

January 2, 2020

The Honorable Frank Hornstein, Chair
House Transportation Finance & Policy Committee
545 State Office Building
Saint Paul, MN 55155

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

RE: 2019 Life-Cycle Cost Analysis 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 2019, 35 construction projects were in the reconditioning, resurfacing and road repair funding categories and required a LCCA. Four projects required two LCAs for a total of 39 LCAs.

MnDOT has conducted LCAs 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 glen.engstrom@state.mn.us or 651-366-5531.

Sincerely,



Margaret Anderson Kelliher
Commissioner



2019 Report on the

Life-Cycle Cost Analysis

January 2020

Prepared by:

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You may also send an email to ADArequest.dot@state.mn.us

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Legislative Request

This report is issued to comply with [Minn. Stat. 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 agency modified the LCCA process 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 October 31st, 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 2019, 35 construction projects were in the reconditioning, resurfacing and road repair funding categories and required a LCCA according to the MnDOT Pavement Design Manual. Four projects required two LCAs for a total of 39 LCAs.

The results of the 39 LCCAs are as follows:

- Hot-mix asphalt was the low-cost option for 37 LCCAs. Of these, 35 selected the low-cost option, one selected a different hot-mix asphalt option and one 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 two LCCAs and both were selected for construction.

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 has been 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 2019, 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)
0707-88	HMA	No	20	PCC Overlay	\$6,239,648.00	PCC	X	No
			20	HMA on CIR	\$8,223,932.00	HMA		
			35	New PCC	\$7,711,502.00	PCC		
1602-50	HMA	No	15	HMA Overlay	\$3,543,282.00	HMA	X	No
			20	PCC Overlay	\$5,288,313.00	PCC		
			20	HMA on FDR	\$4,167,974.00	HMA		
1802-53	HMA	No	13	HMA Overlay	\$6,494,185.00	HMA	X	No
			20	HMA on FDR	\$6,713,624.00	HMA		
			20	PCC Overlay	\$7,873,803.00	PCC		
1806-76	HMA	No	20	HMA on FDR	\$5,127,180.38	HMA	X	No
			20	PCC Overlay	\$8,946,272.88	PCC		
			35	New PCC	\$7,714,825.74	PCC		
2180-115	PCC	Yes	20	New HMA	\$6,596,795.00	HMA		No
			20	PCC Overlay	\$6,485,747.00	PCC	X	
			35	New PCC	\$5,916,081.00	PCC		
2305-29	HMA	No	13	HMA Overlay	\$7,714,982.00	HMA	X	No
			20	New HMA	\$16,725,857.00	HMA		
			20	New PCC	\$19,414,371.00	PCC		
2908-29	HMA	No	20	New HMA	\$624,999.00	HMA	X	No
			20	New PCC	\$1,063,815.00	PCC		
			35	New PCC	\$829,505.00	PCC		
3107-51-1	HMA	No	20	HMA on FDR	\$987,800.00	HMA	X	No
			20	New PCC	\$2,831,799.00	PCC		
			35	New PCC	\$2,235,860.00	PCC		
3107-51-2	HMA	No	17	HMA Overlay	\$1,659,698.00	HMA	X	No
			20	HMA on FDR	\$2,668,910.00	HMA		
			20	New PCC	\$6,401,928.00	PCC		
3111-30	HMA	No	15	HMA Overlay	\$379,046.00	HMA	X	No
			20	New PCC	\$461,079.00	PCC		
			20	New HMA	\$818,066.00	HMA		
3206-20	PCC	No	20	HMA on CIR	\$7,693,468.00	HMA	X	No
			20	PCC Overlay	\$14,767,857.00	PCC		
			35	PCC Overlay	\$13,585,780.00	PCC		

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)
4010-10	HMA	No	20	PCC Overlay	\$8,052,638.00	PCC	X	No
			20	HMA on CIR	\$4,056,750.00	HMA		
			35	PCC Overlay	\$6,304,884.00	PCC		
4601-32	HMA	No	16	HMA Overlay	\$382,556.47	HMA	X	No
			20	PCC Overlay	\$1,058,449.00	PCC		
			20	HMA Overlay	\$448,281.35	HMA		
4904-45-1	HMA	No	20	New PCC	\$1,367,821.00	PCC	X	No
			20	New HMA	\$1,181,644.00	HMA		
			35	New PCC	\$1,213,821.00	PCC		
4904-45-2	HMA	No	20	New PCC	\$1,710,508.00	PCC	X	No
			20	New HMA	\$1,374,425.00	HMA		
			35	New PCC	\$1,725,259.00	PCC		
5003-17	HMA	No	15	HMA Overlay	\$6,581,860.00	HMA	X	No
			20	PCC Overlay	\$11,986,973.00	PCC		
			20	HMA Overlay	\$7,227,091.00	HMA		
5005-64	HMA	No	15	HMA Overlay	\$3,153,643.00	HMA	X	No
			20	PCC Overlay	\$5,241,189.00	PCC		
			20	HMA on CIR	\$3,360,229.00	HMA		
5208-22-1	HMA	No	20	HMA on FDR	\$735,634.00	HMA	X	No
			20	PCC Overlay	\$1,392,825.00	PCC		
			35	New PCC	\$1,225,641.00	PCC		
5208-22-2	HMA	No	20	HMA on FDR	\$754,196.00	HMA	X	No
			20	PCC Overlay	\$1,392,825.00	PCC		
			35	New PCC	\$1,225,641.00	PCC		
5308-29	PCC	No	20	HMA on CIR	\$7,080,807.00	HMA	X	No
			20	PCC Overlay	\$12,892,980.00	PCC		
			35	PCC Overlay	\$9,959,093.00	PCC		
5507-64	PCC	No	15	HMA Overlay	\$4,892,563.00	HMA	X	No
			20	PCC Overlay	\$10,521,709.00	PCC		
			20	HMA on CIR	\$5,047,588.00	HMA		
6103-34	HMA	No	20	PCC Overlay	\$8,105,384.00	PCC	X	No
			20	HMA on FDR	\$6,621,218.95	HMA		
			35	New PCC	\$9,283,055.00	PCC		

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)
6105-26	HMA	No	20	New HMA	\$1,827,640.00	HMA	X	No
			20	New PCC	\$2,804,950.00	PCC		
			35	New PCC	\$2,576,670.00	PCC		
6912-77	HMA	No	15	HMA Overlay	\$6,724,375.00	HMA	X	No
			20	HMA on FDR	\$7,979,708.00	HMA		
			20	New PCC	\$15,300,580.00	PCC		
6917-143	HMA	No	15	HMA Overlay	\$4,848,882.00	HMA	X	No
			20	New PCC	\$10,610,181.00	PCC		
			20	New HMA	\$9,649,480.00	HMA		
6936-19	HMA	No	15	HMA Overlay	\$3,414,704.00	HMA	X	No
			20	HMA on CIR	\$3,838,228.00	HMA		
			20	New PCC	\$8,463,415.00	PCC		
7301-38	HMA	No	20	HMA On FDR	\$9,950,226.00	HMA	X	No
			20	PCC Overlay	\$21,620,682.00	PCC		
			35	New PCC	\$16,257,819.00	PCC		
7314-39	HMA	No	15	HMA Overlay	\$435,900.00	HMA	X	No
			20	HMA on FDR	\$516,240.00	HMA		
			20	PCC Overlay	\$983,934.00	PCC		
7901-52	HMA	No	15	HMA Overlay	\$5,123,680.00	HMA	X	No
			20	PCC Overlay	\$7,371,979.00	PCC		
			20	HMA on FDR	\$5,335,740.00	HMA		
7903-54-1	HMA	No	15	HMA Overlay	\$8,855,322.00	HMA	X	No
			20	PCC Overlay	\$13,852,891.00	PCC		
			20	HMA Overlay	\$10,055,999.00	HMA		
7903-54-2	HMA	No	15	HMA Overlay	\$8,855,322.00	HMA	X	No
			20	PCC Overlay	\$13,852,891.00	PCC		
			20	HMA on FDR	\$10,734,117.00	HMA		
7906-96	PCC	No	15	HMA Overlay	\$8,078,847.00	HMA	X	No
			20	HMA on CIR	\$8,337,637.00	HMA		
			20	PCC Overlay	\$17,139,273.00	PCC		
8105-21	HMA	No	20	PCC Overlay	\$7,402,861.00	PCC		No
			20	HMA on CIR	\$5,619,394.00	HMA	X	
			35	New PCC	\$7,805,886.00	PCC		

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)
8209-111	HMA	No	20	PCC Overlay	\$3,090,672.00	PCC	X	No
			20	HMA on CIR	\$2,134,627.00	HMA		
			35	PCC Overlay	\$2,871,544.00	PCC		
8408-58	PCC	Yes	13	HMA Overlay	\$2,749,004.00	HMA	X	No
			20	PCC Overlay	\$4,001,296.00	PCC		
			20	HMA Overlay	\$2,639,992.00	HMA		
8504-79	PCC	No	15	HMA Overlay	\$4,792,895.00	HMA	X	No
			20	PCC Overlay	\$10,854,499.00	PCC		
			20	HMA Overlay	\$5,107,483.00	HMA		
8604-42	HMA	No	20	New PCC	\$6,505,639.00	PCC	X	No
			20	HMA on FDR	\$3,252,707.00	HMA		
			35	New PCC	\$5,314,356.00	PCC		
8611-26	HMA	No	20	New PCC	\$2,626,595.00	PCC	X	No
			20	New HMA	\$1,443,682.00	HMA		
			35	New PCC	\$2,000,189.00	PCC		
8680-173	PCC	No	20	New HMA	\$67,788,385.00	HMA	X	No
			20	New PCC/ PCC Overlay	\$46,742,653.00	PCC		
			35	New PCC/ PCC Overlay	\$50,080,944.00	PCC		

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

(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

50-Year Analysis Period

Project Number	Analysis Period
0707-88	50
Highway	Discount Rate
TH 30	1.22%
Date	Inflation Rate
	1
Performed By	Ia/(1+r)
Mike Schoeb	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR with Overlay	Mill/BCOA	UBOL	11.0 Miles
Net Present Cost	\$6,239,648.82	\$8,223,932.15	\$7,711,502.01	
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Net Present Cost				
Segment #4				0.0 Miles
Net Present Cost				
Project Net Present Cost	\$6,239,648.82	\$8,223,932.15	\$7,711,502.01	Total
% of Low Cost	100.0%	131.8%	123.6%	11.0

Segment 1																																															
SEG	Length	SEG	Length	SEG	Length	ALT	Description	ALT	Description	ALT	Description																																				
1	10.95	1	10.95	1	10.95																																										
ALT		ALT		ALT																																											
1	CIR with Overlay			2	Mill/BCOA																																										
Pavement Type		Pavement Type		Pavement Type																																											
HMA		PCC		PCC																																											
Primary Category		Primary Category		Primary Category																																											
20-year HMA		6'x6', 5.0 in. or Thinner		6'x6', 5.0 in. or Thinner																																											
Secondary Category		Secondary Category		Secondary Category																																											
Rural		Design Life = 20 years		Design Life = 20 years																																											
Shoulder Category		Shoulder Category		Shoulder Category																																											
Aggregate		Aggregate		Aggregate																																											
Notes:		Notes:		Notes:																																											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost																																				
0	Construction	\$ 3,122,273.16	\$ 3,122,273.16	0	Construction	\$ 3,107,254.17	\$ 3,107,254.17	0	Construction	\$ 5,189,368.32	\$ 5,189,368.32																																				
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -																																				
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -																																				
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7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -																																				
8	Crack Treatment	\$ 13,236.22	\$ 12,012.50	8		\$ -	\$ -	8		\$ -	\$ -																																				
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -																																				
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -																																				
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -																																				
12	Seal	\$ 120,950.55	\$ 104,571.14	12		\$ -	\$ -	12		\$ -	\$ -																																				
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -																																				
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19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -																																				
20	Mill/Overlay	\$ 2,220,847.37	\$ 1,742,577.30	20	1st CPR	\$ 3,726,428.38	\$ 2,923,924.26	20	1st CPR	\$ 1,580,758.32	\$ 1,240,334.48																																				
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -																																				
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -																																				
23	Crack Treatment	\$ 26,399.15	\$ 19,973.96	23		\$ -	\$ -	23		\$ -	\$ -																																				
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26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -																																				
27	Seal	\$ 68,082.99	\$ 49,073.57	27		\$ -	\$ -	27		\$ -	\$ -																																				
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -																																				
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -																																				
30		\$ -	\$ -	30	R & R Mainline	\$ 4,753,272.01	\$ 3,303,715.79	30		\$ -	\$ -																																				
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -																																				
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -																																				
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -																																				
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36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -																																				
37	Mill/Overlay	\$ 2,220,847.37	\$ 1,417,961.35	37		\$ -	\$ -	37		\$ -	\$ -																																				
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -																																				
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -																																				
40	Crack Treatment	\$ 26,399.15	\$ 16,253.11	40		\$ -	\$ -	40		\$ -	\$ -																																				
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -																																				
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -																																				
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -																																				
44	Seal	\$ 68,082.99	\$ 39,931.90	44		\$ -	\$ -	44		\$ -	\$ -																																				
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -																																				
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49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -																																				
50	Remaining Life	\$ (522,552.32)	\$ (284,979.18)	50	Remaining Life	\$ (2,037,116.57)	\$ (1,110,962.08)	50	Remaining Life	\$ -	\$ -																																				
Net Present Cost for Segment			\$ 6,239,648.82	Net Present Cost for Segment			\$ 8,223,932.15	Net Present Cost for Segment			\$ 7,711,502.01																																				
Maintenance - Net Present Cost for Segment			\$ 3,117,375.66	Maintenance - Net Present Cost for Segment			\$ 5,116,677.97	Maintenance - Net Present Cost for Segment			\$ 2,522,133.69																																				
Equivalent Annual Cost			167,437.38	Equivalent Annual Cost			220,684.48	Equivalent Annual Cost			206,933.71																																				
<table border="1"> <tr> <td>Total Lane Width</td> <td># of Lanes</td> <td>Analysis Period</td> </tr> <tr> <td>28</td> <td>2</td> <td>50</td> </tr> <tr> <td>Total Shldr Width</td> <td># of Shldrs</td> <td>ML Mix</td> </tr> <tr> <td>16</td> <td>2</td> <td>12.5 WE (4,E)</td> </tr> <tr> <td>Rounding Agg. Width</td> <td>white / >7 miliom</td> <td>SL Mix</td> </tr> <tr> <td>8</td> <td>No</td> <td></td> </tr> <tr> <td>Sealed/UTBWC</td> <td>ML Thickness</td> <td></td> </tr> <tr> <td>No</td> <td></td> <td></td> </tr> <tr> <td>ML Top Lift/Jt spacing</td> <td># Dowels per Lane</td> <td></td> </tr> <tr> <td>1.5</td> <td></td> <td></td> </tr> <tr> <td>Design Life</td> <td>Shldr Thickness</td> <td></td> </tr> <tr> <td>20</td> <td></td> <td></td> </tr> </table>												Total Lane Width	# of Lanes	Analysis Period	28	2	50	Total Shldr Width	# of Shldrs	ML Mix	16	2	12.5 WE (4,E)	Rounding Agg. Width	white / >7 miliom	SL Mix	8	No		Sealed/UTBWC	ML Thickness		No			ML Top Lift/Jt spacing	# Dowels per Lane		1.5			Design Life	Shldr Thickness		20		
Total Lane Width	# of Lanes	Analysis Period																																													
28	2	50																																													
Total Shldr Width	# of Shldrs	ML Mix																																													
16	2	12.5 WE (4,E)																																													
Rounding Agg. Width	white / >7 miliom	SL Mix																																													
8	No																																														
Sealed/UTBWC	ML Thickness																																														
No																																															
ML Top Lift/Jt spacing	# Dowels per Lane																																														
1.5																																															
Design Life	Shldr Thickness																																														
20																																															
<table border="1"> <tr> <td>Total Lane Width</td> <td># of Lanes</td> <td>Analysis Period</td> </tr></table>	Total Lane Width	# of Lanes	Analysis Period																																												
Total Lane Width	# of Lanes	Analysis Period																																													

