 402,193.93	$ 251,298.13
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (344,737.65)	$ (199,159.68)
Net Present Cost for Segment			$ 9,254,557.06
Maintenance - Net Present Cost for Segment			$ 4,977,902.97
Equivalent Annual Cost			346,262.76

Total Lane Width	# of Lanes	Analysis Period	
27	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
6	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	Y		
Sealed/UTBWC	ML Thickness		
N	4.5		
ML Top Lift / joint spacing	# Dowels per Lane		
6	0		
Design Life	Shldr Thickness		
	3		

35 Year Analysis

Project Number	Analysis Period
7802-33 (1)	35
Highway	Discount Rate
75	1.32%
Date	
9/26/2017	
Performed By	
JS/KR	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	1.5" Mill, 3" Pave(TH75 RP 165.34 - TH75		1.5" Mill, 3" CIR, 3" Pave Back (TH75 RP		Concrete Reconstruct (TH75 RP 165.34 -		5.9
Net Present Cost	$2,368,081.44		$2,333,722.31		$6,333,201.34		Miles
Segment #2	Mill & Fill		CIR		CONC RECON		1.2
Net Present Cost	$550,843.99		$383,183.86		$1,543,311.69		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$2,918,925.43		$2,716,906.18		$7,876,513.02	Total
% of Low Cost		107.4%		100.0%		289.9%	7.1

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	5.9			1	5.9			1	5.9		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		1.5" Mill, 3" Pave(TH75 RP 165.34 - TH75 RP		2		1.5" Mill, 3" CIR, 3" Pave Back (TH75 RP 165.34 -		3		Concrete Reconstruct (TH75 RP 165.34 - TH75 RP 171.	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				20-year HMA				> 11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Aggregate				Bituminous				Aggregate			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,014,015.48	$ 1,014,015.48	0	Construction	$ 1,365,885.03	$ 1,365,885.03	0	Construction	$ 5,605,719.35	$ 5,605,719.35
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 14,578.84	$ 14,016.43	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 41,768.76	$ 38,105.29	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8	Crack Treatment	$ 7,289.42	$ 6,563.44	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12	Seal	$ 77,198.04	$ 65,957.49	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15	Mill/Overlay	$ 1,072,735.90	$ 881,180.95	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18	Crack Treatment	$ 14,578.84	$ 11,513.56	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20		$ -	$ -	20	Mill/Overlay	$ 1,225,752.61	$ 942,972.89	20	1st CPR	$ 945,640.07	$ 727,481.99
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22	Seal	$ 41,768.76	$ 31,300.95	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23	Crack Treatment	$ 14,578.84	$ 10,782.85	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27	Seal	$ 46,576.67	$ 32,688.77	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29	Mill/Overlay	$ 1,072,735.90	$ 733,385.91	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Crack Treatment	$ 14,578.84	$ 9,582.46	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (577,627.02)	$ (365,019.58)	35	Remaining Life	$ (144,206.19)	$ (91,128.15)	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 2,368,081.44	Net Present Cost for Segment			$ 2,333,722.31	Net Present Cost for Segment			$ 6,333,201.34
Maintenance - Net Present Cost for Segment			$ 1,354,065.97	Maintenance - Net Present Cost for Segment			$ 967,837.29	Maintenance - Net Present Cost for Segment			$ 727,481.99
Equivalent Annual Cost			84,925.79	Equivalent Annual Cost			83,693.58	Equivalent Annual Cost			227,125.69
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	35		28	2	35		28	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
18	2	12.5 WE (3,B)		16	2	12.5 WE (3,B)		16	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
2	No			2	No	12.5 WE (3,B)		2	No	9.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/3t spacing	# Dowels per Lane			ML Top Lift/3t spacing	# Dowels per Lane			ML Top Lift/3t spacing	# Dowels per Lane		
1.5				1.5				15			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	1.5			20	1.5				3		

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
2	1.18			2	1.18			2	1.18		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		Mill & Fill		2		CIR		3		CONC RECON	
Pavement Type				Pavement Type				Pavement Type			
HMA				HMA				PCC			
Primary Category				Primary Category				Primary Category			
Overlay				20-year HMA				> 11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Rural				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				Bituminous				Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 242,552.41	$ 242,552.41	0	Construction	$ 189,649.21	$ 189,649.21	0	Construction	$ 1,352,505.01	$ 1,352,505.01
1		$ -	$ -	1		$ -	$ -	1		$ -	$ -
2		$ -	$ -	2		$ -	$ -	2		$ -	$ -
3	Crack Treatment	$ 2,915.27	$ 2,802.81	3		$ -	$ -	3		$ -	$ -
4		$ -	$ -	4		$ -	$ -	4		$ -	$ -
5		$ -	$ -	5		$ -	$ -	5		$ -	$ -
6		$ -	$ -	6		$ -	$ -	6		$ -	$ -
7	Seal	$ 9,485.44	$ 8,653.49	7		$ -	$ -	7		$ -	$ -
8		$ -	$ -	8	Crack Treatment	$ 1,457.64	$ 1,312.47	8		$ -	$ -
9		$ -	$ -	9		$ -	$ -	9		$ -	$ -
10		$ -	$ -	10		$ -	$ -	10		$ -	$ -
11		$ -	$ -	11		$ -	$ -	11		$ -	$ -
12		$ -	$ -	12	Seal	$ 15,436.99	$ 13,189.26	12		$ -	$ -
13		$ -	$ -	13		$ -	$ -	13		$ -	$ -
14		$ -	$ -	14		$ -	$ -	14		$ -	$ -
15	Mill/Overlay	$ 245,108.98	$ 201,340.67	15		$ -	$ -	15		$ -	$ -
16		$ -	$ -	16		$ -	$ -	16		$ -	$ -
17		$ -	$ -	17		$ -	$ -	17		$ -	$ -
18	Crack Treatment	$ 2,915.27	$ 2,302.32	18		$ -	$ -	18		$ -	$ -
19		$ -	$ -	19		$ -	$ -	19		$ -	$ -
20		$ -	$ -	20	Mill/Overlay	$ 245,108.98	$ 188,562.62	20	1st CPR	$ 248,026.00	$ 190,806.68
21		$ -	$ -	21		$ -	$ -	21		$ -	$ -
22	Seal	$ 9,485.44	$ 7,108.26	22		$ -	$ -	22		$ -	$ -
23		$ -	$ -	23	Crack Treatment	$ 2,915.27	$ 2,156.21	23		$ -	$ -
24		$ -	$ -	24		$ -	$ -	24		$ -	$ -
25		$ -	$ -	25		$ -	$ -	25		$ -	$ -
26		$ -	$ -	26		$ -	$ -	26		$ -	$ -
27		$ -	$ -	27	Seal	$ 9,313.76	$ 6,536.65	27		$ -	$ -
28		$ -	$ -	28		$ -	$ -	28		$ -	$ -
29	Mill/Overlay	$ 245,108.98	$ 167,571.04	29		$ -	$ -	29		$ -	$ -
30		$ -	$ -	30		$ -	$ -	30		$ -	$ -
31		$ -	$ -	31		$ -	$ -	31		$ -	$ -
32	Crack Treatment	$ 2,915.27	$ 1,916.17	32		$ -	$ -	32		$ -	$ -
33		$ -	$ -	33		$ -	$ -	33		$ -	$ -
34		$ -	$ -	34		$ -	$ -	34		$ -	$ -
35	Remaining Life	$ (131,981.76)	$ (83,403.17)	35	Remaining Life	$ (28,836.35)	$ (18,222.54)	35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 550,843.99	Net Present Cost for Segment			$ 383,183.86	Net Present Cost for Segment			$ 1,543,311.69
Maintenance - Net Present Cost for Segment			$ 308,291.58	Maintenance - Net Present Cost for Segment			$ 193,534.66	Maintenance - Net Present Cost for Segment			$ 190,806.68
Equivalent Annual Cost			19,754.75	Equivalent Annual Cost			13,742.01	Equivalent Annual Cost			55,347.32
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
28	2	35		28	16	35		28	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (3,B)		16	2	12.5 WE (3,B)		16	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
2	No	12.5 WE (3,B)		2	No	12.5 WE (3,B)		2	No	12.5 WE (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/3t spacing	# Dowels per Lane			ML Top Lift/3t spacing	# Dowels per Lane			ML Top Lift/3t spacing	# Dowels per Lane		
1.5				1.5				15			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	1.5			20	1.5				6		

35 Year Analysis

Project Number	Analysis Period
7802-33 (2)	35
Highway	Discount Rate
27	1.32%
Date	
9/26/2017	
Performed By	
JH/KR	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	Mill and fill (TH27 12.95 to 23.17)		3.0" Mill, 4.0" CIR, 3.0" Pavement(TH27 12		4.5" Whitetop (TH27 12.95 to 23.17)		10.2
Net Present Cost	$4,076,035.68		$3,713,912.72		$8,351,061.08		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$4,076,035.68		$3,713,912.72		$8,351,061.08	Total
% of Low Cost		109.8%		100.0%		224.9%	10.2

SEGMENT	Length		
1	10.22		
ALTERNATE		Description	
1		Mill and fill (TH27 12.95 to 23.17)	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 1,652,493.22	$ 1,652,493.22
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 25,249.23	$ 24,275.19
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 76,503.16	$ 69,793.20
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 1,919,268.01	$ 1,576,550.58
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 25,249.23	$ 19,940.45
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 76,503.16	$ 57,330.45
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 1,919,268.01	$ 1,312,125.49
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 25,249.23	$ 16,595.96
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (1,033,452.01)	$ (653,068.86)
Net Present Cost for Segment			$ 4,076,035.68
Maintenance - Net Present Cost for Segment			$ 2,423,542.46
Equivalent Annual Cost			146,177.64
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
8.0	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
0	No	12.5 WE (3,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	10.22		
ALTERNATE		Description	
2		3.0" Mill, 4.0" CIR, 3.0" Pavement(TH27 12.95 to 23	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,290,818.97	$ 2,290,818.97
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 12,624.62	$ 11,367.28
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 122,955.70	$ 105,052.53
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 1,780,297.11	$ 1,369,584.60
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 25,249.23	$ 18,674.93
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 72,339.72	$ 50,769.97
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (209,446.72)	$ (132,355.57)
Net Present Cost for Segment			$ 3,713,912.72
Maintenance - Net Present Cost for Segment			$ 1,423,093.74
Equivalent Annual Cost			133,190.93
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
8	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
0	No		
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3.0		