Segment 1												
Project Number		Analysis Period		SEG		Length		SEG		Length		
SP 1602-50	35	Highway	Discount Rate	1	7.251	ALT	7.251	1	7.251	ALT	7.251	
TH 61	1.58%	Date	Inflation Rate	1	Description		ALT	Description		ALT	Description	
S/31/2017	1	Performed By	Ia/(1+r)	Overlay, DI = 13 to 17 years	Mill and Overlay		Pavement Type	WhiteTop		Pavement Type	Reclaim	
Amy Thorson	0.9844			Secondary Category	HMA		Primary Category	PCC		Primary Category	HMA	
		D1 - 2016/2017 prices		Rural	>12 joint spacing		Design Life = 20 Years	20 Year HMA		Secondary Category	20 Year HMA	
				ShoulderCategory	Thin Bit		ShoulderCategory	Rural		ShoulderCategory	Rural	
				Bituminous	Notes:			Notes:			Notes:	
Notes:												
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 and overlay	\$ 252,878.10	\$ 252,878.10	0	WhiteTop	\$ 509,403.55	\$ 509,403.55	0	reclaim	\$ 410,499.15	\$ 410,499.15	
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -	
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -	
3		\$ 2,156.00	\$ 2,056.95	3		\$ -	\$ -	3		\$ -	\$ -	
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -	
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -	
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -	
7		\$ 11,633.63	\$ 10,424.56	7		\$ -	\$ -	7		\$ -	\$ -	
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -	
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -	
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -	
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -	
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -	
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -	
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -	
15		\$ 190,410.14	\$ 150,510.55	15		\$ -	\$ -	15		\$ -	\$ -	
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -	
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -	
18		\$ 2,156.00	\$ 1,625.93	18		\$ -	\$ -	18		\$ -	\$ -	
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -	
20		\$ -	\$ -	20		\$ 300,902.29	\$ 219,918.28	20	ML Overlay 3.5	\$ 212,191.44	\$ 155,082.82	
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -	
22		\$ 11,633.63	\$ 8,240.14	22		\$ -	\$ -	22		\$ -	\$ -	
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -	
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -	
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -	
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -	
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -	
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -	
29		\$ 190,410.14	\$ 120,651.49	29		\$ -	\$ -	29		\$ -	\$ -	
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -	
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -	
32		\$ 2,156.00	\$ 1,305.53	32		\$ -	\$ -	32		\$ -	\$ -	
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -	
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -	
35		\$ (102,528.54)	\$ (59,232.14)	35		\$ 0/0 Remaining	\$ -	35		\$ 2/17 Remaining Life	\$ (24,963.70)	
Net Present Cost for Segment												
\$ 3,543,281.69												
Net Present Cost for Segment												
\$ 5,288,312.58												
Maintenance - Net Present Cost for Segment												
\$ 1,594,627.44												
Equivalent Annual Cost												
\$ 132,573.23												
Net Present Cost for Segment												
\$ 4,167,973.72												
Maintenance - Net Present Cost for Segment												
\$ 1,191,444.38												
Equivalent Annual Cost												
\$ 155,946.31												
Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	
24.5	2	35	24.5	2	35	24.5	2	35	24.5	2	35	
Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix	
18.5	2	TYPE SP 9.5 WEARING COURSE MIXTURE (4,8)	18.5	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	18.5	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	18.5	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	
Width of Rounding Aggregate	white/-7 million	SL Mix	Width of Rounding Aggregate	white/-7 million	SL Mix	Width of Rounding Aggregate	white/-7 million	SL Mix	Width of Rounding Aggregate	white/-7 million	SL Mix	
1.5	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	1.5	N	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)	1.5	N	TYPE SP 12.5 NON WEARING COURSE MIXTURE (3,B)	1.5	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		
M			M			M			M			
ML Top Lift / joint spacing	# Dowels per Lane		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	4		1.5	11		1.5	11		1.5	11		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness		
15	3		20	3		20	3		20	3		

Project Number	Analysis Period
1802-53	35
Highway	Discount Rate
	1.58%
Date	Inflation Rate
2/2/2017	1
Performed By	Ia/(1+r)
Samuel Nigon	0.9844

D3 - 2016/2017 prices

Segment 1											
SEG			Length			SEG			Length		
1	6.583		1	6.583		1	6.583		1	6.583	
ALT	Description		ALT	Description		ALT	Description		ALT	Description	
1	2" Mill & 3.5" Overlay (Full Width)		2	2" Mill, FDR, 4.5" Overlay		3	2.5" Mill & 4" White-Topping		3	2.5" Mill & 4" White-Topping	
Pavement Type	HMA		Pavement Type	HMA		Pavement Type	PCC		Pavement Type	PCC	
Primary Category	Overlay, DL >13 to 17 years		Primary Category	20 Year HMA		Secondary Category	Secondary Category		Secondary Category	6'x6' ≤ 5.0" Thickness	
Secondary Category	Rural		ShoulderCategory	ShoulderCategory		Design Life	Design Life = 20 Years		ShoulderCategory	Design Life = 20 Years	
ShoulderCategory	Bituminous		Notes:	2" Mill & 3.5" Overlay - Full Width		Notes:	2" Mill, FDR, 6" Overlay - Full Width		Notes:	2.5" Mill & 4" Whitetopping - Full Width	
Year											
0	Activity		Cost/per Mile	Pres. Cost/per Mile		0	Activity		Cost	Pres. Cost/per Mile	
1	\$ 230,585.40		\$ 230,585.40	\$ 354,762.37		1	\$ 354,762.37		\$ 354,762.37	\$ 354,762.37	
2	Crack Treatment		\$ 2,112.00	\$ 2,014.97		2	Crack Treatment		\$ 1,056.00	\$ 931.53	
3	Seal		\$ 7,733.20	\$ 6,929.50		3	Seal		\$ 12,207.19	\$ 10,113.87	
4	ML Overlay 3.5"		\$ 168,099.99	\$ 137,107.43		4	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
5	Crack Treatment		\$ 2,112.00	\$ 1,643.47		5	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
6	Seal		\$ 7,733.20	\$ 5,651.91		6	Seal		\$ 2,112.00	\$ 1,472.67	
7	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		7	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
8	Crack Treatment		\$ 2,112.00	\$ 1,643.47		8	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
9	Seal		\$ 7,733.20	\$ 5,651.91		9	Seal		\$ 2,112.00	\$ 1,472.67	
10	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		10	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
11	Crack Treatment		\$ 2,112.00	\$ 1,643.47		11	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
12	Seal		\$ 7,733.20	\$ 5,651.91		12	Seal		\$ 2,112.00	\$ 1,472.67	
13	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		13	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
14	Crack Treatment		\$ 2,112.00	\$ 1,643.47		14	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
15	Seal		\$ 7,733.20	\$ 5,651.91		15	Seal		\$ 2,112.00	\$ 1,472.67	
16	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		16	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
17	Crack Treatment		\$ 2,112.00	\$ 1,643.47		17	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
18	Seal		\$ 7,733.20	\$ 5,651.91		18	Seal		\$ 2,112.00	\$ 1,472.67	
19	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		19	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
20	Crack Treatment		\$ 2,112.00	\$ 1,643.47		20	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
21	Seal		\$ 7,733.20	\$ 5,651.91		21	Seal		\$ 2,112.00	\$ 1,472.67	
22	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		22	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
23	Crack Treatment		\$ 2,112.00	\$ 1,643.47		23	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
24	Seal		\$ 7,733.20	\$ 5,651.91		24	Seal		\$ 2,112.00	\$ 1,472.67	
25	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		25	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
26	Crack Treatment		\$ 2,112.00	\$ 1,643.47		26	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
27	Seal		\$ 7,733.20	\$ 5,651.91		27	Seal		\$ 2,112.00	\$ 1,472.67	
28	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		28	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
29	Crack Treatment		\$ 2,112.00	\$ 1,643.47		29	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
30	Seal		\$ 7,733.20	\$ 5,651.91		30	Seal		\$ 2,112.00	\$ 1,472.67	
31	ML Overlay 3.5"		\$ 168,099.99	\$ 113,595.85		31	ML Overlay 4		\$ 219,529.00	\$ 160,445.57	
32	Crack Treatment		\$ 2,112.00	\$ 1,643.47		32	Crack Treatment		\$ 2,112.00	\$ 1,472.67	
33	Seal		\$ 7,733.20	\$ 5,651.91		33	Seal		\$ 2,112.00	\$ 1,472.67</	

50-Year Analysis Period

Project Number	Analysis Period
1806-76	50
Highway	Discount Rate
210	1.32%
Date	Inflation Rate
12/11/2017	1
Performed By	Ia/(1+r)
Scott Zeidler	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	4.5" Mill, 8" FDR, 5.5" HMA w/3" Bit. Shld.	7" PCC with 3" Bit Shoulder	4.5" Mill, 6.0" White-Topping w/ 3" Bit. Shld.	7.9 Miles
Net Present Cost	\$5,127,180.38	\$7,714,825.74	\$8,946,272.88	
Segment #2				1.0 Miles
Segment #3				1.0 Miles
Segment #4				1.0 Miles
Project Net Present Cost	\$5,127,180.38	\$7,714,825.74	\$8,946,272.88	Total
% of Low Cost	100.0%	150.5%	174.5%	10.9

Segment 1																																															
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length																																				
1	7.9	1	7.9	1	7.9	1	7.9	1	7.9	1	7.9																																				
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description																																				
1	4.5" Mill, 8" FDR, 5.5" HMA w/3" Bit. Shld.	2	7" PCC with 3" Bit Shoulder	3	4.5" Mill, 6.0" White-Topping w/ 3" Bit. Shld.	4	4.5" Mill, 6.0" White-Topping w/ 3" Bit. Shld.	5	4.5" Mill, 6.0" White-Topping w/ 3" Bit. Shld.	6	4.5" Mill, 6.0" White-Topping w/ 3" Bit. Shld.																																				
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC																																				
Primary Category	20-year HMA	Primary Category	>11' Joint Spacing	Primary Category	>11' Joint Spacing	Primary Category	>11' Joint Spacing	Primary Category	>11' Joint Spacing	Primary Category	>11' Joint Spacing																																				
Secondary Category	Rural	Secondary Category	Design Life = 35 years	Secondary Category	Design Life = 35 years	Secondary Category	Design Life = 20 years	Secondary Category	Design Life = 20 years	Secondary Category	Design Life = 20 years																																				
Shoulder Category	Bituminous	Shoulder Category	Thin Bit.	Shoulder Category	Thin Bit.	Shoulder Category	Thin Bit.	Shoulder Category	Thin Bit.	Shoulder Category	Thin Bit.																																				
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:																																				
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost																																				
0	Construction	\$ 3,103,083.89	\$ 3,103,083.89	0	Construction	\$ 5,527,108.34	\$ 5,527,108.34	0	Construction	\$ 4,558,527.89	\$ 4,558,527.89																																				
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -																																				
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -																																				
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -																																				
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -																																				
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -																																				
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -																																				
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -																																				
8	Crack Treatment	\$ 8,364.65	\$ 7,531.58	8		\$ -	\$ -	8		\$ -	\$ -																																				
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -																																				
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -																																				
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -																																				
12	Seal	\$ 89,771.64	\$ 76,700.29	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	\$ 1,464,206.55	\$ 1,126,415.77	20	1st CPR	\$ 1,714,420.24	\$ 1,318,905.45	20	1st CPR	\$ 2,510,094.01	\$ 1,931,018.19																																				
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -																																				
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -																																				
23	Crack Treatment	\$ 16,729.29	\$ 12,373.38	23		\$ -	\$ -	23		\$ -	\$ -																																				
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -																																				
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -																																				
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -																																				
27	Seal	\$ 54,366.49	\$ 38,155.88	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	2nd CPR	\$ 1,374,855.72	\$ 868,811.95	35	R & R Mainline	\$ 4,892,342.57	\$ 3,091,615.81																																				
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -																																				
37	Mill/Overlay	\$ 1,464,206.55	\$ 901,323.39	37		\$ -	\$ -	37		\$ -	\$ -																																				
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -																																				
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -																																				
40	Crack Treatment	\$ 16,729.29	\$ 9,900.80	40		\$ -	\$ -	40		\$ -	\$ -																																				
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -																																				
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -																																				
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -																																				
44	Seal	\$ 54,366.49	\$ 30,531.16	44		\$ -	\$ -	44		\$ -	\$ -																																				
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -																																				
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -																																				
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -																																				
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -																																				
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -																																				
50	Remaining Life	\$ (344,519.19)	\$ (178,835.76)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ (1,223,085.64)	\$ (634,889.01)																																				
Net Present Cost for Segment			\$ 5,127,180.38	Net Present Cost for Segment			\$ 7,714,825.74	Net Present Cost for Segment			\$ 8,946,272.88																																				
Maintenance - Net Present Cost for Segment			\$ 2,024,096.50	Maintenance - Net Present Cost for Segment			\$ 2,187,717.40	Maintenance - Net Present Cost for Segment			\$ 4,387,744.99																																				
Equivalent Annual Cost			140,730.06	Equivalent Annual Cost			211,755.35	Equivalent Annual Cost			245,555.92																																				
<table border="1"> <tr> <td>Total Lane Width</td><td># of Lanes</td><td>Analysis Period</td> </tr> <tr> <td>24</td><td>2</td><td>50</td> <td>24</td><td>2</td><td>50</td> <td>26</td><td>2</td><td>50</td> <td>26</td><td>2</td><td>50</td> </tr> <tr> <td>Total Shdr Width</td><td># of Shdtrs</td><td>ML Mix</td> </tr> <tr> <td>16</td><td>2</td><td>9.5 WE (3,B)</td> <td>14</td><td>2</td><td>9.5 WE (4,C)</td> <td>14</td><td>2</td><td>9.5 WE (4,C)</td> <td>14</td><td>2</td</td></tr></table>	Total Lane Width	# of Lanes	Analysis Period	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	26	2	50	26	2	50	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	16	2	9.5 WE (3,B)	14	2	9.5 WE (4,C)	14	2	9.5 WE (4,C)	14	2</td
Total Lane Width	# of Lanes	Analysis Period	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	26	2	50	26	2	50																																				
Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix																																				
16	2	9.5 WE (3,B)	14	2	9.5 WE (4,C)	14	2	9.5 WE (4,C)	14	2</td																																					

50-Year Analysis Period								
Project Number	Analysis Period							
2180-115	50							
Highway	Discount Rate							
I-94 EB	1.22%							
Date	Inflation Rate							
11/5/2018	1							
Performed By	$\frac{I}{a(1+r)}$							
Nathan Bausman	0.9879							
Notes:								
LCCA SUMMARY								
Segment #1	Alternate #1 8" Unbonded Overlay Net Present Cost \$6,485,747.94	Alternate #2 Bituminous Reconstruction \$6,596,795.85	Alternate #3 Concrete Reconstruction \$5,916,081.24	Length 4.9 Miles				
Segment #2				0.0 Miles				
Segment #3				0.0 Miles				
Segment #4				0.0 Miles				
Project Net Present Cost	\$6,485,747.94	\$6,596,795.85	\$5,916,081.24	Total 4.9				
% of Low Cost	109.6%	111.5%	100.0%	4.9				

2180-115

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	4.888			1	4.888			1	4.888		
ALT	Description			ALT	Description			ALT	Description		
1	8" Unbonded Overlay			2	Bituminous Reconstruction			3	Concrete Reconstruction		
Pavement Type	PCC			Pavement Type	HMA			Pavement Type	PCC		
Primary Category	> 11' Joint Spacing			Primary Category	20-year HMA			Primary Category	> 11' Joint Spacing		
Secondary Category	Design Life = 20 years			Secondary Category	Rural			Secondary Category	Design Life = 35 years		
Shoulder Category	Shoulder Category			Shoulder Category	Bituminous			Shoulder Category	Thick Bit.		
Notes:	Notes:			Notes:	Notes:			Notes:	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,653,638.20	\$ 3,653,638.20	0	Construction	\$ 5,385,085.44	\$ 5,385,085.44	0	Construction	\$ 4,530,578.27	\$ 4,530,578.27
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	\$ 5,927.65	\$ 5,379.62	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 27,694.66	\$ 23,944.19	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	\$ 1,310,136.12	\$ 1,027,992.06	20	Mill/Overlay	\$ 900,648.98	\$ 706,689.93	20	1st CPR	\$ 940,036.67	\$ 737,595.29
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22	Crack Treatment	\$ 11,822.47	\$ 8,945.04	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	R & R Mainline	\$ 3,484,120.65	\$ 2,279,142.77	35		\$ -	\$ -	35	2nd CPR	\$ 990,455.06	\$ 647,907.67
36		\$ -	\$ -	36	Mill/Overlay	\$ 900,648.98	\$ 575,044.22	36		\$ -	\$ -
37		\$ -	\$ -	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40		\$ -	\$ -	40	Crack Treatment	\$ 11,822.47	\$ 7,278.72	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44		\$ -	\$ -	44	Seal	\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (871,030.16)	\$ (475,025.09)	50	Remaining Life	\$ (211,917.41)	\$ (115,571.30)	50	Remaining Life	\$ -	\$ -
	Net Present Cost for Segment	\$ 6,485,747.94	\$ 6,596,795.85		Net Present Cost for Segment	\$ 5,916,081.24	\$ 5,916,081.24		Maintenance - Net Present Cost for Segment	\$ 1,211,710.41	\$ 1,385,502.97
	Maintenance - Net Present Cost for Segment	\$ 2,832,109.74	\$ 2,832,109.74		Maintenance - Net Present Cost for Segment	\$ 1,211,710.41	\$ 1,211,710.41		Maintenance - Net Present Cost for Segment	\$ 1,211,710.41	\$ 1,211,710.41
	Equivalent Annual Cost	\$ 174,041.31	\$ 174,041.31		Equivalent Annual Cost	\$ 177,021.23	\$ 177,021.23		Equivalent Annual Cost	\$ 158,754.63	\$ 158,754.63
	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 Shdr Width	# of Shldrs	ML Mix		Total Shdr Width	# of Shldrs	ML Mix		Total Shdr Width	# of Shldrs	ML Mix
	9	1									

35-Year Analysis Period

Project Number	Analysis Period
S.P. 2305-29	35
Highway	Discount Rate
30	1.32%
Date	Inflation Rate
8/6/2018	1
Performed By	Ia/(1+r)
trm	0.9870

T.H. 30 From T.H. 74 to W CL Rushford

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	20.13	1	20.13	1	20.13	1	20.13	1	20.13	1	20.13
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	3" HMA Overlay	2	Reconstruction and 6" PCC Pavement-20 yrs	3	Reconstruct and 4" HMA Pavement-20 yrs						
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		HMA		PCC		HMA		PCC	
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category		Primary Category	
Overlay		> 11" Joint Spacing		20-year HMA		20-year HMA		20-year HMA		20-year HMA	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Rural		Design Life = 20 years		Rural		Design Life = 20 years		Rural		Design Life = 20 years	
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category	
Aggregate		Aggregate		Aggregate		Aggregate		Aggregate		Aggregate	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,572,419.51	\$ 2,572,419.51	0	Construction	\$ 15,918,699.24	\$ 15,918,699.24	0	Construction	\$ 13,759,537.73	\$ 13,759,537.73
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 55,325.62	\$ 53,191.31	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 122,130.16	\$ 111,418.34	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13	Mill/Overlay	\$ 3,133,886.24	\$ 2,642,687.88	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16	Crack Treatment	\$ 55,325.62	\$ 44,854.22	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Seal	\$ 122,130.16	\$ 93,954.87	20	1st CPR	\$ 4,543,957.62	\$ 3,495,671.79	20	Mill/Overlay	\$ 3,795,084.84	\$ 2,919,563.11
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25	Mill/Overlay	\$ 3,133,886.24	\$ 2,257,894.78	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28	Crack Treatment	\$ 55,325.62	\$ 38,323.15	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Seal	\$ 122,130.16	\$ 80,274.41	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (284,898.75)	\$ (180,035.94)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (446,480.57)	\$ (282,144.26)
Net Present Cost for Segment			\$ 7,714,982.54	Net Present Cost for Segment			\$ 19,414,371.03	Net Present Cost for Segment			\$ 16,725,857.48
Maintenance - Net Present Cost for Segment			\$ 5,142,563.04	Maintenance - Net Present Cost for Segment			\$ 3,495,671.79	Maintenance - Net Present Cost for Segment			\$ 2,966,319.74
Equivalent Annual Cost			276,680.10	Equivalent Annual Cost			696,251.75	Equivalent Annual Cost			599,834.40
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		26	2	35		24	2	35	
Total Shdr Width	# of Shdtrs	ML Mix		Total Shdr Width	# of Shdtrs	ML Mix		Total Shdr Width	# of Shdtrs	ML Mix	
0	0	12.5 WE (3.8)		10	2			15	2	12.5 WE (3.8)	
Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix	
3	No			3	No			3	No		
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No			
ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane		
1.5				15				2			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
13	0			6				20			

50-Year Analysis Period	
Project Number	Analysis Period
2908-29	50
Highway	Discount Rate
200	1.32%
Date	Inflation Rate
5/4/2018	1
Performed By	$Ia/(1+r)$
KO	0.9870

Notes:				
LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1 Net Present Cost	HMA Reconstruct \$624,999.97	PCC Reconstruct \$1,063,815.88	35 Yr-PCC Reconstruct \$829,515.60	0.6 Miles
Segment #2 Net Present Cost	PCC Reconstruct			0.0 Miles
Segment #3 Net Present Cost				0.0 Miles
Segment #4 Net Present Cost				0.0 Miles
Project Net Present Cost	\$624,999.97	\$1,063,815.88	\$829,515.60	Total
% of Low Cost	100.0%	170.2%	132.7%	0.6

SEG	Length	SEG	Length	SEG	Length						
1	0.63	1	0.63	1	0.63						
ALT	Description	ALT	Description	ALT	Description						
1	HMA Reconstruct	2	PCC Reconstruct	3	35 Yr PCC 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		PCC		PCC							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 460,786.02	\$ 460,786.02	0	Construction	\$ 680,507.35	\$ 680,507.35	0	Construction	\$ 680,507.35	\$ 680,507.35
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 667.05	\$ 600.62	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 6,691.83	\$ 5,717.45	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	\$ 119,660.54	\$ 92,054.99	20	1st CPR	\$ 142,687.26	\$ 109,769.47	20	1st CPR	\$ 95,568.14	\$ 73,520.68
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 1,334.11	\$ 986.74	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 3,973.50	\$ 2,788.71	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	\$ 544,727.57	\$ 344,229.44	35	2nd CPR	\$ 119,455.68	\$ 75,487.57
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 119,660.54	\$ 73,659.58	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 1,334.11	\$ 789.56	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 3,973.50	\$ 2,231.44	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50		\$ (28,155.42)	\$ (14,615.14)	50	Remaining Life	\$ (136,181.89)	\$ (70,690.38)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment			\$ 624,999.97	Net Present Cost for Segment			\$ 1,063,815.88	Net Present Cost for Segment			\$ 829,515.60
Maintenance - Net Present Cost for Segment			\$ 164,213.95	Maintenance - Net Present Cost for Segment			\$ 383,308.54	Maintenance - Net Present Cost for Segment			\$ 149,008.25
Equivalent Annual Cost			17,154.90	Equivalent Annual Cost			29,199.45	Equivalent Annual Cost			22,768.42
Total Lane Width	# of Lanes	Analysis Period	24	2	50	Total Lane Width	# of Lanes	Analysis Period	24	2	50
Total Shldr Width	# of Shldrs	ML Mix	4	2	12.5 WE (3,C)	Total Shldr Width	# of Shldrs	ML Mix	4	2	ML Mix
Rounding Agg. Width	white/ >7 million	SL Mix	8	No	12.5 WE (3,C)	Rounding Agg. Width	white/ >7 million	SL Mix	8	No	SL Mix
Sealed/UTBWC	ML Thickness	No	ML Top Lift/It spacing	# Dowels per Lane	1.5	Sealed/UTBWC	ML Thickness	No	ML Top Lift/It spacing	# Dowels per Lane	12
Design Life	Shldr Thickness	20	Design Life	Shldr Thickness	6	Design Life	Shldr Thickness	6	Design Life	Shldr Thickness	6

50-Year Analysis Period

Project Number	Analysis Period
3107-51-1	50
Highway	Discount Rate
6	1.3%
Date	Inflation Rate
7/9/2018	1
Performed By	la/(1+r)
KO	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Reclaim	20 yr Concrete	35 yr Concrete	1.7 Miles
Net Present Cost	\$987,800.25	\$2,831,799.84	\$2,235,860.71	Miles
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$987,800.25	\$2,831,799.84	\$2,235,860.71	Total
% of Low Cost	100.0%	286.7%	226.3%	1.7

Segment 1															
SEG	Length		SEG	Length		SEG	Length		SEG						
1	1.675		1	1.675		1	1.675		1						
ALT	Description		ALT	Description		ALT	Description		ALT						
1	Reclaim		2	20 yr Concrete		3	35 yr Concrete		3						
Pavement Type			Pavement Type			Pavement Type			Pavement Type						
HMA			PCC			PCC			PCC						
Primary Category			Primary Category			Primary Category			Primary Category						
20-year HMA			> 11' Joint Spacing			> 11' Joint Spacing			> 11' Joint Spacing						
Secondary Category			Secondary Category			Secondary Category			Secondary Category						
Rural			Design Life = 20 years			Design Life = 35 years			Design Life = 35 years						
Shoulder Category			Shoulder Category			Shoulder Category			Shoulder Category						
Aggregate			Aggregate			Aggregate			Aggregate						
Notes:															
Notes:															
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity						
0	Construction	\$ 552,290.01	\$ 552,290.01	0	Construction	\$ 1,787,019.27	\$ 1,787,019.27	0	Construction	\$ 1,787,019.27	\$ 1,787,019.27				
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -				
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -				
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -				
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -				
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -				
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -				
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -				
8	Crack Treatment	\$ 2,069.10	\$ 1,863.03	8		\$ -	\$ -	8		\$ -	\$ -				
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -				
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -				
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -				
12	Seal	\$ 20,151.74	\$ 17,217.51	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	\$ 313,558.39	\$ 241,220.83	20	1st CPR	\$ 429,452.55	\$ 330,378.34	20	1st CPR	\$ 289,867.11	\$ 222,995.10				
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -				
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -				
23	Crack Treatment	\$ 4,138.21	\$ 3,060.72	23		\$ -	\$ -	23		\$ -	\$ -				
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -				
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -				
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -				
27	Seal	\$ 11,856.07	\$ 8,320.91	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	\$ 1,422,665.49	\$ 899,024.36	35	2nd CPR	\$ 357,391.64	\$ 225,846.34				
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -				
37	Mill/Overlay	\$ 313,558.39	\$ 193,017.52	37		\$ -	\$ -	37		\$ -	\$ -				
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -				
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -				
40	Crack Treatment	\$ 4,138.21	\$ 2,449.09	40		\$ -	\$ -	40		\$ -	\$ -				
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -				
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -				
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -				
44	Seal	\$ 11,856.07	\$ 6,658.14	44		\$ -	\$ -	44		\$ -	\$ -				
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -				
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -				
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -				
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -				
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -				
50	Remaining Life	\$ (73,778.44)	\$ (38,297.50)	50	Remaining Life	\$ (355,666.37)	\$ (184,622.13)	50	Remaining Life	\$ -	\$ -				
Net Present Cost for Segment				\$ 987,800.25				\$ 2,831,799.84							
Maintenance - Net Present Cost for Segment				\$ 435,510.24				\$ 1,044,780.57							
Equivalent Annual Cost				\$ 27,112.99				\$ 77,726.81							

Segment 1											
SEG		Length		SEG		Length		SEG		Length	
1	6.2	1	6.2	1	ALT	2	Reclaim	1	ALT	3	20 yr Concrete
2.0" Mill & 2.0" HMA		HMA		Pavement Type	HMA		Pavement Type	PCC			
		Primary Category		Primary Category			Primary Category				
Overlay		20-year HMA		>11' Joint Spacing							
Rural		Secondary Category		Secondary Category			Design Life = 20 years				
Shoulder Category		Aggregate		Shoulder Category			Shoulder Category				
Notes:		Notes:		Notes:			Notes:				
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 723,002.79	\$ 723,002.79	0	Construction	\$ 1,909,861.52	\$ 1,909,861.52	0	Construction	\$ 4,988,225.11	\$ 4,988,225.11
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 15,317.54	\$ 14,726.63	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 43,885.16	\$ 40,036.06	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17	Mill/Overlay	\$ 929,976.48	\$ 744,138.69	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Crack Treatment	\$ 15,317.54	\$ 11,783.80	20	Mill/Overlay	\$ 929,976.48	\$ 715,431.97	20	1st CPR	\$ 1,589,615.42	\$ 1,222,892.96
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 15,317.54	\$ 11,329.21	23		\$ -	\$ -
24	Seal	\$ 43,885.16	\$ 32,035.63	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33	Mill/Overlay	\$ 929,976.48	\$ 603,296.75	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (805,979.61)	\$ (509,322.33)	35	Remaining Life	\$ (109,409.00)	\$ (69,138.78)	35	Remaining Life	\$ -	\$ -
Net Present Cost for Segment			\$ 1,659,698.02	Net Present Cost for Segment			\$ 2,668,910.22	Net Present Cost for Segment			\$ 6,211,118.07
Maintenance - Net Present Cost for Segment			\$ 936,695.24	Maintenance - Net Present Cost for Segment			\$ 759,048.69	Maintenance - Net Present Cost for Segment			\$ 1,222,892.96
Equivalent Annual Cost			\$ 59,521.25	Equivalent Annual Cost			\$ 95,714.32	Equivalent Annual Cost			\$ 222,747.46
Total Lane Width	# of Lanes	Analysis Period	28	2	35	Total Lane Width	# of Lanes	Analysis Period	28	2	35
Total Shldr Width	# of Shldrs	ML Mix	0	2	12.5 WE (3,B)	Total Shldr Width	# of Shldrs	ML Mix	0	2	ML Mix
Rounding Agg. Width	white/ >7 million	SL Mix	8	No		Rounding Agg. Width	white/ >7 million	SL Mix	8	No	
Sealed/UTBWC	ML Thickness	No				Sealed/UTBWC	ML Thickness	No			
ML Top Lift/Jt spacing	# Dowels per Lane	1.5				ML Top Lift/Jt spacing	# Dowels per Lane	1.5			
Design Life	Shldr Thickness	17				Design Life	Shldr Thickness	20			

Project Number	Analysis Period
Highway	35
Discount Rate	1.74%
Date	Inflation Rate
Performed By	$\frac{1}{(1+r)}$ 0.9629

District 1 - 2015/2016 prices

Segment 1	
SEG	Length
1	25.856
ALT	
1	TH 65
Pavement Type	
HMA	
Primary Category	
Overlay, DL = 3 to 17 years	
Secondary Category	
Rural	
ShoulderCategory	
Bituminous	
Notes:	

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	TH 65	20 year PCC	20 Yr HMA	25.9 Miles
Net Present Cost	\$10,123,632.36	\$17,312,456.76	\$13,612,390.43	
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Segment #5				0.0 Miles
Segment #6				0.0 Miles
Segment #7				0.0 Miles
Segment #8				0.0 Miles
Project Net Present Cost				Total 25.9
% of Low Cost				

BID ADJUSTMENT FACTOR SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	TH 65	20 year PCC	20 Yr HMA	25.9
Net Present Cost	\$4,883,608.16	\$4,581,273.34	\$4,298,752.35	Miles
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Segment #5				0.0 Miles
Segment #6				0.0 Miles
Segment #7				0.0 Miles
Segment #8				0.0 Miles
Project Net Present Cost				Total 25.9
Bid Adjustment Factor				

Net Present Cost for Segment	\$ 10,123,632.36	Net Present Cost for Segment	\$ 17,312,456.76	Net Present Cost for Segment	\$ 13,612,390.43
Maintenance - Net Present Cost for Segment	\$ 4,883,608.16	Maintenance - Net Present Cost for Segment	\$ 4,581,273.34	Maintenance - Net Present Cost for Segment	\$ 4,298,752.35
Equivalent Annual Cost	388,640.86	Equivalent Annual Cost	664,616.00	Equivalent Annual Cost	522,572.42