SEGMENT	Length		
1	10.22		
ALTERNATE		Description	
3		4.5" Whitetop (TH27 12.95 to 23.17)	
Pavement Type			
PCC			
Primary Category			
6'x6', 5.0 in. or Thinner			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Aggregate			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,765,427.12	$ 3,765,427.12
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 5,000,225.75	$ 3,846,679.39
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30	R & R Mainline	$ 5,551,929.15	$ 3,746,178.63
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (4,758,796.42)	$ (3,007,224.05)
Net Present Cost for Segment			$ 8,351,061.08
Maintenance - Net Present Cost for Segment			$ 4,585,633.96
Equivalent Annual Cost			299,491.59
Total Lane Width	# of Lanes	Analysis Period	
28	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
8	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
0	Yes		
Sealed/UTBWC	ML Thickness		
No	4.5		
ML Top Lift/Jt spacing	# Dowels per Lane		
6			
Design Life	Shldr Thickness		
	4.5		

35 Year Analysis: Project # 7906-96 - Hwy 61

35 Year Analysis

Project Number	Analysis Period
2513-957906-96	35
Highway	
61	1.32%
Date	
10/25/2017	
Performed By	
trm	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	7.5" Whitetopping-20 YR FIX		1.5" Mill and 3" Bit. Overlay-15 YR FIX		4" CIR + 3" Bit. Overlay-20 YR FIX		7.4
Net Present Cost	$5,648,165.04		$2,858,062.40		$2,831,896.09		Miles
Segment #2	5" UBOL-20 YR FIX	1.5" Mill and 3" Bit. Overlay-15 YR FIX		3"Mill and 5" Bit. Overlay-20 YR FIX			13.6
Net Present Cost	$11,491,108.73		$5,220,785.20		$5,505,741.72		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$17,139,273.78		$8,078,847.60		$8,337,637.81	Total
% of Low Cost		212.1%		100.0%		103.2%	20.9

SEGMENT	Length		
1	7.358		
ALTERNATE		Description	
1		7.5" Whitetopping-20 YR FIX	
Pavement Type			
PCC			
Primary Category		Notes:	
> 11' Joint Spacing		Segment 1- existng road is BAB	
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 4,263,757.18	$ 4,263,757.18
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 1,799,565.58	$ 1,384,407.86
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 5,648,165.04
Maintenance - Net Present Cost for Segment			$ 1,384,407.86
Equivalent Annual Cost			202,558.44

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	Yes	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
Yes	7.5		
ML Top Lift/Jt spacing	# Dowels per Lane		
15			
Design Life	Shldr Thickness		
	4.5		

SEGMENT	Length		
1	7.358		
ALTERNATE		Description	
2		1.5" Mill and 3" Bit. Overlay-15 YR FIX	
Pavement Type			
HMA			
Primary Category		Notes:	
Overlay		Segment 1- existing road is BAB	
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,098,744.21	$ 1,098,744.21
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 20,222.85	$ 19,442.71
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 49,512.47	$ 45,169.82
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 1,371,416.99	$ 1,126,527.53
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 20,222.85	$ 15,970.89
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 49,512.47	$ 37,103.99
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 1,371,416.99	$ 937,582.03
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 20,222.85	$ 13,292.19
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (738,455.30)	$ (466,651.72)
Net Present Cost for Segment			$ 2,858,062.40
Maintenance - Net Present Cost for Segment			$ 1,759,318.19
Equivalent Annual Cost			102,497.83

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	7.358		
ALTERNATE		Description	
3		4" CIR + 3" Bit. Overlay-20 YR FIX	
Pavement Type			
HMA			
Primary Category		Notes:	
20-year HMA		Segment 1- existing road is BAB	
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,834,667.28	$ 1,834,667.28
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 10,111.42	$ 9,104.39
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 82,162.21	$ 70,198.84
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 1,249,314.31	$ 961,098.93
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 20,222.85	$ 14,957.30
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 49,512.47	$ 34,749.19
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (146,978.15)	$ (92,879.84)
Net Present Cost for Segment			$ 2,831,896.09
Maintenance - Net Present Cost for Segment			$ 997,228.81
Equivalent Annual Cost			101,559.44

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	12.5 WE (4,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	1.5		

SEGMENT	Length		
2	13.568		
ALTERNATE		Description	
1		7.5" UBOL-20 YR FIX	
Pavement Type			
PCC			
Primary Category		Notes:	
> 11' Joint Spacing		Segment 2-existing road is BOC	
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 8,851,660.08	$ 8,851,660.08
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 3,430,969.36	$ 2,639,448.65
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 11,491,108.73
Maintenance - Net Present Cost for Segment			$ 2,639,448.65
Equivalent Annual Cost			412,102.18

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No	7.5		
ML Top Lift/Jt spacing	# Dowels per Lane		
15			
Design Life	Shldr Thickness		
	4.5		

SEGMENT	Length		
2	13.568		
ALTERNATE		Description	
2		1.5" Mill and 3" Bit. Overlay-15 YR FIX	
Pavement Type			
HMA			
Primary Category		Notes:	
Overlay		Segment 2-existing road is BOC	
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,122,192.27	$ 2,122,192.27
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 37,290.51	$ 35,851.95
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 93,372.73	$ 85,183.17
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 2,399,840.27	$ 1,971,308.61
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 37,290.51	$ 29,449.98
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 93,372.73	$ 69,972.29
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 2,399,840.27	$ 1,640,673.20
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 37,290.51	$ 24,510.52
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (1,292,221.68)	$ (816,593.06)
Net Present Cost for Segment			$ 5,220,785.20
Maintenance - Net Present Cost for Segment			$ 3,098,592.93
Equivalent Annual Cost			187,231.45

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (4,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
2	13.568		
ALTERNATE		Description	
3		3"Mill and 5" Bit. Overlay-20 YR FIX	
Pavement Type			
HMA			
Primary Category		Notes:	
20-year HMA		Segment 2-existing road is BOC	
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,398,441.24	$ 3,398,441.24
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 18,645.25	$ 16,788.31
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 154,179.95	$ 131,730.31
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 2,684,584.48	$ 2,065,253.91
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 37,290.51	$ 27,580.94
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 93,372.73	$ 65,531.51
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (315,833.47)	$ (199,584.50)
Net Present Cost for Segment			$ 5,505,741.72
Maintenance - Net Present Cost for Segment			$ 2,107,300.48
Equivalent Annual Cost			197,450.76

Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
16	2	12.5 WE (4,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

35 Year Analysis: Project # 7908-35 - TH 63

35 Year Analysis

Project Number	Analysis Period
7908-35	35
Highway	Discount Rate
TH 63	1.58%
Date	
2/9/2017	
Performed By	
TRM	

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" mill and 3.5" Bit. Overlay		CIR and 3" Bit. Overlay		6" Whitetopping		8.7
Net Present Cost	$3,750,720.52		$3,245,548.48		$4,883,038.32		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,750,720.52		$3,245,548.48		$4,883,038.32	Total
% of Low Cost		115.6%		100.0%		150.5%	8.7

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" mill and 3.5" Bit. Overlay		CIR and 3" Bit. Overlay		6" Whitetopping		8.7
Net Present Cost	$1,963,809.13		$1,205,501.51		$1,257,700.66		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$1,963,809.13		$1,205,501.51		$1,257,700.66	Total
Bid Adjustment Factor		$758,307.62				$52,199.15	8.7

SEGMENT	Length		
1	8.676		
ALTERNATE		Description	
1		2" mill and 3.5" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
Overlay, DL =13 to 17 years			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 205,960.28	$ 205,960.28
1			$ -
2			$ -
3	Crack Treatment	$ 1,909.25	$ 1,821.54
4			$ -
5			$ -
6			$ -
7	Seal	$ 7,794.64	$ 6,984.55
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 187,983.62	$ 148,592.49
16			$ -
17			$ -
18	Crack Treatment	$ 1,909.25	$ 1,439.84
19			$ -
20			$ -
21			$ -
22	Seal	$ 7,794.64	$ 5,520.97
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 187,983.62	$ 119,311.40
30			$ -
31			$ -
32	Crack Treatment	$ 1,909.25	$ 1,156.11
33			$ -
34			$ -
35	Remaining Life	$ (101,221.95)	$ (58,477.31)
Net Present Cost for Segment			$ 3,750,720.52
Maintenance - Net Present Cost for Segment			$ 1,963,809.13
Equivalent Annual Cost			140,334.63
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	8.676		
ALTERNATE		Description	
2		CIR and 3" Bit. Overlay	
Pavement Type			
HMA			
Primary Category			
20 Year HMA			
Secondary Category			
Rural			
ShoulderCategory			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 235,136.81	$ 235,136.81
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 954.62	$ 842.11
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,317.10	$ 10,204.93
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 183,231.67	$ 133,917.20
21			$ -
22			$ -
23	Crack Treatment	$ 1,909.25	$ 1,331.29
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,794.64	$ 5,104.75
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (21,556.67)	$ (12,453.58)
Net Present Cost for Segment			$ 3,245,548.48
Maintenance - Net Present Cost for Segment			$ 1,205,501.51
Equivalent Annual Cost			121,433.43
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2	Type SP 12.5 Wearing Course Mixture (3,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (3,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
1	8.676		
ALTERNATE		Description	
3		6" Whitetopping	
Pavement Type			
PCC			
Primary Category			
≥12 Joint spacing			
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 417,858.19	$ 417,858.19
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 198,345.30	$ 144,963.19
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 4,883,038.32
Maintenance - Net Present Cost for Segment			$ 1,257,700.66
Equivalent Annual Cost			182,700.73
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
4	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
15	11		
Design Life	Shldr Thickness		
	7		

50 Year Analysis

Project Number	Analysis Period
8309-52	50
Highway	Discount Rate
	1.58%
Date	
Performed By	

SEGMENT	Length			SEGMENT	Length			SEGMENT	Length		
1	15			1	15			1	15		
ALTERNATE		Description		ALTERNATE		Description		ALTERNATE		Description	
1		35 yr concrete		2		20 yr concrete		3		20 yr bit	
Pavement Type				Pavement Type				Pavement Type			
PCC				PCC				HMA			
Primary Category				Primary Category				Primary Category			
≥12 Joint spacing				≥12 Joint spacing				20 Year HMA			
Secondary Category				Secondary Category				Secondary Category			
Design Life 35 Years				Design Life = 20 Years				Rural			
ShoulderCategory				ShoulderCategory				ShoulderCategory			
Thick Bit				Thick Bit				Bituminous			

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	35 yr concrete		20 yr concrete		20 yr bit		15.0
Net Present Cost	$ 13,910,942.64		$ 15,955,869.00		$ 21,000,515.64		Miles
Segment #2							
Net Present Cost							Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$13,910,942.64		$15,955,869.00		$21,000,515.64	Total
% of Low Cost		100.0%		114.7%		151.0%	15.0

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	35 yr concrete		20 yr concrete		20 yr bit		15.0
Net Present Cost	$3,658,531.14		$7,371,264.00		$4,898,889.45		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$3,658,531.14		$7,371,264.00		$4,898,889.45	Total
Bid Adjustment Factor				$3,712,732.87		$1,240,358.31	15.0

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	initial construction	$ 683,494.10	$ 683,494.10	0	initial construction	$ 572,307.00	$ 572,307.00	0	initial construction	$ 1,073,441.75	$ 1,073,441.75
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8			$ -	8			$ -	8	Crack Treatment	$ 1,276.00	$ 1,125.60
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12			$ -	12			$ -	12	Seal	$ 15,345.63	$ 12,714.12
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	1st CPR	$ 185,935.75	$ 135,893.52	20	1st CPR	$ 275,368.83	$ 201,256.82	20	ML Overlay 4	$ 262,883.27	$ 192,131.59
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23			$ -	23			$ -	23	Crack Treatment	$ 2,552.00	$ 1,779.47
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27			$ -	27			$ -	27	Seal	$ 9,549.45	$ 6,253.98
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35	2nd CPR	$ 186,958.61	$ 108,008.56	35	Remove and Replace	$ 625,954.05	$ 361,622.26	35			$ -
36			$ -	36			$ -	36			$ -
37			$ -	37			$ -	37	ML Overlay 3.5"	$ 235,247.54	$ 131,710.79
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40			$ -	40			$ -	40	Crack Treatment	$ 2,552.00	$ 1,363.18
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44			$ -	44			$ -	44	Chip Seal	$ 9,549.45	$ 4,790.90
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	0/0 Remaining	$ -	$ -	50	5/20 Remaining	$ (156,488.51)	$ (71,461.49)	50	4/17 Remaining Life	$ (55,352.36)	$ (25,277.01)
Net Present Cost for Segment			$ 13,910,942.64	Net Present Cost for Segment			$ 15,955,869.00	Net Present Cost for Segment			$ 21,000,515.64
Maintenance - Net Present Cost for Segment			$ 3,658,531.14	Maintenance - Net Present Cost for Segment			$ 7,371,264.00	Maintenance - Net Present Cost for Segment			$ 4,898,889.45
Equivalent Annual Cost			404,519.18	Equivalent Annual Cost			463,984.01	Equivalent Annual Cost			610,678.33

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
29	2	50		29	2	50		29	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
9	1			9	1			9	1	Type SP 12.5 Wearing Course Mixture (5,E)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
3	N	Type SP 12.5 Wearing Course Mixture (3,B)		3	N	Type SP 12.5 Wearing Course Mixture (3,B)		3	N	Type SP 12.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N	7.5			N	6			N			
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
15	11			12	11			2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
35	4			20	4			20	4		

35 Year Analysis

Project Number	Analysis Period
8504-79	35
Highway	Discount Rate
61	1.32%
Date	
1/12/2018	
Performed By	
trm	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	6.5" UBOL-20 YR FIX		1.5" Mill and 3" Bit. Overlay-15 YR FIX		3.5" Mill and 5" Bit. Overlay-20 YR FIX		12.7
Net Present Cost	$10,854,498.80		$4,792,894.69		$5,107,483.32		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$10,854,498.80		$4,792,894.69		$5,107,483.32	Total
% of Low Cost		226.5%		100.0%		106.6%	12.7

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
1		6.5" UBOL-20 YR FIX	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 8,175,277.56	$ 8,175,277.56
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 3,482,669.00	$ 2,679,221.24
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 10,854,498.80
Maintenance - Net Present Cost for Segment			$ 2,679,221.24
Equivalent Annual Cost			389,271.63
Total Lane Width	# of Lanes	Analysis Period	
29	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
8	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No	6.5		
ML Top Lift/Jt spacing	# Dowels per Lane		
15			
Design Life	Shldr Thickness		
	4.5		

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
2		1.5" Mill and 3" Bit. Overlay-15 YR FIX	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 2,002,875.81	$ 2,002,875.81
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 34,891.14	$ 33,545.14
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 85,425.50	$ 77,932.97
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 2,155,483.04	$ 1,770,585.46
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 34,891.14	$ 27,555.09
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 85,425.50	$ 64,016.74
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 2,155,483.04	$ 1,473,616.10
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 34,891.14	$ 22,933.45
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (1,160,644.71)	$ (733,445.69)
Net Present Cost for Segment			$ 4,792,894.69
Maintenance - Net Present Cost for Segment			$ 2,790,018.87
Equivalent Annual Cost			171,886.14
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	12.5 WE (4,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	1.5		

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
3		3.5" Mill and 5" Bit. Overlay-20 YR FIX	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,201,779.30	$ 3,201,779.30
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 17,445.57	$ 15,708.10
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 141,757.17	$ 121,116.38
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 2,421,906.01	$ 1,863,175.06
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 34,891.14	$ 25,806.31
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 85,425.50	$ 59,953.93
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (284,930.12)	$ (180,055.76)
Net Present Cost for Segment			$ 5,107,483.32
Maintenance - Net Present Cost for Segment			$ 1,905,704.02
Equivalent Annual Cost			183,168.14
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	12.5 WE (4,B)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	4.5		

35 Year Analysis

Project Number	Analysis Period
8580-167	35
Highway	
I-90 EB & WB	1.32%
Date	
1/10/2018	
Performed By	
trm	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	8" UBOL-20 YR FIX		3" Mill and 3" Bit. Overlay-15 YR FIX		3" Mill and 5" Bit. Overlay-20 YR FIX		5.7
Net Present Cost	$5,337,533.36		$2,559,325.04		$2,400,445.63		Miles
Segment #2	0		0		0		0
Net Present Cost	0		0		0		Miles
Segment #3	0		0		0		0
Net Present Cost	0		0		0		Miles
Project Net Present Cost		$5,337,533.36		$2,559,325.04		$2,400,445.63	Total
% of Low Cost		22.4%		106.6%		100.0%	5.7

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
1		8" UBOL-20 YR FIX	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 4,248,051.53	$ 4,248,051.53
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 1,416,196.82	$ 1,089,481.83
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 5,337,533.36
Maintenance - Net Present Cost for Segment			$ 1,089,481.83
Equivalent Annual Cost			191,418.35
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
14	2		
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No	8		
ML Top Lift/Jt spacing	# Dowels per Lane		
15			
Design Life	Shldr Thickness		
	3.5		

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
2		3" Mill and 3" Bit. Overlay-15 YR FIX	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Urban			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,081,017.74	$ 1,081,017.74
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 15,649.48	$ 15,045.77
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 38,605.26	$ 35,219.26
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 1,101,799.60	$ 905,054.84
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 15,649.48	$ 12,359.10
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 38,605.26	$ 28,930.27
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 1,302,700.88	$ 890,603.62
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 15,649.48	$ 10,286.18
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (701,454.32)	$ (443,269.71)
Net Present Cost for Segment			$ 2,559,325.04
Maintenance - Net Present Cost for Segment			$ 1,478,307.30
Equivalent Annual Cost			91,784.30
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
14	2	12.5 WE (4,E)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
15	4.5		

SEGMENT	Length		
1	12.695		
ALTERNATE		Description	
3		3" Mill and 5" Bit. Overlay-20 YR FIX	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Urban			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 1,621,097.78	$ 1,621,097.78
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 7,824.74	$ 7,045.45
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 63,955.50	$ 54,643.15
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 977,025.65	$ 751,626.95
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 15,649.48	$ 11,574.73
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 38,605.26	$ 27,094.22
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (114,944.19)	$ (72,636.63)
Net Present Cost for Segment			$ 2,400,445.63
Maintenance - Net Present Cost for Segment			$ 779,347.85
Equivalent Annual Cost			86,086.46
Total Lane Width	# of Lanes	Analysis Period	
24	2	35	
Total Shldr Width	# of Shldrs	ML Mix	
14	2	12.5 WE (4,E)	
Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness		
No			
ML Top Lift/Jt spacing	# Dowels per Lane		
2			
Design Life	Shldr Thickness		
20	4.5		

35 Year Analysis

Project Number	Analysis Period
8606-60	35
Highway	
55	1.32%
Date	
9/5/2017	
Performed By	
Samuel Nigon	