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
24	2	35	26	2	35	24	2	35
Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix
6	2		4	2		6	2	
Width of Rounding Aggregate	white/>7 million	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	Width of Rounding Aggregate	white/>7 million	SL Mix	Width of Rounding Aggregate	white/>7 million	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)
1.5	N	SL Mix	1.5	N	SL Mix	1.5	N	SL Mix
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
N			N			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	
2			6	11		1.5		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
15	4		15	4		20	3	

50-Year Analysis Period

Project Number	Analysis Period
3206-20	50
Highway	Discount Rate
71	1.22%
Date	Inflation Rate
11/21/2018	1
Performed By	Ia/(1+r)
mpr	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	Unbonded Concrete Overlay - 20	Unbonded Concrete Overlay - 35	17.2 Miles
Net Present Cost	\$7,693,468.39	\$14,767,857.11	\$13,585,780.83	
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$7,693,468.39	\$14,767,857.11	\$13,585,780.83	Total
% of Low Cost	100.0%	192.0%	176.6%	17.2

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	17.2	1	17.2	1	17.2	1	17.2	1	17.2	1	17.2
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	CIR	2	Unbonded Concrete Overlay - 20	3	Unbonded Concrete Overlay - 35	4		5		6	
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		PCC		PCC		PCC		PCC	
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category		Primary Category	
20-year HMA		6'x6', 5.5 in. or Thicker		>11' Joint Spacing		Design Life = 20 years		Design Life = 35 years		Design Life = 35 years	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Rural											
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category	
Aggregate		Aggregate		Aggregate		Aggregate		Aggregate		Aggregate	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,748,670.33	\$ 3,748,670.33	0	Construction	\$ 9,105,673.36	\$ 9,105,673.36	0	Construction	\$ 9,649,861.13	\$ 9,649,861.13
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 22,229.89	\$ 20,174.68	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 193,750.60	\$ 167,512.44	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	\$ 2,741,214.36	\$ 2,150,880.78	20		\$ 3,619,967.48	\$ 2,840,390.23	20		\$ 2,469,775.53	\$ 1,937,897.60
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 44,336.68	\$ 33,545.75	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 112,396.12	\$ 81,014.05	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		\$ 5,973,758.97	\$ 3,907,743.43	35		\$ 3,054,372.07	\$ 1,998,022.09
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 2,741,214.36	\$ 1,750,204.03	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 44,336.68	\$ 27,296.68	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 112,396.12	\$ 65,922.35	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (644,991.61)	\$ (351,752.68)	50	Remaining Life	\$ (1,991,252.99)	\$ (1,085,949.91)	50	Remaining Life	\$ -	\$ -
	Net Present Cost for Segment	\$ 7,693,468.39			Net Present Cost for Segment	\$ 14,767,857.11			Net Present Cost for Segment	\$ 13,585,780.83	
	Maintenance - Net Present Cost for Segment	\$ 3,944,798.07			Maintenance - Net Present Cost for Segment	\$ 5,662,183.75			Maintenance - Net Present Cost for Segment	\$ 3,935,919.69	
	Equivalent Annual Cost	206,449.79			Equivalent Annual Cost	396,286.93			Equivalent Annual Cost	364,566.60	
	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		30	2	50
	Total Shdr Width	# of Shdrs	ML Mix		Total Shdr Width	# of Shdrs	ML Mix		Total Shdr Width	# of Shdrs	ML Mix
	15.4	2	12.5 WE (3,B)		15.4	2	12.5 WE (3,B)		15.4	2	12.5 WE (3,B)
	Rounding Agg. Width	white/->7 million	SL Mix		Rounding Agg. Width	white/->7 million	SL Mix		Rounding Agg. Width	white/->7 million	SL Mix
	0	No	12.5 WE (3,B)		0	No	12.5 WE (3,B)		0	No	12.5 WE (3,B)
	Sealed/UTBWC	ML Thickness			Sealed/UTBWC</td						

50-Year Analysis Period

Project Number	Analysis Period
	50
Highway	Discount Rate
	1.3%
Date	Inflation Rate
	1
Performed By	la/(1+r)
	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	Whitetopping - 20yr	Whitetopping - 35 yr	8.0 Miles
Net Present Cost	\$4,056,750.07	\$8,052,637.59	\$6,304,884.27	
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$4,056,750.07	\$8,052,637.59	\$6,304,884.27	Total
% of Low Cost	100.0%	198.5%	155.4%	8.0

Segment 1											
SEG		Length		SEG		Length		SEG		Length	
1		8		1		8		1		8	
ALT	Description			ALT	Description			ALT	Description		
1	CIR			2	Whitetopping - 20yr			3	Whitetopping - 35 yr		
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				PCC				PCC			
Notes:											
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,087,677.22	\$ 2,087,677.22	0	Construction	\$ 4,412,716.00	\$ 4,412,716.00	0	Construction	\$ 4,412,716.00	\$ 4,412,716.00
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 8,470.53	\$ 7,626.92	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 84,975.62	\$ 72,602.60	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	\$ 1,427,489.33	\$ 1,098,169.18	20	1st CPR	\$ 1,811,901.70	\$ 1,393,898.05	20	1st CPR	\$ 1,213,563.65	\$ 933,595.90
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 16,941.06	\$ 12,530.01	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 50,457.09	\$ 35,412.15	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34	R & R Mainline	\$ 4,472,746.66	\$ 2,826,460.77	35	2nd CPR	\$ 1,516,897.54	\$ 958,572.37
35		\$ -	\$ -	35		\$ -	\$ -	36		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	37		\$ -	\$ -
37	Mill/Overlay	\$ 1,427,489.33	\$ 878,721.33	37		\$ -	\$ -	38		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	39		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	40		\$ -	\$ -
40	Crack Treatment	\$ 16,941.06	\$ 10,026.13	40		\$ -	\$ -	41		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	42		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	43		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	44		\$ -	\$ -
44	Seal	\$ 50,457.09	\$ 28,335.72	44		\$ -	\$ -	45		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	46		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	47		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	48		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	49		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	50		\$ -	\$ -
50		\$ (335,879.84)	\$ (174,351.18)	50		\$ (1,118,186.67)	\$ (580,437.22)	50		\$ -	\$ -
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				\$ 1,969,072.85				\$ 3,639,921.59			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
111,349.05				221,027.56				173,055.49			
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	
4	2										

35-Year Analysis Period

Project Number	Analysis Period
4601-32	35
Highway	Discount Rate
TH 4	1.32%
Date	Inflation Rate
1/9/2018	1
Performed By	Ia/(1+r)
Mike Schoeb	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Medium Mill and Overlay	Thick Mill and Overlay	BCOA	1.0 Miles
Net Present Cost	\$382,553.47	\$448,281.35	\$1,058,449.71	Total
% of Low Cost	100.0%	117.2%	276.7%	4.0

Segment 1											
SEG	Length		SEG	Length		SEG	Length		SEG	Length	
1	1		1	1		1	1		1	1	
ALT	Description		ALT	Description		ALT	Description		ALT	Description	
1	Medium Mill and Overlay		2	Thick Mill and Overlay		3	BCOA		4	PCC	
Pavement Type	HMA		Pavement Type	HMA		Pavement Type	PCC		Pavement Type	BCOA	
Primary Category	Overlay		Primary Category	20-year HMA		Primary Category	6"x6", 5.0 in. or Thinner		Primary Category	BCOA	
Secondary Category	Rural		Secondary Category	Rural		Secondary Category	Design Life = 20 years		Secondary Category	BCOA	
Shoulder Category	Aggregate		Shoulder Category	Aggregate		Shoulder Category	Aggregate		Shoulder Category	Aggregate	
Notes:				Notes:				Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 175,991.65	\$ 175,991.65	0	Construction	\$ 302,000.43	\$ 302,000.43	0	Construction	\$ 578,066.13	\$ 578,066.13
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 2,470.57	\$ 2,375.26	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 7,078.25	\$ 6,457.43	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 1,235.29	\$ 1,112.26	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 12,030.89	\$ 10,279.11	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16	Mill/Overlay	\$ 184,320.24	\$ 149,434.24	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19	Crack Treatment	\$ 2,470.57	\$ 1,925.70	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	Mill/Overlay	\$ 184,320.24	\$ 141,797.77	20		\$ 489,258.88	\$ 376,387.42
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22	Crack Treatment	\$ 2,470.57	\$ 1,827.29	22		\$ -	\$ -
23	Seal	\$ 7,078.25	\$ 5,235.24	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ 7,078.25	\$ 4,967.71	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30	R & R Mainline	\$ 781,346.13	\$ 527,215.33
31	Mill/Overlay	\$ 184,320.24	\$ 122,750.26	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34	Crack Treatment	\$ 2,470.57	\$ 1,581.83	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (131,657.31)	\$ (83,198.15)	35	Remaining Life	\$ (21,684.73)	\$ (13,703.22)	35	Remaining Life	\$ (669,725.26)	\$ (423,219.18)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 382,553.47				\$ 448,281.35				\$ 1,058,449.71			
Maintenance - Net Present Cost for Segment				\$ 206,561.82				\$ 146,280.92			
Equivalent Annual Cost				\$ 13,719.40				\$ 16,076.58			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
\$ 37,958.86				\$ 37,958.86				\$ 37,958.86			
Total Lane Width	# of Lanes	Analysis Period	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	28	2	35
Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix
0	0	12.5 WE (4,B)	0	0	12.5 WE (4,B)	0	0	12.5 WE (4,B)	0	0	12.5 WE (4,B)
Rounding Agg. Width	white/ >7 million	SL Mix	Rounding Agg. Width	white/ >7 million	SL Mix	Rounding Agg. Width	white/ >7 million	SL Mix	Rounding Agg. Width	white/ >7 million	SL Mix
2	No	12.5 WE (4,B)	2	No	12.5 WE (4,B)	2	No	12.5 WE (4,B)	2	No	12.5 WE (4,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No			No			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		ML Top Lift/Jt spacing	# Dowels per Lane	
1.5			1.5			1.5			1.5		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
16	0		20	0		20	0		20	0	

Project Number	Analysis Period
4904-45-1	50
Highway	Discount Rate
T.H. 27	1.58%
Date	Inflation Rate
11/16/2016	1
Performed By	$1/(1+r)$

D3 - 2016/2017

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1 Net Present Cost	T.H. 27 Reconstruct in Little Falls \$1,181,644.69	T.H. 27 Reconstruct in Little Falls \$1,367,821.51	T.H. 27 Reconstruct in Little Falls \$1,213,636.65	0.7 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				Total
% of Low Cost				0.7...

Bid Adjustment Factor Summary				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	T.H. 27 Reconstruct in Little Falls \$193,278.53	T.H. 27 Reconstruct in Little Falls \$344,654.19	T.H. 27 Reconstruct in Little Falls \$163,586.71	0.7 Miles
Net Present Cost				0.0 Miles
Segment #2				0.0 Miles
Net Present Cost				0.0 Miles
Segment #3				0.0 Miles
Net Present Cost				0.0 Miles
Segment #4				0.0 Miles
Net Present Cost				0.0 Miles
Segment #5				0.0 Miles
Net Present Cost				0.0 Miles
Segment #6				0.0 Miles
Net Present Cost				0.0 Miles
Segment #7				0.0 Miles
Net Present Cost				0.0 Miles
Segment #8				0.0 Miles
Net Present Cost				0.0 Miles
Project Net Present Cost				Total
Bid Adjustment Factor				0.7

1

Segment 1

SEG	Length		SEG	Length		SEG	Length	
1	0.653		1	0.653		1	0.653	
ALT		Description	ALT		Description	ALT		Description
1		T.H. 27 Reconstruct in Little Falls	2		T.H. 27 Reconstruct in Little Falls	3		T.H. 27 Reconstruct in Little Falls
Pavement Type		Pavement Type	Pavement Type		Pavement Type	Pavement Type		Pavement Type
HMA		PCC	PCC		PCC	PCC		PCC
Primary Category		Primary Category	Primary Category		Primary Category	Primary Category		Primary Category
20 Year HMA		z12 Joint spacing	z12 Joint spacing		z12 Joint spacing	z12 Joint spacing		z12 Joint spacing
Secondary Category		Secondary Category	Secondary Category		Secondary Category	Secondary Category		Secondary Category
Urban		Design Life = 20 Years	Design Life = 20 Years		Design Life = 35 Years	Design Life = 35 Years		Design Life = 35 Years
ShoulderCategory		ShoulderCategory	ShoulderCategory		ShoulderCategory	ShoulderCategory		ShoulderCategory
Thick		Thick Bit	Thick Bit		Thick Bit	Thick Bit		Thick Bit
Notes:		Notes:	Notes:		Notes:	Notes:		Notes:
Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year
0	Full Width Bit. over 6" Agg. Base	\$ 1,513,577.58	\$ 1,513,577.58	0	Concrete with Bit. Shoulders	\$ 1,566,871.86	\$ 1,566,871.86	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	\$ 931.53	8		\$ -	\$ -	8
9		\$ -	\$ -	9		\$ -	\$ -	9
10		\$ -	\$ -	10		\$ -	\$ -	10
11		\$ -	\$ -	11		\$ -	\$ -	11
12	Seal	\$ 13,237.85	\$ 10,967.78	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 Mill 3.0"	\$ 210,527.45	\$ 153,866.67	20	1st CPR	\$ 274,428.32	\$ 200,569.44	20
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	\$ 8,531.96	\$ 5,587.63	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		\$ -	\$ -	35
36		\$ -	\$ -	36		\$ -	\$ -	36
37	ML Overlay 3.5"	\$ 260,260.86	\$ 145,715.30	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	Seal	\$ 8,531.96	\$ 4,280.43	44		\$ -	\$ -	44
45		\$ -	\$ -	45		\$ -	\$ -	45
46		\$ -	\$ -	46		\$ -	\$ -	46
47		\$ -	\$ -	47		\$ -	\$ -	47
48		\$ -	\$ -	48		\$ -	\$ -	48
49		\$ -	\$ -	49		\$ -	\$ -	49
50	O/O Remaining Life	\$ (61,237.85)	\$ (27,964.66)	50	5/20 Remaining	\$ (176,481.51)	\$ (80,591.42)	50
Net Present Cost for Segment		\$ 1,181,644.69		Net Present Cost for Segment		\$ 1,367,821.51		Net Present Cost for Segment
Maintenance - Net Present Cost for Segment		\$ 193,178.53		Maintenance - Net Present Cost for Segment		\$ 344,654.19		Maintenance - Net Present Cost for Segment
Equivalent Annual Cost		\$ 34,361.29		Equivalent Annual Cost		\$ 39,775.19		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	50	24	2	50	24	2	50
Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix	Total Shdr Width	# of Shdtrs	ML Mix
24	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	24	2	SL Mix	24	2	SL Mix
Width of Rounding Aggregate	white/ >7 milliom		Width of Rounding Aggregate	white/ >7 milliom		Width of Rounding Aggregate	white/ >7 milliom	
0	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	0	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	0	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
N			Y	6		Y	6.5	
ML Top Lift / joint spacing	# Dowels per Lane		ML Top Lift / joint spacing	# Dowels per Lane		ML Top Lift / joint spacing	# Dowels per Lane	
2			12	11		12	11	
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	

Project Number	Analysis Period
4904-45-2	35
Highway	Discount Rate
T.H. 27	1.58%
Date	Inflation Rate
4/27/2017	1
Performed By	Ia/(1+r)
Scott Zeidler	0.9844

D3 - 2016/2017 prices

Segment 1											
SEG	Length										
1	1.582										
ALT											
1	6" Conc. w/6" Bit. Shld.										
Pavement Type											
PCC											
Primary Category											
≥12 Joint spacing											
Secondary Category											
Design Life = 20 Years											
ShoulderCategory											
Thick Bit											
Notes:											
Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile
0	6" Concrete w/6" Bit. Shld.	\$ 813,937.22	\$ 813,937.22	0	6	\$ 672,761.80	\$ 672,761.80	0	6" Conc. White-Topping	\$ 931,932.67	\$ 931,932.67

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	6" Conc. w/6" Bit. Shld. \$1,710,508.56	6" Bit. w/ 6" Bit. Shds. \$1,374,425.91	6.5" Concrete w/6.5" Conc. Shlds. \$1,725,259.79	1.6 Miles
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Segment #5				0.0 Miles
Segment #6				0.0 Miles
Segment #7				0.0 Miles
Segment #8				0.0 Miles
Project Net Present Cost				Total 1.6
% of Low Cost				