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	2" M & F (ML & TL), 1.5" HMA (Full Width)		Mill, 5" HMA (Full Width)		Mill, Whitetopping, HMA (Shld)		11.1
Net Present Cost	$4,237,193.81		$5,572,169.83		$6,989,824.65		Miles
Segment #2	2" M & F (ML & TL), 1.5" HMA (Full Width)		Mill, 5" HMA (Full Width)		Mill, Whitetopping, HMA (Shld)		1.5
Net Present Cost	$679,680.80		$819,455.88		$1,367,217.69		Miles
Segment #3	2" M & F (ML & TL), 1.5" HMA (Full Width)		Mill, 5" HMA (Full Width)		Mill, Whitetopping, HMA (Shld)		0.498
Net Present Cost	281936.198		338122.7786		515891.5543		Miles
Segment #2	2" M & F (ML & TL), 1.5" HMA (Full Width)		Mill, 5" HMA (Full Width)		Mill, Whitetopping, HMA (Shld)		0.2
Net Present Cost	$142,837.83		$175,816.21		$217,517.29		Miles
Project Net Present Cost		$5,341,648.64		$6,905,564.69		$9,090,451.19	Total
% of Low Cost		100.0%		129.3%		170.2%	13.2

SEGMENT	Length		
1	11.096		
ALTERNATE		Description	
		2" M & F (ML & TL), 1.5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 1,772,934.05	$ 1,772,934.05
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 23,497.25	$ 22,590.79
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 74,665.73	$ 68,116.92
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 1,960,467.50	$ 1,610,393.21
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 23,497.25	$ 18,556.83
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 74,665.73	$ 55,953.51
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 1,960,467.50	$ 1,340,291.90
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 23,497.25	$ 15,444.40
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (1,055,636.34)	$ (667,087.79)
Net Present Cost for Segment			$ 4,237,193.81
Maintenance - Net Present Cost for Segment			$ 2,464,259.77
Equivalent Annual Cost			151,957.21

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEGMENT	Length		
1	11.096		
ALTERNATE		Description	
		Mill, 5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 3,686,521.61	$ 3,686,521.61
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 11,748.62	$ 10,578.53
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 123,902.14	$ 105,861.16
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 2,445,371.76	$ 1,881,227.29
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 23,497.25	$ 17,379.12
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 74,665.73	$ 52,402.43
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (287,690.80)	$ (181,800.31)
Net Present Cost for Segment		$ 5,572,169.83	
Maintenance - Net Present Cost for Segment		$ 1,885,648.22	
Equivalent Annual Cost		199,833.05	

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
2.5		
Design Life	Shldr Thickness	
20	2.5	

SEGMENT	Length		
1	11.096		
ALTERNATE		Description	
		Mill, Whitetopping, HMA (Shld)	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 4,806,975.64	$ 4,806,975.64
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 2,837,444.13	$ 2,182,849.01
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 6,989,824.65
Maintenance - Net Present Cost for Segment			$ 2,182,849.01
Equivalent Annual Cost			250,673.98

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
Yes	4.5	
ML Top Lift/Jt spacing	# Dowels per Lane	
12		
Design Life	Shldr Thickness	
	4.5	

SEGMENT	Length		
2	1.483		
ALTERNATE		Description	
		2" M & F (ML & TL), 1.5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 350,328.13	$ 350,328.13
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 3,140.45	$ 3,019.30
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 9,979.21	$ 9,103.95
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 262,019.94	$ 215,231.89
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 3,140.45	$ 2,480.15
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 9,979.21	$ 7,478.28
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 262,019.94	$ 179,132.38
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 3,140.45	$ 2,064.17
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (141,087.66)	$ (89,157.46)
Net Present Cost for Segment			$ 679,680.80
Maintenance - Net Present Cost for Segment			$ 329,352.67
Equivalent Annual Cost			24,375.19

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEGMENT	Length		
2	1.483		
ALTERNATE		Description	
		Mill, 5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 567,435.68	$ 567,435.68
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 1,570.22	$ 1,413.84
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 16,559.74	$ 14,148.53
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 326,828.24	$ 251,429.34
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 3,140.45	$ 2,322.75
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 9,979.21	$ 7,003.68
28		$ -	$ -
29	Mill/Overlay	$ 262,019.94	$ 179,132.38
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 3,140.45	$ 2,064.17
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (38,450.38)	$ (24,297.93)
Net Present Cost for Segment			$ 819,455.88
Maintenance - Net Present Cost for Segment			$ 252,020.20
Equivalent Annual Cost			29,387.90

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
2.5		
Design Life	Shldr Thickness	
20	2.5	

SEGMENT	Length		
3	2		
ALTERNATE		Description	
		Mill, Whitetopping, HMA (Shld)	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 941,331.13	$ 941,331.13
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 553,601.88	$ 425,886.56
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 1,367,217.69
Maintenance - Net Present Cost for Segment			$ 425,886.56
Equivalent Annual Cost			49,032.12

Total Lane Width	# of Lanes	Analysis Period
37	2	35
Total Shldr Width	# of Shldrs	ML Mix
13	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
Yes	4.5	
ML Top Lift/Jt spacing	# Dowels per Lane	
12		
Design Life	Shldr Thickness	
	4.5	

35 Year Analysis: Project # 8606-60 - Hwy 55, Segments 3 and 4

SEGMENT	Length		
2	0.498		
ALTERNATE		Description	
1		2" M & F (ML & TL), 1.5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 132,828.22	$ 132,828.22
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 1,581.87	$ 1,520.85
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 4,734.98	$ 4,319.68
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 117,983.70	$ 96,915.73
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 1,581.87	$ 1,249.27
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 4,734.98	$ 3,548.33
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 117,983.70	$ 80,660.66
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 1,581.87	$ 1,039.74
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (63,529.68)	$ (40,146.28)
Net Present Cost for Segment			$ 281,936.20
Maintenance - Net Present Cost for Segment			$ 149,107.98
Equivalent Annual Cost			10,110.99

Total Lane Width	# of Lanes	Analysis Period
36	3	35
Total Shldr Width	# of Shldrs	ML Mix
8	1	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEGMENT	Length		
2	0.498		
ALTERNATE		Description	
2		Mill, 5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 221,432.22	$ 221,432.22
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 790.94	$ 712.16
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 7,964.98	$ 6,805.23
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 150,628.20	$ 115,878.44
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 1,581.87	$ 1,169.99
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 4,734.98	$ 3,323.14
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (17,720.96)	$ (11,198.40)
Net Present Cost for Segment			$ 338,122.78
Maintenance - Net Present Cost for Segment			$ 116,690.56
Equivalent Annual Cost			12,126.00

Total Lane Width	# of Lanes	Analysis Period
36	3	35
Total Shldr Width	# of Shldrs	ML Mix
8	1	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
2.5		
Design Life	Shldr Thickness	
20	2.5	

SEGMENT	Length		
2	0.498		
ALTERNATE		Description	
3		Mill, Whitetopping, HMA (Shld)	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 335,324.46	$ 335,324.46
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 234,715.76	$ 180,567.10
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 515,891.55
Maintenance - Net Present Cost for Segment			$ 180,567.10
Equivalent Annual Cost			18,501.26

Total Lane Width	# of Lanes	Analysis Period
49	3	35
Total Shldr Width	# of Shldrs	ML Mix
8	1	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
Yes	4.5	
ML Top Lift/Jt spacing	# Dowels per Lane	
12		
Design Life	Shldr Thickness	
	4.5	

SEGMENT	Length		
3	0.169		
ALTERNATE		Description	
1		2" M & F (ML & TL), 1.5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
Overlay			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 76,053.57	$ 76,053.57
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 715.76	$ 688.15
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 2,132.43	$ 1,945.40
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 52,812.30	$ 43,381.78
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 715.76	$ 565.27
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 2,132.43	$ 1,598.01
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 52,812.30	$ 36,105.62
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 715.76	$ 470.46
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (28,437.39)	$ (17,970.43)
Net Present Cost for Segment			$ 142,837.83
Maintenance - Net Present Cost for Segment			$ 66,784.25
Equivalent Annual Cost			5,122.55

Total Lane Width	# of Lanes	Analysis Period
48	4	35
Total Shldr Width	# of Shldrs	ML Mix
9.5	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEGMENT	Length		
3	0.169		
ALTERNATE		Description	
2		Mill, 5" HMA (Full Width)	
Pavement Type			
HMA			
Primary Category			
20-year HMA			
Secondary Category			
Rural			
Shoulder Category			
Bituminous			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 123,432.48	$ 123,432.48
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 357.88	$ 322.24
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 3,591.01	$ 3,068.14
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 67,583.17	$ 51,991.81
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 715.76	$ 529.39
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 2,132.43	$ 1,496.59
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (7,950.96)	$ (5,024.45)
Net Present Cost for Segment			$ 175,816.21
Maintenance - Net Present Cost for Segment			$ 52,383.73
Equivalent Annual Cost			6,305.24

Total Lane Width	# of Lanes	Analysis Period
48	4	35
Total Shldr Width	# of Shldrs	ML Mix
9.5	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/Jt spacing	# Dowels per Lane	
2.5		
Design Life	Shldr Thickness	
20	2.5	

SEGMENT	Length		
3	0.169		
ALTERNATE		Description	
3		Mill, Whitetopping, HMA (Shld)	
Pavement Type			
PCC			
Primary Category			
> 11' Joint Spacing			
Secondary Category			
Design Life = 20 years			
Shoulder Category			
Thick Bit.			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 156,475.73	$ 156,475.73
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 79,346.76	$ 61,041.56
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 217,517.29
Maintenance - Net Present Cost for Segment			$ 61,041.56
Equivalent Annual Cost			7,800.76

Total Lane Width	# of Lanes	Analysis Period
48	4	35
Total Shldr Width	# of Shldrs	ML Mix
9.5	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
Yes	4.5	
ML Top Lift/Jt spacing	# Dowels per Lane	
12		
Design Life	Shldr Thickness	
	4.5	

50 Year Analysis

Project Number	Analysis Period
8607-63	50
Highway	
55	1.58%
Date	
7/20/2017	
Performed By	
Samuel Nigon	

SEGMENT	Length		
1	6.981		
ALTERNATE		Description	
1		5" Mill, 10" FDR, 5.5" HMA	
Pavement Type			
HMA			
Primary Category		Notes:	
20 Year HMA		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Rural		5.5" HMA (Mainline), 3" HMA (Shldrs)	
ShoulderCategory			
Bituminous			

SEGMENT	Length		
1	6.981		
ALTERNATE		Description	
2		5" Mill, 10" FDR, 6" PCC	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Design Life = 20 Years		6" PCC (Mainline & Shoulders)	
ShoulderCategory			
PCC			

SEGMENT	Length		
1	6.981		
ALTERNATE		Description	
3		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Design Life 35 Years		6" PCC (Mainline), 3" HMA (Shldrs)	
ShoulderCategory			
Thin Bit			

LCCA SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill, 10" FDR, 5.5" HMA		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld		7.0
Net Present Cost	$ 4,038,767.64		$ 6,699,664.02		$ 5,106,315.41		Miles
Segment #2	3" Mill & Fill		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld		0.3
Net Present Cost	$ 157,281.61		$ 363,428.15		$ 283,399.78		Miles
Segment #3	3" Mill & Fill		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld.		0.2
Net Present Cost	$ 93,938.29		$ 254,371.37		$ 202,159.62		Miles
Project Net Present Cost		$4,289,987.54		$7,317,463.55		$5,591,874.80	Total
% of Low Cost		100.0%		170.6%		130.3%	7.4

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1	5" Mill, 10" FDR, 5.5" HMA		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld		7.0
Net Present Cost	$1,544,742.70		$2,952,194.25		$1,807,973.58		Miles
Segment #2	3" Mill & Fill		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld		0.3
Net Present Cost	$86,914.82		$162,238.69		$99,838.31		Miles
Segment #3	3" Mill & Fill		5" Mill, 10" FDR, 6" PCC		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld.		0.2
Net Present Cost	$55,675.26		$122,965.49		$70,753.73		Miles
Project Net Present Cost		$1,687,332.78		$3,237,398.44		$1,978,565.63	Total
Bid Adjustment Factor				$1,550,065.66		$291,232.85	7.4

Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0		$ 357,258.98	$ 357,258.98	0		$ 536,809.88	$ 536,809.88	0		$ 472,474.12	$ 472,474.12
1			$ -	1			$ -	1			$ -
2			$ -	2			$ -	2			$ -
3			$ -	3			$ -	3			$ -
4			$ -	4			$ -	4			$ -
5			$ -	5			$ -	5			$ -
6			$ -	6			$ -	6			$ -
7			$ -	7			$ -	7			$ -
8	Crack Treatment	$ 1,056.00	$ 931.53	8			$ -	8			$ -
9			$ -	9			$ -	9			$ -
10			$ -	10			$ -	10			$ -
11			$ -	11			$ -	11			$ -
12	Seal	$ 12,293.08	$ 10,185.03	12			$ -	12			$ -
13			$ -	13			$ -	13			$ -
14			$ -	14			$ -	14			$ -
15			$ -	15			$ -	15			$ -
16			$ -	16			$ -	16			$ -
17			$ -	17			$ -	17			$ -
18			$ -	18			$ -	18			$ -
19			$ -	19			$ -	19			$ -
20	ML Overlay 3.5	$ 167,785.22	$ 122,627.97	20	1st CPR	$ 207,886.27	$ 151,936.33	20	1st CPR	$ 222,596.97	$ 162,687.83
21			$ -	21			$ -	21			$ -
22			$ -	22			$ -	22			$ -
23	Crack Treatment	$ 2,112.00	$ 1,472.67	23			$ -	23			$ -
24			$ -	24			$ -	24			$ -
25			$ -	25			$ -	25			$ -
26			$ -	26			$ -	26			$ -
27	Seal	$ 7,799.77	$ 5,108.11	27			$ -	27			$ -
28			$ -	28			$ -	28			$ -
29			$ -	29			$ -	29			$ -
30			$ -	30			$ -	30			$ -
31			$ -	31			$ -	31			$ -
32			$ -	32			$ -	32			$ -
33			$ -	33			$ -	33			$ -
34			$ -	34			$ -	34			$ -
35			$ -	35	Remove and Replace	$ 584,518.94	$ 337,684.63	35	2nd CPR	$ 166,686.47	$ 96,297.06
36			$ -	36			$ -	36			$ -
37	ML Overlay 3.5"	$ 167,785.22	$ 93,939.88	37			$ -	37			$ -
38			$ -	38			$ -	38			$ -
39			$ -	39			$ -	39			$ -
40	Crack Treatment	$ 2,112.00	$ 1,128.15	40			$ -	40			$ -
41			$ -	41			$ -	41			$ -
42			$ -	42			$ -	42			$ -
43			$ -	43			$ -	43			$ -
44	Chip Seal	$ 7,799.77	$ 3,913.10	44			$ -	44			$ -
45			$ -	45			$ -	45			$ -
46			$ -	46			$ -	46			$ -
47			$ -	47			$ -	47			$ -
48			$ -	48			$ -	48			$ -
49			$ -	49			$ -	49			$ -
50	4/17 Remaining Life	$ (39,478.88)	$ (18,028.28)	50	5/20 Remaining	$ (146,129.74)	$ (66,731.08)	50	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 4,038,767.64	Net Present Cost for Segment			$ 6,699,664.02	Net Present Cost for Segment			$ 5,106,315.41
Maintenance - Net Present Cost for Segment			$ 1,544,742.70	Maintenance - Net Present Cost for Segment			$ 2,952,194.25	Maintenance - Net Present Cost for Segment			$ 1,807,973.58
Equivalent Annual Cost			117,444.16	Equivalent Annual Cost			194,820.91	Equivalent Annual Cost			148,487.60

Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	50		24	2	50		24	2	50	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 9.5 Wearing Course Mixture (4,C)		13	2	Type SP 9.5 Wearing Course Mixture (3,B)		13	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix		Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N	Type SP 12.5 Wearing Course Mixture (2,C)		2	N	Type SP 9.5 Wearing Course Mixture (3,B)		2	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
N				Y	6			Y	6		
ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane			ML Top Lift / joint spacing	# Dowels per Lane		
1.5				12	11			12	11		
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
20	3			20	6				3		

50 Year Analysis: Project # 8607-63 - Hwy 55, Segments 2 and 3

SEGMENT	Length		
2	0.274		
ALTERNATE		Description	
1		3" Mill & Fill	
Pavement Type			
HMA			
Primary Category		Notes:	
20 Year HMA		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Rural		5.5" HMA (Mainline), 3" HMA (Shoulders)	
ShoulderCategory			
Bituminous			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 256,813.10	$ 256,813.10
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 1,628.00	$ 1,436.11
9			$ -
10			$ -
11			$ -
12	Seal	$ 18,347.04	$ 15,200.84
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 239,327.50	$ 174,915.56
21			$ -
22			$ -
23	Crack Treatment	$ 3,256.00	$ 2,270.36
24			$ -
25			$ -
26			$ -
27	Seal	$ 11,555.92	$ 7,568.03
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35			$ -
36			$ -
37	ML Overlay 3.5"	$ 239,327.50	$ 133,995.09
38			$ -
39			$ -
40	Crack Treatment	$ 3,256.00	$ 1,739.23
41			$ -
42			$ -
43			$ -
44	Chip Seal	$ 11,555.92	$ 5,797.54
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	4/17 Remaining Life	$ (56,312.35)	$ (25,715.40)
Net Present Cost for Segment			$ 157,281.61
Maintenance - Net Present Cost for Segment			$ 86,914.82
Equivalent Annual Cost			4,573.62

Total Lane Width	# of Lanes	Analysis Period	
37	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 9.5 Wearing Course Mixture (4,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N	Type SP 12.5 Wearing Course Mixture (2,C)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
2	0.274		
ALTERNATE		Description	
2		5" Mill, 10" FDR, 6" PCC	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Design Life = 20 Years		6" PCC (Mainline & Shoulders)	
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 734,268.10	$ 734,268.10
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 315,686.54	$ 230,723.53
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	Remove and Replace	$ 779,611.20	$ 450,392.11
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	5/20 Remaining	$ (194,902.80)	$ (89,003.62)
Net Present Cost for Segment			$ 363,428.15
Maintenance - Net Present Cost for Segment			$ 162,238.69
Equivalent Annual Cost			10,568.20

Total Lane Width	# of Lanes	Analysis Period	
37	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
13	2	Type SP 9.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N	Type SP 9.5 Wearing Course Mixture (3,B)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
20	6		

SEGMENT	Length		
2	0.274		
ALTERNATE		Description	
3		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		5" Mill (Full Width)	
Secondary Category		10" FDR (Full Width)	
Design Life 35 Years		6" PCC (Mainline), 3" HMA (Shoulders)	
ShoulderCategory			
Thin Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 669,932.35	$ 669,932.35
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 296,775.07	$ 216,901.85
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2nd CPR	$ 255,267.53	$ 147,471.56
36			$ -
37			$ -
38			$ -
39			$ -
40			$ -
41			$ -
42			$ -
43			$ -
44			$ -
45			$ -
46			$ -
47			$ -
48			$ -
49			$ -
50	0/0 Remaining	$ -	$ -
Net Present Cost for Segment			$ 283,399.78
Maintenance - Net Present Cost for Segment			$ 99,838.31
Equivalent Annual Cost			8,241.04

Total Lane Width	# of Lanes	Analysis Period	
37	2	50	
Total Shldr Width	# of Shldrs	ML Mix	
13	2		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
2	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
20	3		

SEGMENT	Length		
3	0.178		
ALTERNATE		Description	
1		3" Mill & Fill	
Pavement Type			
HMA			
Primary Category		Notes:	
20 Year HMA		3" Mill & Overlay (Full Width)	
Secondary Category			
Urban			
ShoulderCategory			
Thin			