BID ADJUSTMENT FACTOR SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	6" Conc. w/6" Bit. Shld. \$422,859.87	6" Bit. w/ 6" Bit. Shds. \$310,116.74	6.5" Concrete w/6.5" Conc. Shlds. \$250,942.30	1.6 Miles
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Segment #5				0.0 Miles
Segment #6				0.0 Miles
Segment #7				0.0 Miles
Segment #8				0.0 Miles
Project Net Present Cost				Total 1.6
Bid Adjustment Factor				

Net Present Cost for Segment	\$ 1,710,508.56	Net Present Cost for Segment	\$ 1,374,425.91	Net Present Cost for Segment	\$ 1,725,259.79
Maintenance - Net Present Cost for Segment	\$ 422,859.87	Maintenance - Net Present Cost for Segment	\$ 310,116.74	Maintenance - Net Present Cost for Segment	\$ 250,942.30
Equivalent Annual Cost	\$ 63,995.33	Equivalent Annual Cost	\$ 51,424.67	Equivalent Annual Cost	\$ 64,551.25

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
37	3	35	37	3	35	37	3	35
Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix
20	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	16	2	TYPE SP 9.5 WEARING COURSE MIXTURE (3,C)	16	2	ML Mix
Width of Rounding Aggregate	white/>7 million	SL Mix	Width of Rounding Aggregate	white/>7 million	SL Mix	Width of Rounding Aggregate	white/>7 million	SL Mix
0	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	0	N	TYPE SP 9.5 WEARING COURSE MIXTURE (3,B)	0	N	SL Mix
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
N			N			N		
ML Top Lft / joint spacing	# Dowels per Lane		ML Top Lft / joint spacing	# Dowels per Lane		ML Top Lft / joint spacing	# Dowels per Lane	
12			4			12		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	6		20	6		20	6	

35-Year Analysis Period			
Project Number	Analysis Period		
2301-13 & 5003-17	35		
Highway	Discount Rate		
T.H. 16	1.32%		
Date	Inflation Rate		
1/9/2018	1		
Performed By	la/(1+r)		
trm	0.9870		

T.H. 16 From 198.892-210.246(Segment 1) and 210.246-214.893(Segment 2)

	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	6" Unbonded Concrete Overlay	1.5" Bit. Mill and 3" overlay	3" Bit. Mill and 5" Overlay	11.2 Miles
Net Present Cost	\$8,321,682.63	\$4,628,950.19	\$5,036,652.40	
Segment #2	6" Unbonded Concrete Overlay	1.5" Bit. Mill and 3" Overlay	3" Bit. Mill and 5" Overlay	4.6 Miles
Net Present Cost	\$3,665,291.21	\$1,952,910.08	\$2,190,439.26	
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
Project Net Present Cost	\$11,986,973.84	\$6,581,860.27	\$7,227,091.66	Total
% of Low Cost	182.1%	100.0%	109.8%	17.8

Segment 1						
SEG	Length	SEG	Length			
1	11.182	1	11.182			
ALT	Description	ALT	Description			
1	6" Unbonded Concrete Overlay	2	1.5" Bit. Mill and 3" overlay			
Pavement Type		Pavement Type				
PCC		HMA				
Primary Category		Primary Category				
>11' Joint Spacing		Overlay				
Secondary Category		Secondary Category				
Design Life = 20 years		Rural				
Shoulder Category		Shoulder Category				
Aggregate		Aggregate				
Notes:		Notes:				
Year	Activity	Cost	Present Cost			
0	Construction	\$ 6,379,874.30	\$ 6,379,874.30			
1		\$ -	\$ -			
2		\$ -	\$ -			
3		\$ -	\$ -			
4		\$ -	\$ -			
5		\$ -	\$ -			
6		\$ -	\$ -			
7		\$ -	\$ -			
8		\$ -	\$ -			
9		\$ -	\$ -			
10		\$ -	\$ -			
11		\$ -	\$ -			
12		\$ -	\$ -			
13		\$ -	\$ -			
14		\$ -	\$ -			
15		\$ -	\$ -			
16		\$ -	\$ -			
17		\$ -	\$ -			
18		\$ -	\$ -			
19		\$ -	\$ -			
20	1st CPR	\$ 2,524,119.91	\$ 1,941,808.33			
21		\$ -	\$ -			
22		\$ -	\$ -			
23		\$ -	\$ -			
24		\$ -	\$ -			
25		\$ -	\$ -			
26		\$ -	\$ -			
27		\$ -	\$ -			
28		\$ -	\$ -			
29		\$ -	\$ -			
30		\$ -	\$ -			
31		\$ -	\$ -			
32		\$ -	\$ -			
33		\$ -	\$ -			
34		\$ -	\$ -			
35	Remaining Life	\$ -	\$ -			
	Net Present Cost for Segment	\$ 8,321,682.63	Net Present Cost for Segment	\$ 4,628,950.19	Net Present Cost for Segment	\$ 5,036,652.40
	Maintenance - Net Present Cost for Segment	\$ 1,941,808.33	Maintenance - Net Present Cost for Segment	\$ 2,727,731.69	Maintenance - Net Present Cost for Segment	\$ 1,892,888.79
	Equivalent Annual Cost	298,438.00	Equivalent Annual Cost	166,006.65	Equivalent Annual Cost	180,627.95
	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
	26	2	35	28	2	35
	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
	14	2		12	2	12.5 WE (3,B)
	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix
	3	No		3	No	
	Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
	No	6		No		
	ML Top Lift/It spacing	# Dowels per Lane		ML Top Lift/It spacing	# Dowels per Lane	
	15			1.5		
	Design Life	Shldr Thickness		Design Life	Shldr Thickness	
		2			2	
	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
	28	2	35	28	2	35
	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
	12	2		12	2	12.5 WE (3,B)
	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix
	3	No		3	No	
	Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
	No			No		
	ML Top Lift/It spacing	# Dowels per Lane		ML Top Lift/It spacing	# Dowels per Lane	
	2			2		
	Design Life	Shldr Thickness		Design Life	Shldr Thickness	
		2			2	

35-Year Analysis Period

Project Number	Analysis Period
S.P. 5005-64	35
Highway	Discount Rate
56	1.32%
Date	Inflation Rate
5/24/2018	1
Performed By	la/(1+r)
trm	0.9870

T.H. 56 From E. Cl of Leroy to Maple St(Taopi)

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	1.5" Bit. Mill and 3" Overlay(15 Year Fix)	6" Whitetopping(20 Year Fix)	CIR with 3" Bit. Overlay	8.4 Miles
Net Present Cost	\$3,153,643.71	\$5,241,189.72	\$3,360,229.85	Total
Project Net Present Cost	\$3,153,643.71	\$5,241,189.72	\$3,360,229.85	
% of Low Cost	100.0%	166.2%	106.6%	11.4

Segment 1													
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	8.4	1	8.4	1	8.4	1	8.4	1	8.4	1	8.4		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	1.5" Bit. Mill and 3" Overlay(15 Year Fix)	2	6" Whitetopping(20 Year Fix)	3	CIR with 3" Bit. Overlay								
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA		
Primary Category	Overlay	Primary Category	> 11' Joint Spacing	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA		
Secondary Category	Rural	Secondary Category	Design Life = 20 years	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural		
Shoulder Category	Bituminous	Shoulder Category	Thick Bit.	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous		
Notes:													
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost		
0	Construction	\$ 1,291,822.86	\$ 1,291,822.86	0	Construction	\$ 3,670,049.48	\$ 3,670,049.48	0	Construction	\$ 2,193,101.14	\$ 2,193,101.14		
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -		
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -		
3	Crack Treatment	\$ 23,086.69	\$ 22,196.08	3		\$ -	\$ -	3		\$ -	\$ -		
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -		
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -		
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -		
7	Seal	\$ 54,385.41	\$ 49,615.36	7		\$ -	\$ -	7		\$ -	\$ -		
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -		
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -		
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -		
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -		
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -		
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -		
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -		
15	Mill/Overlay	\$ 1,473,053.67	\$ 1,210,015.28	15		\$ -	\$ -	15		\$ -	\$ -		
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -		
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -		
18	Crack Treatment	\$ 23,086.69	\$ 18,232.60	18		\$ -	\$ -	18		\$ -	\$ -		
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -		
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -		
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -		
22	Seal	\$ 54,385.41	\$ 40,755.70	22		\$ -	\$ -	22		\$ -	\$ -		
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -		
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -		
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -		
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -		
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -		
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -		
29	Mill/Overlay	\$ 1,473,053.67	\$ 1,007,066.89	29		\$ -	\$ -	29		\$ -	\$ -		
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -		
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -		
32	Crack Treatment	\$ 23,086.69	\$ 15,174.55	32		\$ -	\$ -	32		\$ -	\$ -		
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -		
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -		
35	Remaining Life	\$ (793,182.75)	\$ (501,235.61)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (173,300.43)	\$ (109,513.66)		
Net Present Cost for Segment				\$ 3,153,643.71	Net Present Cost for Segment				\$ 5,241,189.72	Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				\$ 1,861,820.85	Maintenance - Net Present Cost for Segment				\$ 1,571,140.24	Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost				113,098.18	Equivalent Annual Cost				187,963.21	Equivalent Annual Cost			
Total Lane Width	# of Lanes	Analysis Period	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	24	2	35	24	2	35		
Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix		
8	2	12.5 WE (3,B)	8	2	12.5 WE (3,B)	8	2	12.5 WE (3,B)	8	2	12.5 WE (3,B)		
Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix		
3	No	12.5 WE (2,B)	3	Yes	12.5 WE (2,B)	3	No	12.5 WE (2,B)	3	No	12.5 WE (2,B)		
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness			
No			Yes	6		No			No				
ML Top Lift/It spacing	# Dowels per Lane		ML Top Lift/It spacing	# Dowels per Lane		ML Top Lift/It spacing	# Dowels per Lane		ML Top Lift/It spacing	# Dowels per Lane			
1.5	3		1.5	3		1.5	3		1.5	3			
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness			
15	3		15	3		15	3		20	3			

50-Year Analysis Period

Project Number	Analysis Period
S.P. 5208-22-1	50
Highway	Discount Rate
111/22	1.32%
Date	Inflation Rate
7/11/2018	1
Performed By	$\frac{I}{(1+r)}$
Mike Schoeb	0.9870

Notes:				
LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1 Net Present Cost	20 yr Bituminous overlay with FDR/SFDR \$735,634.58	20 yr BCOA \$1,392,825.56	35 yr 7" UBOL \$1,225,641.71	1.0 Miles
Segment #2 Net Present Cost				1.0 Miles
Segment #3 Net Present Cost				1.0 Miles
Segment #4 Net Present Cost				1.0 Miles
Project Net Present Cost	\$735,634.58	\$1,392,825.56	\$1,225,641.71	Total
% of Low Cost	100.0%	189.3%	166.6%	4.0

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	1			1	1			1	1		
ALT	Description			ALT	Description			ALT	Description		
1	20 yr Bituminous overlay with FDR/SFDR				20 yr BCOA				35 yr 7" UBOL		
Pavement Type				Pavement Type				Pavement Type			
HMA				PCC				PCC			
Primary Category				Primary Category				Primary Category			
20-year HMA				6x6 , 5.0 in. or Thinner				>11' Joint Spacing			
Secondary Category				Secondary Category				Secondary Category			
Rural				Design Life = 20 years				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category			
Aggregate				Aggregate				Aggregate			
Notes:				Notes:				Notes:			
Year	Activity		Cost	Present Cost	Year	Activity		Cost	Present Cost	Year	Activity
0	Construction		\$ 452,619.76	\$ 452,619.76	0	Construction		\$ 636,448.15	\$ 636,448.15	0	Construction
1			\$ -	\$ -	1			\$ -	\$ -	1	
2			\$ -	\$ -	2			\$ -	\$ -	2	
3			\$ -	\$ -	3			\$ -	\$ -	3	
4			\$ -	\$ -	4			\$ -	\$ -	4	
5			\$ -	\$ -	5			\$ -	\$ -	5	
6			\$ -	\$ -	6			\$ -	\$ -	6	
7			\$ -	\$ -	7			\$ -	\$ -	7	
8	Crack Treatment		\$ 1,235.29	\$ 1,112.26	8			\$ -	\$ -	8	
9			\$ -	\$ -	9			\$ -	\$ -	9	
10			\$ -	\$ -	10			\$ -	\$ -	10	
11			\$ -	\$ -	11			\$ -	\$ -	11	
12	Seal		\$ 12,030.89	\$ 10,279.11	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		\$ 216,519.49	\$ 166,568.69	20	1st CPR		\$ 489,258.88	\$ 376,387.42	20	1st CPR
21			\$ -	\$ -	21			\$ -	\$ -	21	
22			\$ -	\$ -	22			\$ -	\$ -	22	
23	Crack Treatment		\$ 2,470.57	\$ 1,827.29	23			\$ -	\$ -	23	
24			\$ -	\$ -	24			\$ -	\$ -	24	
25			\$ -	\$ -	25			\$ -	\$ -	25	
26			\$ -	\$ -	26			\$ -	\$ -	26	
27	Seal		\$ 7,078.25	\$ 4,967.71	27			\$ -	\$ -	27	
28			\$ -	\$ -	28			\$ -	\$ -	28	
29			\$ -	\$ -	29			\$ -	\$ -	29	
30			\$ -	\$ -	30	R & R Mainline		\$ 840,153.60	\$ 566,895.83	30	
31			\$ -	\$ -	31			\$ -	\$ -	31	
32			\$ -	\$ -	32			\$ -	\$ -	32	
33			\$ -	\$ -	33			\$ -	\$ -	33	
34			\$ -	\$ -	34			\$ -	\$ -	34	
35			\$ -	\$ -	35			\$ -	\$ -	35	
36	Mill/Overlay		\$ 188,115.97	\$ 115,798.77	36	2nd CPR		\$ -	\$ -	36	2nd CPR
37			\$ -	\$ -	37			\$ -	\$ -	37	
38			\$ -	\$ -	38			\$ -	\$ -	38	
39			\$ -	\$ -	39			\$ -	\$ -	39	
40	Crack Treatment		\$ 2,470.57	\$ 1,462.14	40			\$ -	\$ -	40	
41			\$ -	\$ -	41			\$ -	\$ -	41	
42			\$ -	\$ -	42						

50-Year Analysis Period

Project Number	Analysis Period
S.P. 5208-22-2	50
Highway	Discount Rate
111/22	1.32%
Date	Inflation Rate
7/11/2018	1
Performed By	$la/(1+r)$
Mike Schoeb	0.9870

Notes:				
LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1 Net Present Cost	20 yr Bituminous overlay with FDR/SFDR \$754,196.71	20 yr BCOA \$1,392,825.56	35 yr 7" UBOL \$1,225,641.71	1.0 Miles
Segment #2 Net Present Cost				1.0 Miles
Segment #3 Net Present Cost				1.0 Miles
Segment #4 Net Present Cost				1.0 Miles
Project Net Present Cost	\$754,196.71	\$1,392,825.56	\$1,225,641.71	Total
% of Low Cost	100.0%	184.7%	162.5%	4.0