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0	Construction	$ 76,053.57	$ 76,053.57
1		$ -	$ -
2		$ -	$ -
3	Crack Treatment	$ 715.76	$ 688.15
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7	Seal	$ 2,132.43	$ 1,945.40
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15	Mill/Overlay	$ 52,812.30	$ 43,381.78
16		$ -	$ -
17		$ -	$ -
18	Crack Treatment	$ 715.76	$ 565.27
19		$ -	$ -
20		$ -	$ -
21		$ -	$ -
22	Seal	$ 2,132.43	$ 1,598.01
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29	Mill/Overlay	$ 52,812.30	$ 36,105.62
30		$ -	$ -
31		$ -	$ -
32	Crack Treatment	$ 715.76	$ 470.46
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (28,437.39)	$ (17,970.43)
Net Present Cost for Segment			$ 142,837.83
Maintenance - Net Present Cost for Segment			$ 66,784.25
Equivalent Annual Cost			5,122.55

Total Lane Width	# of Lanes	Analysis Period	
44	4	50	
Total Shldr Width	# of Shldrs	ML Mix	
0	0	Type SP 9.5 Wearing Course Mixture (4,C)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
N			
ML Top Lift / joint spacing	# Dowels per Lane		
1.5			
Design Life	Shldr Thickness		
20	0		

SEGMENT	Length		
3	0.178		
ALTERNATE		Description	
2		5" Mill, 10" FDR, 6" PCC	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		5.5" Mill & Overlay (Full Width)	
Secondary Category			
Design Life = 20 Years			
ShoulderCategory			
PCC			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 123,432.48	$ 123,432.48
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8	Crack Treatment	$ 357.88	$ 322.24
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12	Seal	$ 3,591.01	$ 3,068.14
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	Mill/Overlay	$ 67,583.17	$ 51,991.81
21		$ -	$ -
22		$ -	$ -
23	Crack Treatment	$ 715.76	$ 529.39
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27	Seal	$ 2,132.43	$ 1,496.59
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ (7,950.96)	$ (5,024.45)
Net Present Cost for Segment			$ 175,816.21
Maintenance - Net Present Cost for Segment			$ 52,383.73
Equivalent Annual Cost			6,305.24

Total Lane Width	# of Lanes	Analysis Period	
48	4	50	
Total Shldr Width	# of Shldrs	ML Mix	
0	0	Type SP 9.5 Wearing Course Mixture (3,B)	
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	11		
Design Life	Shldr Thickness		
20	0		

SEGMENT	Length		
3	0.178		
ALTERNATE		Description	
3		5" Mill, 10" FDR, 6" PCC, 3" HMA Shld.	
Pavement Type			
PCC			
Primary Category		Notes:	
≥12 Joint spacing		4" Mill (Full Width)	
Secondary Category		4" White-topping (Mainline)	
Design Life 35 Years		4" HMA (Shoulders)	
ShoulderCategory			
Thin Bit			

Year	Activity	Cost	Pres. Cost/per Mile
0	Construction	$ 156,475.73	$ 156,475.73
1		$ -	$ -
2		$ -	$ -
3		$ -	$ -
4		$ -	$ -
5		$ -	$ -
6		$ -	$ -
7		$ -	$ -
8		$ -	$ -
9		$ -	$ -
10		$ -	$ -
11		$ -	$ -
12		$ -	$ -
13		$ -	$ -
14		$ -	$ -
15		$ -	$ -
16		$ -	$ -
17		$ -	$ -
18		$ -	$ -
19		$ -	$ -
20	1st CPR	$ 79,346.76	$ 61,041.56
21		$ -	$ -
22		$ -	$ -
23		$ -	$ -
24		$ -	$ -
25		$ -	$ -
26		$ -	$ -
27		$ -	$ -
28		$ -	$ -
29		$ -	$ -
30		$ -	$ -
31		$ -	$ -
32		$ -	$ -
33		$ -	$ -
34		$ -	$ -
35	Remaining Life	$ -	$ -
Net Present Cost for Segment			$ 217,517.29
Maintenance - Net Present Cost for Segment			$ 61,041.56
Equivalent Annual Cost			7,800.76

Total Lane Width	# of Lanes	Analysis Period	
48	4	50	
Total Shldr Width	# of Shldrs	ML Mix	
0	0		
Width of Rounding Aggregate	white/ >7 milliom	SL Mix	
0	N	Type SP 12.5 Wearing Course Mixture (2,B)	
Sealed/UTBWC	ML Thickness		
Y	6		
ML Top Lift / joint spacing	# Dowels per Lane		
12	19360		
Design Life	Shldr Thickness		
	0		

Appendix C: Copies of LCCA Exceptions

Office Memorandum

TO: Curt Turgeon
Pavement Engineer

FROM: Scott Zeidler
Engineering Specialist Senior

DATE: August 24, 2017

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	0120-24
Highway #	210
Project Limits	RP 160+00.351 to RP 174+00.536
Project Description	This project will consist of a 3" Mill with a 4" Overlay on mainline, shoulders and turn lanes. We will also be placing Type 3 Asphalt Reinforcement Mesh on the Longitudinal and Transverse cracks.

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
1.5" Mill w/3" CIR & 2" HMA Overlay	20 yr	$5,018,769.35	NO	100%
3" Mill w/4" Overlay and Asphalt Reinforcement Mesh	>17 yrs.	$5,442,985.00	YES	108.5%
6" Unbonded Concrete Overlay	20 yr	$8,184,733.06	NO	163.1%

Reason for Request

The District decided to choose this option because we felt it would best increase our chances to mitigate the longitudinal and transverse cracking that exists throughout the project. We did not feel that a CIR w/overlay would be a good long term fix. The existing roadway is 14' bituminous lanes over 10' concrete lanes. The cracks at the transverse joints (40' spacing) and the longitudinal crack (10' offset) are very severe.

DocuSigned by:
Dan Anderson
B677C4AB1E9B4J3...
District Engineer (low-cost)

8/29/2017
Date

Office Memorandum

TO: Shiloh Wahl
District Engineer – District 4

FROM: Nathan Bausman
Soils Engineer – District 4

DATE: October 30, 2018

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	0304-37
Highway #	59
Project Limits	RP 18+00.400 to RP 23+00.839
Project Description	Pavement Rehabilitation of U.S. 59 between North Otter Tail County Line and Jct. of Becker CSAH 6 to recondition the pavement and restore the ride quality.

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
6" Concrete Whitetopping	20	$4,650,262.41	No	144.1
6" Bituminous Overlay	13	$3,228,198.69	No	100.0
Bituminous Reclaim	20	$3,727,391.47	Yes	115.5

Reason for Request

The 2017 Minnesota Legislative Session pass a statue to appropriate $640 Million from the Trunk Highway bond sales to MnDOT for construction, reconstruction, and improvement of trunk highways. (Laws of Minnesota 2017, 1st Special Session Chapter 3). A memo, dated June 20, 2017, listed investment priorities and the first one listed is "Long-term pavement preservation (concrete overlays & bituminous reclamations) projects to improve pavement condition and remain service life, including changing planned short-term pavement preservation projects into long-term improvements."

Chapter 3 funding was provided to the District and this project was selected for an up scope to a 20-year fix.

This roadway was originally planned for a mill and bituminous overlay and the district decided to change the rehab to a reclaim and 5.5" bituminous overlay project to meet the goals of the Chief Engineering Staff.

The roadway was graded in 1965 and paved with a 1.5" x 26' bituminous base. A 3.5" bituminous overlay was done in 1971 and the last rehab consisted of 4.0" CIR and 3.0" HMA overlay in 1999.

Shiloh Wahl
District Engineer

10-30-18
Date

Office Memorandum

TO: Tim Andersen
Pavement Engineer

FROM: Steve Adamsky
Soils Engineer

DATE: June 1, 2017

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	2706-237
Highway #	TH 7
Project Limits	RP 188+00.970 to RP 192+00.900
Project Description	From 0.1 MI E of I494 in Minnetonka to 0.25 MI W of Louisiana Ave in St. Louis Park, a rehabilitation of the pavement to improve the ride quality index.

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
HMA thin M&O	>20 yrs	$1,871,976.84	Yes	121.4%
PCC unbonded white topping	>20 yrs	$3,035,045.51	No	196.8%
CIR w/2" overlay	20 yrs	$1,542,256.44	No	100%

Reason for Request

The lowest cost alternative for this project is the CIR option. However, it was not selected because there are several stop lights on the project and the stopping and starting causes excessive rutting in CIR.

Scott L 2

District Engineer

June 1, 2017

Date

Office Memorandum

TO: Steven Henrichs
Pavement Engineer

FROM: Samuel Nigon
Graduate 2 Engineer

Sara Johnson SJ
Materials Engineer

DATE: October 31, 2018

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	3302-16
Highway #	23
Project Limits	RP 256+00.180 to RP 266+00.615
Project Description	On TH 23 from North Jct. MN 65 in Mora to Jct. MN 107. Bituminous Mill and Overlay

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
2" Mill & Fill (Mainline), 1.5" Overlay (Full Width)	13-17 yrs	$4,553,222.00	Yes	110.7%
1.5" Mill, 3" CIR, 2" Overlay (Full Width)	20 yrs	$4,144,827.69	No	100.0%
1.5" Mill (Full Width) 6" Unbonded Overlay (Mainline), 6" HMA (Shlds)	20 yrs	$7,021,428.45	No	170.6%

Reason for Request

The district made the decision to go with the more expensive option, the 2" Mill & Fill (Mainline) and 1.5" Overlay (Full Width). The reason for this decision was because of the limited detour routes available in this area and the fact that in place there is underlying concrete pavement. The selected option will allow for construction to occur without detouring traffic, whereas the low cost alternative of 1.5" Mill, 3" CIR, 2" Overlay (Full Width) would have required a detour and presented the possibility of conflicts with CIR construction on variable bituminous pavement depth over concrete pavement.