Segment 1											
SEG	Length		SEG	Length		SEG	Length		ALT	Description	Length
1	1		1	1		1	1		ALT	Description	1
ALT	Description		ALT	Description		ALT	Description		ALT	Description	Length
1	20 yr Bituminous overlay with FDR/SFDR		2	20 yr BCOA		3	35 yr 7" UBOL		3	35 yr 7" UBOL	
Pavement Type			Pavement Type			Pavement Type			Pavement Type		
HMA			PCC			PCC			PCC		
Primary Category			Primary Category			Primary Category			Primary Category		
20-year HMA			6x6 , 5.0 in. or Thinner			>11' Joint Spacing			Rural		
Secondary Category			Secondary Category			Secondary Category			Design Life = 20 years		
Rural			Shoulder Category			Shoulder Category			Design Life = 35 years		
Shoulder Category			Aggregate			Aggregate			Aggregate		
Notes:			Notes:			Notes:			Notes:		
Year	Activity		Cost	Present Cost		Year	Activity		Cost	Present Cost	
0	Construction		\$ 471,181.90	\$ 471,181.90		0	Construction		\$ 636,448.15	\$ 636,448.15	
1			\$ -	\$ -		1			\$ -	\$ -	
2			\$ -	\$ -		2			\$ -	\$ -	
3			\$ -	\$ -		3			\$ -	\$ -	
4			\$ -	\$ -		4			\$ -	\$ -	
5			\$ -	\$ -		5			\$ -	\$ -	
6			\$ -	\$ -		6			\$ -	\$ -	
7			\$ -	\$ -		7			\$ -	\$ -	
8	Crack Treatment		\$ 1,235.29	\$ 1,112.26		8			\$ -	\$ -	
9			\$ -	\$ -		9			\$ -	\$ -	
10			\$ -	\$ -		10			\$ -	\$ -	
11			\$ -	\$ -		11			\$ -	\$ -	
12	Seal		\$ 12,030.89	\$ 10,279.11		12			\$ -	\$ -	
13			\$ -	\$ -		13			\$ -	\$ -	
14			\$ -	\$ -		14			\$ -	\$ -	
15			\$ -	\$ -		15			\$ -	\$ -	
16			\$ -	\$ -		16			\$ -	\$ -	
17			\$ -	\$ -		17			\$ -	\$ -	
18			\$ -	\$ -		18			\$ -	\$ -	
19			\$ -	\$ -		19			\$ -	\$ -	
20	Mill/Overlay		\$ 216,519.49	\$ 166,568.69		20	1st CPR		\$ 489,258.88	\$ 376,387.42	
21			\$ -	\$ -		21			\$ -	\$ -	
22			\$ -	\$ -		22			\$ -	\$ -	
23	Crack Treatment		\$ 2,470.57	\$ 1,827.29		23			\$ -	\$ -	
24			\$ -	\$ -		24			\$ -	\$ -	
25			\$ -	\$ -		25			\$ -	\$ -	
26			\$ -	\$ -		26			\$ -	\$ -	
27	Seal		\$ 7,078.25	\$ 4,967.71		27			\$ -	\$ -	
28			\$ -	\$ -		28			\$ -	\$ -	
29			\$ -	\$ -		29			\$ -	\$ -	
30			\$ -	\$ -		30	R & R Mainline		\$ 840,153.60	\$ 566,895.83	
31			\$ -	\$ -		31			\$ -	\$ -	
32			\$ -	\$ -		32			\$ -	\$ -	
33			\$ -	\$ -		33			\$ -	\$ -	
34			\$ -	\$ -		34					

50-Year Analysis Period

Project Number	Analysis Period
	50
Highway	Discount Rate
	1.3%
Date	Inflation Rate
	1
Performed By	$\frac{1}{(1+r)}$
	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	Whitetopping	UBOL	14.0 Miles
Net Present Cost	\$7,080,817.39	\$12,892,979.70	\$9,959,093.38	
Segment #2				1.0 Miles
Net Present Cost				
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
Project Net Present Cost	\$7,080,817.39	\$12,892,979.70	\$9,959,093.38	Total
% of Low Cost	100.0%	182.1%	140.6%	17.0

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	14	1	14	1	14	1	14	1	14		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	CIR	2	Whitetopping	3	UBOL						
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type			
HMA		PCC		PCC		PCC		PCC			
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category			
20-year HMA		6'x6', 5.0 in. or Thinner		> 11' Joint Spacing		Design Life = 20 years		Design Life = 35 years			
Secondary Category		Secondary Category		Secondary Category		Shoulder Category		Shoulder Category			
Rural						PCC		PCC			
Shoulder Category						Notes:		Notes:			
Bituminous						Notes:		Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity		
0	Construction	\$ 3,535,491.67	\$ 3,535,491.67	0	Construction	\$ 5,190,974.92	\$ 5,190,974.92	0	Construction	\$ 6,647,798.90	\$ 6,647,798.90
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 14,823.42	\$ 13,347.11	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 148,050.26	\$ 126,493.15	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	\$ 2,577,816.70	\$ 1,983,117.34	20	1st CPR	\$ 5,911,678.08	\$ 4,547,860.70	20	1st CPR	\$ 2,123,736.38	\$ 1,633,792.83
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 29,646.85	\$ 21,927.51	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 87,790.68	\$ 61,613.87	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30	R & R Mainline	\$ 6,973,777.06	\$ 4,705,574.20	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -	35	2nd CPR	\$ 2,654,570.69	\$ 1,677,501.65
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 2,577,816.70	\$ 1,586,829.74	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 29,646.85	\$ 17,545.72	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 87,790.68	\$ 49,301.53	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (606,545.11)	\$ (314,850.25)	50	Remaining Life	\$ (2,988,761.60)	\$ (1,551,430.12)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
										273,355.66	
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	
4	2	12.5 WE (4,E)		4	2	12.5 WE (3,B)		4	2	12.5 WE (3,B)	
Rounding Agg. Width	white/ >7 miliom	SL Mix		Rounding Agg. Width	white/ >7 miliom	SL Mix		Rounding Agg. Width	white/ >7 miliom	SL Mix	
12	No	12.5 WE (3,B)		12	Yes	12.5 WE (3,B)		12	No	1	

35-Year Analysis Period

Project Number	Analysis Period
5507-64	35
Highway	Discount Rate
52	1.32%
Date	Inflation Rate
9/20/2017	1
Performed By	$la/(1+r)$
trm	0.9870

Notes:

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 Miles
Net Present Cost	\$4,892,563.14	\$10,521,708.52	\$5,047,587.66	
Segment #2				1.0 Miles
Net Present Cost				
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
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%	14.2

Segment 1				Segment 2				Segment 3					
SEG	Length	SEG	Length	SEG	Length	SEG	Length	ALT	Description	ALT	Description	ALT	Description
1	11.219	1	11.219	1	11.219	1	11.219						
ALT	Description	ALT	Description	ALT	Description	ALT	Description						
1	1.5" Mill and 3" Bit. Overlay-15 YR FIX	2	6" UBOL-20 YR FIX	3	CIR 4" and 3" Overlay-20 YR FIX								
Pavement Type		Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		HMA		HMA							
Primary Category		Primary Category		Primary Category		Primary Category							
Overlay		> 11' Joint Spacing		20-year HMA									
Secondary Category		Secondary Category		Secondary Category		Secondary Category							
Rural		Design Life = 20 years		Rural		Rural							
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Thin Bit.		Bituminous		Bituminous							
Notes:		Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost		
0	Construction	\$ 2,034,467.72	\$ 2,034,467.72	0	Construction	\$ 7,496,671.40	\$ 7,496,671.40	0	Construction	\$ 3,261,585.08	\$ 3,261,585.08		
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -		
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -		
3	Crack Treatment	\$ 30,834.48	\$ 29,644.97	3		\$ -	\$ -	3		\$ -	\$ -		
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -		
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -		
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -		
7	Seal	\$ 79,492.51	\$ 72,520.36	7		\$ -	\$ -	7		\$ -	\$ -		
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -		
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -		
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -		
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -		
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -		
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -		
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -		
15	Mill/Overlay	\$ 2,276,518.74	\$ 1,870,008.21	15		\$ -	\$ -	15		\$ -	\$ -		
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -		
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -		
18	Crack Treatment	\$ 30,834.48	\$ 24,351.37	18		\$ -	\$ -	18		\$ -	\$ -		
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -		
20		\$ -	\$ -	20	1st CPR	\$ 3,932,188.52	\$ 3,025,037.12	20	Mill/Overlay	\$ 2,276,518.74	\$ 1,751,328.47		
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -		
22	Seal	\$ 79,492.51	\$ 59,570.63	22		\$ -	\$ -	22	Crack Treatment	\$ 30,834.48	\$ 22,805.91		
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -		
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -		
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -		
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -		
27		\$ -	\$ -	27		\$ -	\$ -	27	Seal	\$ 79,492.51	\$ 55,789.99		
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -		
29	Mill/Overlay	\$ 2,276,518.74	\$ 1,556,363.29	29		\$ -	\$ -	29		\$ -	\$ -		
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -		
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -		
32	Crack Treatment	\$ 30,834.48	\$ 20,267.06	32		\$ -	\$ -	32		\$ -	\$ -		
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -		
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -		
35	Remaining Life	\$ (1,225,817.78)	\$ (774,630.47)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (267,825.73)	\$ (169,246.99)		
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment				\$ 5,047,587.66	
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				\$ 1,786,002.58	
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost				\$ 181,020.12	
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period			
24	2	35		27	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			
20	2	12.5 WE (3,B)		17	2	12.5 WE (3,B)		20	2	12.5 WE (3,B)			
Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix			
3	No	12.5 WE (2,B)		3	No	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				No				No					
ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane				
1.5				1.5				1.5					
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness	</td			

Project Number	Analysis Period
6103-34	50
Highway	Discount Rate
3%	1.58%
Date	Inflation Rate
11/1/2016	1
Performed By	Ia/(1+r)
KR	0.9844

D4 - 2016/2017 prices

LCCA SUMMARY			
	Alternate #1	Alternate #2	Alternate #3
Segment #1	FDR	4.5" Whitetop	PCC Reconstruct
Net Present Cost	\$6,621,218.95	\$8,105,384.71	7.5 Miles
Segment #2			0.0 Miles
Net Present Cost			0.0 Miles
Segment #3			0.0 Miles
Net Present Cost			0.0 Miles
Segment #4			0.0 Miles
Net Present Cost			0.0 Miles
Segment #5			0.0 Miles
Net Present Cost			0.0 Miles
Segment #6			0.0 Miles
Net Present Cost			0.0 Miles
Segment #7			0.0 Miles
Net Present Cost			0.0 Miles
Segment #8			0.0 Miles
Net Present Cost			0.0 Miles
Project Net Present Cost			Total 7.5
% of Low Cost			7.5

BID ADJUSTMENT FACTOR SUMMARY			
	Alternate #1	Alternate #2	Alternate #3
Segment #1	FDR	4.5" Whitetop	PCC Reconstruct
Net Present Cost	\$1,816,453.75	\$3,968,814.23	7.5 Miles
Segment #2			0.0 Miles
Net Present Cost			0.0 Miles
Segment #3			0.0 Miles
Net Present Cost			0.0 Miles
Segment #4			0.0 Miles
Net Present Cost			0.0 Miles
Segment #5			0.0 Miles
Net Present Cost			0.0 Miles
Segment #6			0.0 Miles
Net Present Cost			0.0 Miles
Segment #7			0.0 Miles
Net Present Cost			0.0 Miles
Segment #8			0.0 Miles
Net Present Cost			0.0 Miles
Project Net Present Cost			Total 7.5
Bid Adjustment Factor			7.5

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	7.50	1	7.50	1	7.50	1	7.50	1	7.50	1	7.50
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	FDR	2	4.5" Whitetop	3	4.5" Whitetop	4	PCC Reconstruct	5	PCC Reconstruct	6	PCC Reconstruct
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		6"X6' 5.0" Thickness		6"X6' 5.0" Thickness		6"X6' 5.0" Thickness		6"X6' 5.0" Thickness	
Primary Category		Primary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
20 Year HMA		Design Life = 20 Years		Rural		Design Life = 35 Years		ShoulderCategory		Design Life = 35 Years	
Secondary Category		ShoulderCategory		Bituminous		ShoulderCategory		Thick Bit		ShoulderCategory	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/Per Mile	Year	Activity	Cost	Pres. Cost/Per Mile
0	FDR	\$ 640,635.36	\$ 640,635.36	0	4.5" Whitetop	\$ 551,542.73	\$ 551,542.73	0	PCC Reconstruct	\$ 1,027,347.80	\$ 1,027,347.80
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	Seal	\$ 12,263.75	\$ 10,160.73	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	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	\$ 193,561.45	\$ 141,466.86	20	1st CPR	\$ 420,093.89	\$ 307,030.97	20	1st CPR	\$ 141,698.54	\$ 103,562.18
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	\$ 7,716.84	\$ 5,053.80	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		\$ -	\$ -	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	ML Overlay 3.5"	\$ 172,641.23	\$ 96,658.67	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	\$ 7,716.84	\$ 3,871.49	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	4/17 Remaining Life	\$ (40,621.47)	\$ (18,550.05)	50	15/35 Remaining	\$ (221,866.27)	\$ (101,316.66)	50	0/0 Remaining	\$ -	\$ -
Net Present Cost for Segment		\$ 6,621,218.95	\$ 8,105,384.71	Maintenance							

50-Year Analysis Period

Project Number	Analysis Period
6105-26	50
Highway	Discount Rate
TH 28, TH 29 & TH 114	1.22%
Date	Inflation Rate
10/17/2018	1
Performed By	Ia/(1+r)
Nathan Bausman	0.9879

Notes:	

LCCA SUMMARY			
	Alternate #1	Alternate #2	Alternate #3
Segment #1	4.5" Bituminous Reconstruct Net Present Cost \$489,456.66	6" Undoweled Concrete Reconstruct \$751,057.86	7" Doweled Concrete Reconstruct \$689,970.66
Miles	0.5	0.5	0.5
Segment #2	4.5" Bituminous Reconstruct Net Present Cost \$749,204.99	6" Undoweled Construct Reconstruct \$1,150,079.80	7" Doweled Concrete Reconstruct \$1,056,477.89
Miles	0.7	0.7	0.7
Segment #3	4.5" Bituminous Reconstruct Net Present Cost \$588,978.60	6" Undoweled Concrete Reconstruct \$903,813.19	7" Doweled Concrete Reconstruct \$830,221.51
Miles	0.6	0.6	0.6
Segment #4			
Net Present Cost			
Project Net Present Cost	\$1,827,640.26	\$2,804,950.86	\$2,576,670.06
Total			
% of Low Cost	100.0%	153.5%	141.0%
			1.8

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	0.468	1	0.468	1	0.468	1	0.468	1	0.468	1	0.468
ALT		ALT		ALT		ALT		ALT		ALT	
1	4.5" Bituminous Reconstruct	2	6" Undoweled Concrete Reconstruct	3	7" Doweled Concrete Reconstruct	4	8" Doweled Concrete Reconstruct	5	9" Doweled Concrete Reconstruct	6	10" Doweled Concrete Reconstruct
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		PCC		PCC		PCC		PCC	
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category		Primary Category	
20-year HMA		6"x6", 5.5 in. or Thicker		> 11' Joint Spacing		Design Life = 20 years		Design Life = 35 years		Design Life = 50 years	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Urban		Design Life = 20 years		Design Life = 35 years		Design Life = 50 years		Design Life = 50 years		Design Life = 50 years	
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category	
Thick Blt.		PCC		PCC		PCC		PCC		PCC	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 351,008.64	\$ 351,008.64	0	Construction	\$ 483,594.51	\$ 483,594.51	0	Construction	\$ 562,968.84	\$ 562,968.84
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 488.77	\$ 443.58	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 5,875.18	\$ 5,079.55	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	\$ 91,875.68	\$ 72,089.81	20	1st CPR	\$ 120,694.53	\$ 94,702.39	20	1st CPR	\$ 78,872.14	\$ 61,886.64
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 974.83	\$ 737.57	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 3,044.44	\$ 2,194.40	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	\$ 365,736.30	\$ 239,246.95	35	2nd CPR	\$ 99,541.43	\$ 65,115.17
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 108,823.87	\$ 69,481.61	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 974.83	\$ 600.17	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 3,044.44	\$ 1,785.62	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (25,605.62)	\$ (13,964.28)	50	Remaining Life	\$ (121,912.10)	\$ (66,485.99)	50	Remaining Life	\$ -	\$ -
	Net Present Cost for Segment	\$ 489,456.66	\$ 751,057.86		Net Present Cost for Segment	\$ 267,463.35	\$ 267,463.35		Net Present Cost for Segment	\$ 689,970.66	\$ 127,001.82
	Maintenance - Net Present Cost for Segment	\$ 138,448.02	\$ 20,154.20		Maintenance - Net Present Cost for Segment	\$ 20,154.20	\$ 20,154.20		Maintenance - Net Present Cost for Segment	\$ 18,514.97	
	Equivalent Annual Cost	13,134.29	Equivalent Annual Cost		Equivalent Annual Cost	20,154.20	Equivalent Annual Cost		Equivalent Annual Cost	18,514.97	
	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					

35-Year Analysis Period

Project Number	Analysis Period
6912-77	35
Highway	Discount Rate
135	1.22%
Date	Inflation Rate
8/30/1990	1
Performed By	Ia/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	3" Mill and Overlay, Fog Seal Shoulders	FDR	20 year Concrete	12.3 Miles
Net Present Cost	\$3,668,673.83	\$4,770,140.76	\$9,093,280.56	
Segment #2	3" Mill Full Width, 3" Overlay	FDR	20 Year PCC	8.0 Miles
Net Present Cost	\$2,391,286.85	\$2,518,013.65	\$4,799,925.35	
Segment #3	3" Mill and Overlay plus new 2' Shoulders	FDR, add 2' Shoulders	20 Year PCC	2.5 Miles
Net Present Cost	\$664,414.68	\$691,553.88	\$1,407,374.40	
Segment #4				0.0 Miles
Project Net Present Cost	\$6,724,375.37	\$7,979,708.28	\$15,300,580.31	Total
% of Low Cost	100.0%	118.7%	227.5%	22.7

Segment 1																		
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length									
1	12.293	1	12.293	1	12.293	1	12.293	1	12.293									
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description									
1	3" Mill and Overlay, Fog Seal Shoulders	2	FDR	3	20 year Concrete	4	PCC	5	6x6, 5.5 in. or Thicker									
Pavement Type	HMA	Pavement Type	HMA	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	6x6, 5.5 in. or Thicker									
Primary Category	Overlay	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	Design Life = 20 years									
Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Shoulder Category									
Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Thick Bit.									
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:									
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost							
0	Construction	\$ 1,407,900.54	\$ 1,407,900.54	0	Construction	\$ 3,211,565.59	\$ 3,211,565.59	0	Construction	\$ 6,976,347.42	\$ 6,976,347.42							
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -							
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -							
3	Crack Treatment	\$ 25,344.79	\$ 24,439.36	3		\$ -	\$ -	3		\$ -	\$ -							
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -							
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -							
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -							
7	Seal	\$ 107,995.71	\$ 99,206.96	7		\$ -	\$ -	7		\$ -	\$ -							
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -							
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -							
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -							
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -							
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -							
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -							
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -							
15	Mill/Overlay	\$ 1,702,019.26	\$ 1,418,957.79	15		\$ -	\$ -	15		\$ -	\$ -							
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -							
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -							
18	Crack Treatment	\$ 25,344.79	\$ 20,374.87	18		\$ -	\$ -	18		\$ -	\$ -							
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -							
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -							
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -							
22	Seal	\$ 107,995.71	\$ 82,707.93	22		\$ -	\$ -	22		\$ -	\$ -							
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -							
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -							
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -							
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -							
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -							
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -							
29	Mill/Overlay	\$ 1,702,019.26	\$ 1,197,404.30	29		\$ -	\$ -	29		\$ -	\$ -							
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -							
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -							
32	Crack Treatment	\$ 25,344.79	\$ 17,193.57	32		\$ -	\$ -	32		\$ -	\$ -							
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -							
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -							
35	Remaining Life	\$ (916,471.91)	\$ (599,511.48)	35		\$ (218,503.95)	\$ (142,934.69)	35		\$ -	\$ -							
Net Present Cost for Segment				\$ 3,668,673.83	Net Present Cost for Segment				\$ 4,770,140.76	Net Present Cost for Segment				\$ 9,093,280.56				
Maintenance - Net Present Cost for Segment				\$ 2,260,773.29	Maintenance - Net Present Cost for Segment				\$ 1,558,575.17	Maintenance - Net Present Cost for Segment				\$ 2,116,933.14				
Equivalent Annual Cost				129,414.53	Equivalent Annual Cost				168,269.40	Equivalent Annual Cost				320,770.58				

35-Year Analysis Period

Project Number	Analysis Period
6917-143	35
Highway	Discount Rate
53	1.22%
Date	Inflation Rate
9/5/2018	1
Performed By	$1/(1+r)$
Ed Welch	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1 Net Present Cost	3" Mill, 3" Overlay, R&R Shoulders - 15 Year \$2,709,718.04	20 Year HMA \$4,831,693.55	20 Year PCC \$5,165,677.60	5.9 Miles
Segment #2 Net Present Cost	3" Mill, 3" Overlay, Fog Seal Shoulders - 15 Year \$2,139,164.61	20 Year HMA \$4,817,786.76	20 Year PCC \$5,444,503.92	6.4 Miles
Segment #3 Net Present Cost				0.0 Miles
Segment #4 Net Present Cost				0.0 Miles
Project Net Present Cost	\$4,848,882.65	\$9,649,480.31	\$10,610,181.51	Total
% of Low Cost	100.0%	199.0%	218.8%	12.3

Segment 1																									
SEG	Length		SEG	Length		SEG	Length		SEG	Length															
1	5.926		1	5.926		1	5.926		1	5.926															
ALT	Description		ALT	Description		ALT	Description		ALT	Description															
1	3" Mill, 3" Overlay, R&R Shoulders - 15 Year			20 Year HMA			20 Year PCC			20 Year PCC															
Pavement Type			Pavement Type			Pavement Type			Pavement Type																
HMA			HMA			PCC			PCC																
Primary Category			Primary Category			Primary Category			Primary Category																
Overlay			20-year HMA			6'x6', 5.5 in. or Thicker			6'x6', 5.5 in. or Thicker																
Secondary Category			Secondary Category			Secondary Category			Secondary Category																
Rural			Rural			Design Life = 20 years			Design Life = 20 years																
Shoulder Category			Shoulder Category			Shoulder Category			Shoulder Category																
Bituminous			Bituminous			Thick Bit.			Thick Bit.																
Notes:						Notes:																			
Notes:																									
Year	Activity		Cost	Present Cost		Year	Activity		Cost	Present Cost															
0	Construction		\$ 1,517,038.53	\$ 1,517,038.53		0	Construction		\$ 4,001,962.29	\$ 4,001,962.29															
1			\$ -	\$ -		1			\$ -	\$ -															
2			\$ -	\$ -		2			\$ -	\$ -															
3	Crack Treatment		\$ 13,775.47	\$ 13,283.34		3			\$ -	\$ -															
4			\$ -	\$ -		4			\$ -	\$ -															
5			\$ -	\$ -		5			\$ -	\$ -															
6			\$ -	\$ -		6			\$ -	\$ -															
7	Seal		\$ 57,326.20	\$ 52,660.97		7			\$ -	\$ -															
8			\$ -	\$ -		8	Crack Treatment		\$ 6,905.22	\$ 6,266.81															
9			\$ -	\$ -		9			\$ -	\$ -															
10			\$ -	\$ -		10			\$ -	\$ -															
11			\$ -	\$ -		11			\$ -	\$ -															
12			\$ -	\$ -		12	Seal		\$ 85,130.76	\$ 73,602.16															
13			\$ -	\$ -		13			\$ -	\$ -															
14			\$ -	\$ -		14			\$ -	\$ -															
15	Mill/Overlay		\$ 896,569.78	\$ 747,461.97		15			\$ -	\$ -															
16			\$ -	\$ -		16			\$ -	\$ -															
17			\$ -	\$ -		17			\$ -	\$ -															
18	Crack Treatment		\$ 13,775.47	\$ 11,074.20		18			\$ -	\$ -															
19			\$ -	\$ -		19			\$ -	\$ -															
20			\$ -	\$ -		20	Mill/Overlay		\$ 986,624.64	\$ 774,150.32															
21			\$ -	\$ -		21			\$ -	\$ -															
22	Seal		\$ 57,326.20	\$ 43,902.96		22			\$ -	\$ -															
23			\$ -	\$ -		23	Crack Treatment		\$ 13,772.20	\$ 10,420.24															
24			\$ -	\$ -		24			\$ -	\$ -															
25			\$ -	\$ -		25			\$ -	\$ -															
26			\$ -	\$ -		26	Seal		\$ 57,189.13	\$ 41,221.38															
27			\$ -	\$ -		27			\$ -	\$ -															
28	Mill/Overlay		\$ 896,569.78	\$ 630,754.62		28			\$ -	\$ -															
29			\$ -	\$ -		29			\$ -	\$ -															
30			\$ -	\$ -		30			\$ -	\$ -															
31			\$ -	\$ -		31			\$ -	\$ -															
32	Crack Treatment		\$ 13,775.47	\$ 9,345.09		32			\$ -	\$ -															
33			\$ -	\$ -		33			\$ -	\$ -															
34			\$ -	\$ -		34			\$ -	\$ -															
35	Remaining Life		\$ (482,768.34)	\$ (315,803.64)		35	Remaining Life		\$ (116,073.49)	\$ (75,929.65)															
Net Present Cost for Segment						Net Present Cost for Segment																			
\$ 2,709,718.04						\$ 4,831,693.55																			
Maintenance - Net Present Cost for Segment						Maintenance - Net Present Cost for Segment																			
\$ 1,192,679.51						\$ 829,731.26																			
Equivalent Annual Cost						Equivalent Annual Cost																			
\$ 95,586.83						\$ 170,440.71																			
Equivalent Annual Cost						Equivalent Annual Cost																			
\$ 182,222.18						\$ 182,222.18																			
Total Lane Width						# of Lanes																			
27						35																			
Total Shldr Width						# of Shldrs																			
10						ML Mix																			
Rounding Agg. Width						9.5 WE (3,B)																			
white/ >7 million						SL Mix																			
3						No																			
Sealed/UTBWC						9.5 WE (3,B)																			
ML Thickness						No																			
No						ML Thickness																			
ML Top Lift/Jt spacing						2																			
1.5						Shldr Thickness																			
Design Life						4																			
15						4																			
Shldr Thickness						4																			
Notes:						Notes:																			
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35-Year Analysis Period

Project Number	Analysis Period
6936-19	35
Highway	Discount Rate
169	1.22%
Date	Inflation Rate
29-Mar-19	1
Performed By	la/(1+r)
A. Thorson	0.9879

Notes:

LCCA SUMMARY	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Mill and Overlay HMA	CIR	New Concrete	5.5 Miles
Net Present Cost	\$1,970,496.05	\$2,155,063.29	\$5,106,180.85	
Segment #2	Mill and Overlay	CIR	New Concrete	4.1 Miles
Net Present Cost	\$1,444,208.48	\$1,683,165.13	\$3,357,234.95	
Segment #3				0.0 Miles
Net Present Cost				
Segment #4				0.0 Miles
Net Present Cost				
Project Net Present Cost	\$3,414,704.53	\$3,838,228.42	\$8,463,415.81	Total
% of Low Cost	100.0%	112.4%	247.9%	9.6

Segment 1											
SEG	Length	SEG	Length	SEG	Length	ALT	Description	ALT	Description	ALT	Description
1	5.48	1	5.48	1	5.48						
ALT		ALT		ALT							
1	Mill and Overlay HMA	2	CIR	3	New Concrete						
Pavement Type		Pavement Type		Pavement Type							
HMA		HMA		PCC							
Primary Category		Primary Category		Primary Category							
Overlay		20-year HMA		6'x6', 5.0 in. or Thinner							
Secondary Category		Secondary Category		Secondary Category							
Rural		Rural		Design Life = 20 years							
Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Bituminous		Thin Bit.							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,030,276.35	\$ 1,030,276.35	0	Construction	\$ 1,553,893.82	\$ 1,553,893.82	0	Construction	\$ 3,270,143.37	\$ 3,270,143.37
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 9,451.45	\$ 9,113.80	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 41,160.32	\$ 37,810.67	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 4,738.84	\$ 4,300.73	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 62,171.40	\$ 53,752.00	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 715,426.79	\$ 596,444.73	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 9,451.45	\$ 7,598.09	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	Mill/Overlay	\$ 715,426.79	\$ 561,356.22	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 41,160.32	\$ 31,522.41	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 9,451.45	\$ 7,151.10	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ 41,160.32	\$ 29,667.96	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 715,426.79	\$ 503,316.93	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 9,451.45	\$ 6,411.74	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (385,229.81)	\$ (251,998.66)	35	Remaining Life	\$ (84,167.86)	\$ (55,058.53)	35	Remaining Life	\$ (2,805,936.60)	\$ (1,835,507.65)
Net Present Cost for Segment			\$ 1,970,496.05	Net Present Cost for Segment			\$ 2,155,063.29	Net Present Cost for Segment			\$ 5,106,180.85
Maintenance - Net Present Cost for Segment			\$ 940,219.70	Maintenance - Net Present Cost for Segment			\$ 601,169.48	Maintenance - Net Present Cost for Segment			\$ 1,836,037.48
Equivalent Annual Cost			69,510.36	Equivalent Annual Cost			76,021.07	Equivalent Annual Cost			180,123.40

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
20	2	35	20	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
12	2	9.5 WE (3,B)	12	2	9.5 WE (3,B)	12	2	9.5 WE (3,B)
Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix
3	No	9.5 WE (3,B)	3	No	9.5 WE (3,B)	3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No			No		
ML Top Lift/It spacing	1.5		ML Top Lift/It spacing	1.5		ML Top Lift/It spacing	6	
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
15	3		20	3		20	3	

50-Year Analysis Period

Project Number	Analysis Period
7301-38	50
Highway	Discount Rate
4	1.32%
Date	Inflation Rate
	1
Performed By	$\frac{I}{a/(1+r)}$
Samuel Nigon	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Mill, FDR, HMA	6" PCC (ML), 3" HMA (Shld)	5" Whitetopping, 3" HMA (Shld/TL)	20.3 Miles
Net Present Cost	\$9,181,657.17	\$15,077,765.66	\$20,140,286.38	
Segment #2	Mill, FDR, HMA	PCC (ML), HMA (Shld)	Whitetopping, HMA (Shld/TL)	1.4 Miles
Net Present Cost	\$768,568.90	\$1,180,053.60	\$1,480,395.98	
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
Project Net Present Cost	\$9,950,226.08	\$16,257,819.26	\$21,620,682.35	Total
% of Low Cost	100.0%	163.4%	217.3%	23.6

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	20.269	1	20.269	1	20.269	1	20.269	1	20.269	1	20.269
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	Mill, FDR, HMA	2	6" PCC (ML), 3" HMA (Shld)	3	5" Whitetopping, 3" HMA (Shld/TL)						
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		PCC		PCC		PCC		PCC	
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category		Primary Category	
20-year HMA		6x6, 5.5 in. or Thicker		6x6, 5.0 in. or Thinner		6x6, 5.0 in. or Thinner		6x6, 5.0 in. or Thinner		6x6, 5.0 in. or Thinner	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Rural		Design Life = 35 years		Design Life = 20 years		Design Life = 20 years		Design Life = 20 years		Design Life = 20 years	
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category	
Bituminous		Thin Bit.		Thin Bit.		Thin Bit.		Thin Bit.		Thin Bit.	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 5,043,448.12	\$ 5,043,448.12	0	Construction	\$ 10,550,479.34	\$ 10,550,479.34	0	Construction	\$ 7,884,907.05	\$ 7,884,907.05
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 21,461.14	\$ 19,323.75	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 217,008.68	\$ 185,410.76	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	\$ 2,940,552.74	\$ 2,262,170.58	20	1st CPR	\$ 2,624,252.39	\$ 2,018,840.36	20	1st CPR	\$ 9,226,947.15	\$ 7,098,300.99
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 42,922.28	\$ 31,746.34	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 129,166.40	\$ 90,652.47	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	2nd CPR	\$ 3,969,502.58	\$ 2,508,445.96	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 2,940,552.74	\$ 1,810,119.60	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 42,922.28	\$ 25,402.45	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 129,166.40	\$ 72,537.33	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (691,894.76)	\$ (359,154.23)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ (4,886,675.21)	\$ (2,536,614.20)
	Net Present Cost for Segment	\$ 9,181,657.17			Net Present Cost for Segment	\$ 15,077,765.66			Net Present Cost for Segment	\$ 20,140,286.38	
	Maintenance - Net Present Cost for Segment	\$ 4,138,209.05			Maintenance - Net Present Cost for Segment	\$ 4,527,286.32			Maintenance - Net Present Cost for Segment	\$ 12,255,379.33	
	Equivalent Annual Cost	\$ 252,016.71			Equivalent Annual Cost	\$ 413,852.19			Equivalent Annual Cost	\$ 552,807.48	
	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	</td			