District Engineer

11/1/18
Date

Office Memorandum

TO: Curt Turgeon
Pavement Engineer

FROM: Tom Meath TRM
Materials Engineer

DATE: February 14, 2017

SUBJECT: REQUEST FOR AN EXCEPTION FROM THE LOW COST SELECTION

SP #	5510-84
Highway #	63
Project Limits	RP 47+00.016 to RP 59+00.914
Project Description	*Concrete Overlay on T.H. 63 from CSAH 33 to T.H. 60*

LCCA Results

Alternative	Design Life	Total Present Cost / Mile	Requested Selection	% of Low Cost
2" Mill & 3.5" Bit. Overlay	15	$6,537,817.76	No	118.7
CIR & 3" Bit. Overlay	20	$5,506,915.94	No	100.0
5" Whitetopping	20	$9,309,142.21	Yes	169.0

Reason for Request

A plan to deploy more Whitetopping projects across the state were decided at the December 18th Operations Division Managers meeting in order to observe their performance. On December 23, 2014 a notice was sent out by Glenn Engstrom (OMRR Director) asking each district to lay out a plan to deploy more Whitetopping projects.

This roadway was originally planned for a mill and bituminous overlay and the district decided to change the rehab to a thin Whitetopping project to help meet the goals of the Operations Division Managers.

The district is requesting an exception to the LCCA low-cost alternate and use the thin Whitetopping alternate, to meet the goals of the Operations Division Managers.

District Engineer

2/13/17
Date

District 6

Segment	TH 63 from CSAH 33 to T.H. 60
Alternative	2" Mill and 3.5" Bit. Overlay

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Milling	2282301.00000 - MILL BITUMINOUS SURFACE (2.0")		24		14080.0	SY	$1.28	$17,965.31	
HMA	2360301.23500 - TYPE SP 12.5 WEARING COURSE MIXTURE (3,H)	3.5	24		2784.3	TON-B	$56.50	$157,314.93	
HMA	2360301.22200 - TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	1.5	20		994.4	TON-B	$56.07	$55,755.34	
Under Pavement	2211807.00120 - AGGREGATE SURFACING (CV) CLASS 2	1.5	3		73.3	CY	$20.00	$1,466.67	
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$217,502.24	

Segment	TH 63 from CSAH 33 to T.H. 60
Alternative	CIR and 3" Bit. Overlay

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Milling	2282301.00000 - MILL BITUMINOUS SURFACE (3.0")		24		14080.0	SY	$1.34	$18,847.57	
Milling	2282301.00000 - MILL BITUMINOUS SURFACE (1.5")		20		11733.3	SY	$0.90	$10,568.77	
HMA	2360301.23500 - TYPE SP 12.5 WEARING COURSE MIXTURE (3,C)	3	24		2386.6	TON-B	$54.91	$131,039.81	
HMA	COLD IN-PLACE RECYCLE (CIR)	4	24		56320.0	SY-in	$0.74	$41,741.57	
HMA	2360301.22200 - TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	1.5	20		994.4	TON-B	$56.07	$55,755.34	
Under Pavement	2211807.00120 - AGGREGATE SURFACING (CV) CLASS 2	1.5	3		73.3	CY	$20.00	$1,466.67	
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$259,419.73	

Segment	TH 63 from CSAH 33 to T.H. 60
Alternative	5" Whitetopping

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Milling	2282301.00000 - MILL BITUMINOUS SURFACE (3.0")		24		14080.0	SY	$1.34	$18,847.57	
Concrete	2301511.00010 - STRUCTURAL CONCRETE	5	24		1955.6	CY	$92.00	$179,951.11	
Concrete	2301504.01001 - PLACE CONCRETE PAVEMENT 5"		24		14080.0	SY	$4.00	$56,366.93	
Concrete	2301508.00010 - SUPPLEMENTAL PAVEMENT REINFORCEMENT			6220	6220.0	LB	$1.79	$11,128.36	
HMA	2360301.22200 - TYPE SP 12.5 WEARING COURSE MIXTURE (2,B)	2	20		1325.9	TON-B	$56.07	$74,340.45	
Under Pavement	2211850.00020 - AGGREGATE SURFACING CLASS 2	2	3		178.2	TON-A	$18.09	$3,224.11	
Select	Concrete Fiber				1.0	Each	$50,000.00	$50,000.00	
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$395,818.54	

Segment	
Alternative	

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$0.00	

Segment	
Alternative	

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$0.00	

Segment	
Alternative	

Category	Specification - Description	Depth (in)	Width (ft)	Each, LF, or LB per Mile	Quantity (mile)	Unit	Unit Price	Cost (mile)	Comment
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
Select	Item Number - Description				0.0	Unit	Price		
							Cost/Mile	$0.00	

Segment 1

SEG	Length	ALT	Description
1	12.838	1	2" mill and 3.5" Bit. Overlay

Pavement Type	Primary Category	Secondary Category	ShoulderCategory
HMA	Overlay, DL =13 to 17 years	Rural	Bituminous

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 232,502.24	$ 232,502.24
1			$ -
2			$ -
3	Crack Treatment	$ 1,909.25	$ 1,821.54
4			$ -
5			$ -
6			$ -
7	Seal	$ 8,297.40	$ 7,435.06
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 232,502.17	$ 183,782.39
16			$ -
17			$ -
18	Crack Treatment	$ 1,909.25	$ 1,439.84
19			$ -
20			$ -
21			$ -
22	Seal	$ 8,297.40	$ 5,877.07
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 232,502.17	$ 147,566.91
30			$ -
31			$ -
32	Crack Treatment	$ 1,909.25	$ 1,156.11
33			$ -
34			$ -
35	Remaining Life	$ (125,193.48)	$ (72,325.99)

Net Present Cost for Segment	$ 6,537,817.76
Maintenance - Net Present Cost for Segment	$ 3,552,954.01
Equivalent Annual Cost	244,614.93

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
20	2	WEARING COURSE MIXTURE (3,I
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	N	WEARING COURSE MIXTURE (2,I
Sealed/UTBWC	ML Thickness	
N		
ML Top Lift / joint spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEG	Length	ALT	Description
1	12.838	2	CIR and 3" Bit. Overlay

Pavement Type	Primary Category	Secondary Category	ShoulderCategory
HMA	20 Year HMA	Rural	Bituminous

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 259,419.73	$ 259,419.73
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 954.62	$ 842.11
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,965.81	$ 10,742.40
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 228,067.02	$ 166,685.69
21			$ -
22			$ -
23	Crack Treatment	$ 1,909.25	$ 1,331.29
24			$ -
25			$ -
26			$ -
27	Seal	$ 8,297.40	$ 5,434.01
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (26,831.41)	$ (15,500.88)

Net Present Cost for Segment	$ 5,506,915.94
Maintenance - Net Present Cost for Segment	$ 2,176,485.45
Equivalent Annual Cost	206,043.34

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
20	2	WEARING COURSE MIXTURE (3,(
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	N	WEARING COURSE MIXTURE (2,I
Sealed/UTBWC	ML Thickness	
N		
ML Top Lift / joint spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
20	1.5	

SEG	Length	ALT	Description
1	12.838	3	5" Whitetopping

Pavement Type	Primary Category	Secondary Category	ShoulderCategory
PCC	6'X6' ≤ 5.0" Thickness	Design Life = 20 Years	Thick Bit

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 393,818.54	$ 393,818.54
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 360,528.31	$ 263,496.71
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30	Remove and Replace	$ 523,074.19	$ 326,826.33
31			$ -
32			$ -
33			$ -
34			$ -
35	30/35 Remaining	$ (448,349.31)	$ (259,017.56)

Net Present Cost for Segment	$ 9,309,142.21
Maintenance - Net Present Cost for Segment	$ 4,253,299.79
Equivalent Annual Cost	348,305.08

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
20	2	WEARING COURSE MIXTURE (3,(
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	Y	WEARING COURSE MI
Sealed/UTBWC	ML Thickness	
Y	5	
ML Top Lift / joint spacing	# Dowels per Lane	
6		
Design Life	Shldr Thickness	
	2	

Project Number	Analysis Period
	35
Highway	Discount Rate
T.H. 63 From CSAH 33 to T.H. 60	1.58%
Date	CLEAR ALL
2/9/2017	
Performed By	
TRM	

D6 - 2016/2017 prices

LCCA SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1 Net Present Cost	2" mill and 3.5" Bit. Overlay $6,537,817.76		CIR and 3" Bit. Overlay $5,506,915.94		5" Whitetopping $9,309,142.21		12.8 Miles
Segment #2 Net Present Cost							0.0 Miles
Segment #3 Net Present Cost							0.0 Miles
Segment #4 Net Present Cost							0.0 Miles
Segment #5 Net Present Cost							0.0 Miles
Segment #6 Net Present Cost							0.0 Miles
Segment #7 Net Present Cost							0.0 Miles
Segment #8 Net Present Cost							0.0 Miles
Project Net Present Cost		$ 6,537,817.76		$ 5,506,915.94		$ 9,309,142.21	Total
% of Low Cost		118.7%		100.0%		169.0%	12.8

BID ADJUSTMENT FACTOR SUMMARY							
	Alternate #1		Alternate #2		Alternate #3		Length
Segment #1 Net Present Cost	2" mill and 3.5" Bit. Overlay $3,552,954.01		CIR and 3" Bit. Overlay $2,176,485.45		5" Whitetopping $4,253,299.79		12.8 Miles
Segment #2 Net Present Cost							0.0 Miles
Segment #3 Net Present Cost							0.0 Miles
Segment #4 Net Present Cost							0.0 Miles
Segment #5 Net Present Cost							0.0 Miles
Segment #6 Net Present Cost							0.0 Miles
Segment #7 Net Present Cost							0.0 Miles
Segment #8 Net Present Cost							0.0 Miles
Project Net Present Cost		$ 3,552,954.01		$ 2,176,485.45		$ 4,253,299.79	Total
Bid Adjustment Factor		$ 1,376,468.56		$ -		$ 2,076,814.34	12.8

Office Memorandum

TO: *Curt Turgeon P.E.*
Pavement Engineer

FROM: *Rod Garver P.E.*
District Materials Engineer

DATE: *04, 07, 2015*

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	*5880-191*
Highway #	*I 35*
Project Limits	RP 170+0.400 to RP 181+0.500
Project Description	UBOL

LCCA Results

Alternative	Design Life	Total Present Cost / Mile	Requested Selection	% of Low Cost
8.0 in. UBOL	35	$997,908	*Yes*	122.9%
7.5 in. UBOL	20	$1,139,927	No	140.4%
6 in. HMA/Rubblized conc.	20	$811,748	No	100.0%

Reason for Request

This project involves rehabilitating 11 miles of Interstate 35 from approximately Pine City to Hinckley, in both the southbound and northbound directions. Construction of either the UBOL (preferred option, 8.0 in. UBOL) alternative or the HMA (low cost option, 6 in. bit over rubblized conc.) alternatives will require closure of I 35 in one direction with all traffic being place in one lane of the opposite direction.

A concern over constructability of the HMA option prompts our request for an exception. Significant areas adjacent to this project are relatively flat with little drainage movement as indicated by the amount of standing water in the roadway ditches, and the growth of water seeking vegetation. Previous District experience with trying to rubblized concrete in areas where a water surface closely underlies fine grained soil have had problems due to pumping caused by the vibration from the resonate breaker. Additionally, the subgrade could also become saturated if we have a wetter than normal construction season. Either case could have a severe impact on project costs and scheduling.

For these reasons, I recommend and the District requests, that the exception be granted to allow the selection of the 8 in. UBOL as the preferred option.

Pavement Engineer **Date** 4/13/15

I concur

Office Memorandum

TO: Curt Turgeon
Pavement Engineer

FROM: Tom Meath
Materials Engineer

DATE: February 13, 2017

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	*7908-35*
Highway #	63
Project Limits	RP 059+00.914 to RP 068+00.639
Project Description	*Medium Bituminous Mill and Overlay*

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
2" Mill and 3.5" Bit. Overlay	15	$3,750,720.52	*Yes*	115.6
CIR and 3" Bit. Overlay	20	$3,245,548.48	No	100.0
6" Whitetopping	20	$4,883,038.32	No	150.5

Reason for Request

The low cost option of CIR with a 3" Bituminous Overlay is not being chosen. Instead the district has chosen 2" Mill and 3.5" Bituminous Overlay because it has a lower initial cost and the district is trying to do some projects with a lower initial cost to help pay for a whitetopping project on a different segment which has a higher initial cost than budgeted for.

District Engineer

Date 3/23/17

Project Number	Analysis Period
	35
Highway	Discount Rate
T.H. 63 From T.H. 60 to CSAH 78	1.58%
Date	CLEAR ALL
2/9/2017	
Performed By	
TRM	

D6 - 2016/2017 prices

LCCA SUMMARY

	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	2" mill and 3.5" Bit. Overlay	CIR and 3" Bit. Overlay	6" Whitetopping	8.7
Net Present Cost	$3,750,720.52	$3,245,548.48	$4,883,038.32	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
Segment #5				0.0
Net Present Cost				Miles
Segment #6				0.0
Net Present Cost				Miles
Segment #7				0.0
Net Present Cost				Miles
Segment #8				0.0
Net Present Cost				Miles
Project Net Present Cost	$ 3,750,720.52	$ 3,245,548.48	$ 4,883,038.32	Total
% of Low Cost	115.6%	100.0%	150.5%	8.7

BID ADJUSTMENT FACTOR SUMMARY

	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	2" mill and 3.5" Bit. Overlay	CIR and 3" Bit. Overlay	6" Whitetopping	8.7
Net Present Cost	$1,963,809.13	$1,205,501.51	$1,257,700.66	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
Segment #5				0.0
Net Present Cost				Miles
Segment #6				0.0
Net Present Cost				Miles
Segment #7				0.0
Net Present Cost				Miles
Segment #8				0.0
Net Present Cost				Miles
Project Net Present Cost	$ 1,963,809.13	$ 1,205,501.51	$ 1,257,700.66	Total
Bid Adjustment Factor	$ 758,307.62	$ -	$ 52,199.15	8.7

Segment 1

SEG	Length
1	8.676

ALT	Description
1	2" mill and 3.5" Bit. Overlay

Pavement Type
HMA
Primary Category
Overlay, DL =13 to 17 years
Secondary Category
Rural
ShoulderCategory
Bituminous

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost/per Mile	Pres. Cost/per Mile
0		$ 205,960.28	$ 205,960.28
1			$ -
2			$ -
3	Crack Treatment	$ 1,909.25	$ 1,821.54
4			$ -
5			$ -
6			$ -
7	Seal	$ 7,794.64	$ 6,984.55
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15	ML Overlay 3.5"	$ 187,983.62	$ 148,592.49
16			$ -
17			$ -
18	Crack Treatment	$ 1,909.25	$ 1,439.84
19			$ -
20			$ -
21			$ -
22	Seal	$ 7,794.64	$ 5,520.97
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29	ML Overlay 3.5"	$ 187,983.62	$ 119,311.40
30			$ -
31			$ -
32	Crack Treatment	$ 1,909.25	$ 1,156.11
33			$ -
34			$ -
35	Remaining Life	$ (101,221.95)	$ (58,477.31)

Net Present Cost for Segment	$ 3,750,720.52
Maintenance - Net Present Cost for Segment	$ 1,963,809.13
Equivalent Annual Cost	140,334.63

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
4	2	WEARING COURSE MIXTURE (3,I
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	N	WEARING COURSE MIXTURE (3,I
Sealed/UTBWC	ML Thickness	
N		
ML Top Lift / joint spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
15	1.5	

SEG	Length
1	8.676

ALT	Description
2	CIR and 3" Bit. Overlay

Pavement Type
HMA
Primary Category
20 Year HMA
Secondary Category
Rural
ShoulderCategory
Bituminous

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 235,136.81	$ 235,136.81
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8	Crack Treatment	$ 954.62	$ 842.11
9			$ -
10			$ -
11			$ -
12	Seal	$ 12,317.10	$ 10,204.93
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	ML Overlay 3.5	$ 183,231.67	$ 133,917.20
21			$ -
22			$ -
23	Crack Treatment	$ 1,909.25	$ 1,331.29
24			$ -
25			$ -
26			$ -
27	Seal	$ 7,794.64	$ 5,104.75
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	2/17 Remaining Life	$ (21,556.67)	$ (12,453.58)

Net Present Cost for Segment	$ 3,245,548.48
Maintenance - Net Present Cost for Segment	$ 1,205,501.51
Equivalent Annual Cost	121,433.43

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
4	2	WEARING COURSE MIXTURE (3,(
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	N	WEARING COURSE MIXTURE (3,(
Sealed/UTBWC	ML Thickness	
N		
ML Top Lift / joint spacing	# Dowels per Lane	
1.5		
Design Life	Shldr Thickness	
20	3	

SEG	Length
1	8.676

ALT	Description
3	6" Whitetopping

Pavement Type
PCC
Primary Category
≥12 Joint spacing
Secondary Category
Design Life = 20 Years
ShoulderCategory
PCC

CLICK HERE TO EDIT THIS ALTERNATE

DELETE

Notes:

Year	Activity	Cost	Pres. Cost/per Mile
0		$ 417,858.19	$ 417,858.19
1			$ -
2			$ -
3			$ -
4			$ -
5			$ -
6			$ -
7			$ -
8			$ -
9			$ -
10			$ -
11			$ -
12			$ -
13			$ -
14			$ -
15			$ -
16			$ -
17			$ -
18			$ -
19			$ -
20	1st CPR	$ 198,345.30	$ 144,963.19
21			$ -
22			$ -
23			$ -
24			$ -
25			$ -
26			$ -
27			$ -
28			$ -
29			$ -
30			$ -
31			$ -
32			$ -
33			$ -
34			$ -
35	0/0 Remaining	$ -	$ -

Net Present Cost for Segment	$ 4,883,038.32
Maintenance - Net Present Cost for Segment	$ 1,257,700.66
Equivalent Annual Cost	182,700.73

Total Lane Width	# of Lanes	Analysis Period
24	2	35
Total Shldr Width	# of Shldrs	ML Mix
4	2	WEARING COURSE MIXTURE (3,(
Width of Rounding Aggregate	white/ >7 million	SL Mix
3	N	WEARING COURSE MI
Sealed/UTBWC	ML Thickness	
Y	6	
ML Top Lift / joint spacing	# Dowels per Lane	
15	11	
Design Life	Shldr Thickness	
	7	

Office Memorandum

TO: Curt Turgeon
Pavement Engineer

FROM: *Tom Meath* TRM
Materials Engineer

DATE: 1/10/18

SUBJECT: REQUEST FOR AN EXCEPTION TO SELECTING THE LOW COST ALTERNATE

SP #	*8580-167*
Highway #	I-90 EB From 0.26 Mi. west of CSAH 12 to 0.75 mi. east of CSAH 12 and I-90 WB From Br # 85803 to 1.62 mi. south of Br#85809 and T.H. 61 NB and SB From I-90 to 0.4 mi. north
Project Limits	**271.233-272.259 and 271.31-275.475 and 8.736-9.338**
Project Description	*Bituminous Mill and Overlay*

LCCA Results

Alternative	Design Life	Total Present Cost	Requested Selection	% of Low Cost
8" UBOL	20	$5,337,533.36	*no*	222.4%
3" Bit. Mill and Overlay	15	$2,559,325.04	yes	106.6%
3" Bit. Mill and 5" Overlay	20	$2,400,445.63	no	100.0%

Reason for Request

For budgetary reasons the 3" Bituminous Mill and Overlay is being selected as it has the lowest initial cost.

District Engineer (low-cost) **Date** 1/12/18