35-Year Analysis Period

Project Number	Analysis Period
7314-39	35
Highway	Discount Rate
55	1.32%
Date	Inflation Rate
2/13/2018	1
Performed By	la/(1+r)
Scott Zeidler	0.9870

Notes:	
Notes:	

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	2" Mill & Fill with 1 1/2" Overlay	5" Mill with 9" FDR and 4" HMA	4" Mill with 6" White-Topping	1.0 Miles
Net Present Cost	\$435,900.51	\$516,240.64	\$983,934.46	Total
Segment #2				1.0 Miles
Net Present Cost				1.0 Miles
Segment #3				1.0 Miles
Net Present Cost				1.0 Miles
Segment #4				1.0 Miles
Net Present Cost				1.0 Miles
Project Net Present Cost	\$435,900.51	\$516,240.64	\$983,934.46	
% of Low Cost	100.0%	118.4%	225.7%	4.0

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	1			1	1			1	1		
ALT	Description			ALT	Description			ALT	Description		
1	2" Mill & Fill with 1 1/2" Overlay			2	5" Mill with 9" FDR and 4" HMA			3	4" Mill with 6" White-Topping		
Pavement Type	HMA			Pavement Type	HMA			Pavement Type	PCC		
Primary Category	Overlay			Primary Category	20-year HMA			Primary Category	> 11" Joint Spacing		
Secondary Category	Rural			Secondary Category	Rural			Secondary Category	Design Life = 35 years		
Shoulder Category	Bituminous			Shoulder Category	Bituminous			Shoulder Category	Thin Bit.		
Notes:	Notes:			Notes:	Notes:			Notes:	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 196,513.69	\$ 196,513.69	0	Construction	\$ 355,349.81	\$ 355,349.81	0	Construction	\$ 796,997.60	\$ 796,997.60
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 2,117.63	\$ 2,035.94	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 7,027.33	\$ 6,410.97	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 191,110.12	\$ 156,984.21	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 2,117.63	\$ 1,672.39	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 7,027.33	\$ 5,266.19	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 191,110.12	\$ 130,654.22	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 2,117.63	\$ 1,391.89	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (102,905.45)	\$ (65,028.99)	35		\$ (24,304.52)	\$ (15,358.74)	35		\$ -	\$ -
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
Total Lane Width # of Lanes Analysis Period											
24	2	35		24	2	35		26	2	35	
Total Shdr Width	# of Shldrs	ML Mix		Total Shdr Width	# of Shldrs	ML Mix		Total Shdr Width	# of Shldrs	ML Mix	
16	2	9.5 WE (3,B)		16	2	9.5 WE (3,C)		14	2		
Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix	
3	No	12.5 WE (3,B)		3	No	12.5 WE (3,B)		3	Yes	12.5 WE (2,B)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				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		
1.5				2				12			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	1.5			20	4			3			

35-Year Analysis Period

Project Number	Analysis Period
7901-52	35
Highway	Discount Rate
42	1.32%
Date	Inflation Rate
5/14/2018	1
Performed By	la/(1+r)
trm/CZ	0.9870

Notes:				
LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	2.0" Mill and 3.5" Bit. Overlay(15 Yr HMA) \$5,123,680.35	6" Whitetopping(20 Yr PCC) \$7,371,979.76	SFDR + 3" Bit. Overlay(20 YR HMA) \$5,335,740.58	12.4 Miles
Net Present Cost				0.0 Miles
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Net Present Cost				0.0 Miles
Segment #4				0.0 Miles
Net Present Cost				0.0 Miles
Project Net Present Cost	\$5,123,680.35	\$7,371,979.76	\$5,335,740.58	Total
% of Low Cost	100.0%	143.9%	104.1%	12.4

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	12.382	1	12.382	1	12.382	1	12.382	1	12.382	1	12.382
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	2.0" Mill and 3.5" Bit. Overlay(15 Yr HMA)	2	6" Whitetopping(20 Yr PCC)	3	SFDR + 3" Bit. Overlay(20 YR HMA)	4		5		6	
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA
Primary Category	Overlay	Primary Category	6"x6', 5.5 in. or Thicker	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA
Secondary Category	Rural	Secondary Category	Design Life = 20 years	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural
Shoulder Category	Aggregate	Shoulder Category	Aggregate	Shoulder Category	Aggregate	Shoulder Category	Aggregate	Shoulder Category	Aggregate	Shoulder Category	Aggregate
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,267,374.38	\$ 2,267,374.38	0	Construction	\$ 4,991,135.41	\$ 4,991,135.41	0	Construction	\$ 3,539,524.50	\$ 3,539,524.50
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 39,702.70	\$ 38,171.09	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 87,642.90	\$ 79,955.89	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 2,245,019.13	\$ 1,844,133.38	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 39,702.70	\$ 31,355.00	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 87,642.90	\$ 65,678.43	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 2,245,019.13	\$ 1,534,828.28	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 39,702.70	\$ 26,096.02	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (1,208,856.45)	\$ (763,912.11)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (264,119.90)	\$ (166,905.17)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
Total Lane Width				# of Lanes				Analysis Period			
28				2				35			
Total Shldr Width				# of Shldrs				ML Mix			
0				0				12.5 WE (3,B)			
Rounding Agg. Width				white/ >7 million				SL Mix			
3				No				3			
Sealed/UTBWC				ML Thickness				Yes			
ML Top Lift/it spacing				# Dowels per Lane				6			
1.5				Design Life				Design Life			
15				Shldr Thickness				4			
Total Lane Width				# of Lanes				Analysis Period			
28				2				35			
Total Shldr Width				# of Shldrs				ML Mix			
0											

35-Year Analysis Period

Project Number	Analysis Period
7903-54-1	35
Highway	Discount Rate
60	1.32%
Date	Inflation Rate
3/22/2018	1
Performed By	$la/(1+r)$
trm/CZ	0.9870

Notes:				
LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	1.5" Mill and 3" Bit. Overlay(15 Yr HMA)	6" Whitetopping(20 Yr PCC)	4" Mill and 5" Bit. Overlay-(20 Yr HMA)	24.2 Miles
Net Present Cost	\$8,855,322.62	\$13,852,891.75	\$10,055,999.57	
Segment #2				1.0 Miles
Segment #3				1.0 Miles
Segment #4				1.0 Miles
Project Net Present Cost	\$8,855,322.62	\$13,852,891.75	\$10,055,999.57	Total
% of Low Cost	100.0%	156.4%	113.6%	27.2

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	24.197	1	24.197	1	24.197	1	24.197	1	24.197		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	1.5" Mill and 3" Bit. Overlay(15 Yr HMA)	2	6" Whitetopping(20 Yr PCC)	3	4" Mill and 5" Bit. Overlay-(20 Yr HMA)						
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type			
HMA		PCC		PCC		HMA		HMA			
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category			
Overlay		>11' Joint Spacing		>11' Joint Spacing		20-year HMA		20-year HMA			
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category			
Rural		Design Life = 20 years		Design Life = 20 years		Rural		Rural			
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category			
Bituminous		Aggregate		Aggregate		Bituminous		Bituminous			
Notes:		Notes:		Notes:		Notes:		Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,771,553.46	\$ 3,771,553.46	0	Construction	\$ 9,753,715.35	\$ 9,753,715.35	0	Construction	\$ 6,471,896.27	\$ 6,471,896.27
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 66,503.42	\$ 63,937.91	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 151,733.64	\$ 138,425.34	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 4,010,452.15	\$ 3,294,318.78	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 66,503.42	\$ 52,520.73	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 151,733.64	\$ 113,707.18	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 4,010,452.15	\$ 2,741,783.05	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 66,503.42	\$ 43,711.75	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (2,159,474.23)	\$ (1,364,635.57)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (538,308.71)	\$ (340,173.18)
Net Present Cost for Segment				\$ 8,855,322.62	Net Present Cost for Segment				\$ 13,852,891.75	Net Present Cost for Segment	
Maintenance - Net Present Cost for Segment				\$ 5,083,769.16	Maintenance - Net Present Cost for Segment				\$ 4,099,176.40	Maintenance - Net Present Cost for Segment	
Equivalent Annual Cost				317,575.77	Equivalent Annual Cost				496,802.09	Equivalent Annual Cost	
Total Lane Width					# of Lanes					Analysis Period	
24					35					35	
Total Shldr Width					# of Shldrs					ML Mix	
4					2					4	
Rounding Agg. Width					white/ >7 million					12.5 WE (3,B)	
3					No					SL Mix	
Sealed/UTBWC					ML Thickness					3	
ML Top Lift/It spacing					# Dowels per Lane					Yes	
1.5					6					ML Thickness	
Design Life					ML Top Lift/It spacing					12.5 WE (3,B)	
15					Shldr Thickness					2	
Design Life					Shldr Thickness					5	

35-Year Analysis Period

Project Number	Analysis Period
7903-54-2	35
Highway	Discount Rate
60	1.32%
Date	Inflation Rate
3/22/2018	1
Performed By	$\ln(1+r)$
trm/CZ	0.9870

Notes:	

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	1.5" Mill and 3" Bit. Overlay(15 Yr HMA) \$8,855,322.62	6" Whitetopping(20 Yr PCC) \$13,852,891.75	SFDR + 3" Bit. Overlay(20 YR HMA) \$10,734,117.19	24.2 Miles
Net Present Cost				1.0 Miles
Segment #2				
Net Present Cost				1.0 Miles
Segment #3				
Net Present Cost				1.0 Miles
Segment #4				
Net Present Cost				1.0 Miles
Project Net Present Cost	\$8,855,322.62	\$13,852,891.75	\$10,734,117.19	Total
% of Low Cost	100.0%	156.4%	121.2%	27.2

Segment 1				Segment 2				Segment 3			
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	24.197	1	24.197	1	24.197	1	24.197	1	24.197	1	24.197
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	1.5" Mill and 3" Bit. Overlay(15 Yr HMA)	2	6" Whitetopping(20 Yr PCC)	3	SFDR + 3" Bit. Overlay(20 YR HMA)	4		5		6	
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	HMA	Pavement Type	PCC	Pavement Type	HMA	Pavement Type	HMA
Primary Category	Overlay	Primary Category	>11' Joint Spacing	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA	Primary Category	20-year HMA
Secondary Category	Rural	Secondary Category	Design life = 20 years	Secondary Category	Design life = 20 years	Secondary Category	Design life = 20 years	Secondary Category	Design life = 20 years	Secondary Category	Design life = 20 years
Shoulder Category	Bituminous	Shoulder Category	Aggregate	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous	Shoulder Category	Bituminous
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,771,553.46	\$ 3,771,553.46	0	Construction	\$ 9,753,715.35	\$ 9,753,715.35	0	Construction	\$ 6,364,474.39	\$ 6,364,474.39
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 66,503.42	\$ 63,937.91	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 151,733.64	\$ 138,425.34	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 4,010,452.15	\$ 3,294,318.78	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 66,503.42	\$ 52,520.73	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 151,733.64	\$ 113,707.18	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 4,010,452.15	\$ 2,741,783.05	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 66,503.42	\$ 43,711.75	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (2,159,474.23)	\$ (1,364,635.57)	35		\$ -	\$ -	35		\$ -	\$ -
	Net Present Cost for Segment	\$ 8,855,322.62	Net Present Cost for Segment		\$ 13,852,891.75	Net Present Cost for Segment			\$ 10,734,117.19		
	Maintenance - Net Present Cost for Segment	\$ 5,083,769.16	Maintenance - Net Present Cost for Segment		\$ 4,099,176.40	Maintenance - Net Present Cost for Segment			\$ 4,369,642.80		
	Equivalent Annual Cost	317,575.77	Equivalent Annual Cost		496,802.09	Equivalent Annual Cost			384,954.42		
	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		24	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	12.5 WE (3,8)		4	2	12.5 WE (3,8)		4	2	12.5 WE (3,8)
	Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix
	3	No	12.5 WE (3,8)		3	Yes	ML Thickness		3	No	12.5 WE (3,8)
	Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness	
	ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane			ML Top Lift/It spacing	# Dowels per Lane	
	1.5				1.5				1.5		
	Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness	
	15	1.5			15	1.5			15	1.5	

35-Year Analysis Period

Project Number	Analysis Period
7906-96, 7905-23 & 2513-95	35
Highway	Discount Rate
61	1.32%
Date	Inflation Rate
10/25/2017	1
Performed By	$I_a/(1+r)$
trm	0.9870

Segment 1-existing road is BAB and Segment 2-existing road is BOC

Segment 1		Segment 2	
Notes:	Notes:	Notes:	Notes:

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 Miles
Net Present Cost	\$5,648,165.04	\$2,858,062.40	\$2,831,896.09	
Segment #2	7.5" UBL-20 YR FIX	1.5" Mill and 3" Bit. Overlay-15 YR FIX	3"Mill and 5" Bit. Overlay-20 YR FIX	13.6 Miles
Net Present Cost	\$11,491,108.73	\$5,220,785.20	\$5,505,741.72	
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
Project Net Present Cost	\$17,139,273.78	\$8,078,847.60	\$8,337,637.81	Total 22.9
% of Low Cost	212.1%	100.0%	103.2%	

Segment 1			Segment 2			Remaining Life		
Year	Activity	Cost	Year	Activity	Cost	Year	Activity	Cost
0	Construction	\$ 4,263,757.18	0	Construction	\$ 1,098,744.21	0	Construction	\$ 1,834,667.28
1		\$ -	1		\$ -	1		\$ -
2		\$ -	2		\$ -	2		\$ -
3		\$ -	3		\$ -	3		\$ -
4		\$ -	4		\$ -	4		\$ -
5		\$ -	5		\$ -	5		\$ -
6		\$ -	6		\$ -	6		\$ -
7		\$ -	7	Seal	\$ 49,512.47	7		\$ -
8		\$ -	8		\$ -	8		\$ -
9		\$ -	9		\$ -	9		\$ -
10		\$ -	10		\$ -	10		\$ -
11		\$ -	11		\$ -	11		\$ -
12		\$ -	12		\$ -	12		\$ -
13		\$ -	13		\$ -	13		\$ -
14		\$ -	14		\$ -	14		\$ -
15		\$ -	15	Mill/Overlay	\$ 1,371,416.99	15		\$ -
16		\$ -	16		\$ -	16		\$ -
17		\$ -	17		\$ -	17		\$ -
18		\$ -	18	Crack Treatment	\$ 20,222.85	18		\$ -
19		\$ -	19		\$ -	19		\$ -
20	1st CPR	\$ 1,799,565.58	20		\$ -	20	Mill/Overlay	\$ 1,249,314.31
21		\$ 1,384,407.86	21		\$ -	21		\$ 961,098.93
22		\$ -	22	Seal	\$ 49,512.47	22		\$ -
23		\$ -	23		\$ -	23		\$ -
24		\$ -	24		\$ -	24		\$ -
25		\$ -	25		\$ -	25		\$ -
26		\$ -	26		\$ -	26		\$ -
27		\$ -	27		\$ -	27	Seal	\$ 49,512.47
28		\$ -	28		\$ -	28		\$ -
29		\$ -	29	Mill/Overlay	\$ 1,371,416.99	29		\$ -
30		\$ -	30		\$ -	30		\$ -
31		\$ -	31		\$ -	31		\$ -
32		\$ -	32	Crack Treatment	\$ 20,222.85	32		\$ -
33		\$ -	33		\$ -	33		\$ -
34		\$ -	34		\$ -	34		\$ -
35	Remaining Life	\$ -	35	Remaining Life	\$ (738,455.30)	35	Remaining Life	\$ (146,978.15)
	Net Present Cost for Segment	\$ 5,648,165.04		Net Present Cost for Segment	\$ 2,858,062.40		Net Present Cost for Segment	\$ 2,831,896.09
	Maintenance - Net Present Cost for Segment	\$ 1,384,407.86		Maintenance - Net Present Cost for Segment	\$ 1,759,318.19		Maintenance - Net Present Cost for Segment	\$ 997,228.81
	Equivalent Annual Cost	202,558.44		Equivalent Annual Cost	102,497.83		Equivalent Annual Cost	101,559.44
	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes
	24	2	35	24	2	35	24	2
	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs	ML Mix	Total Shdr Width	# of Shldrs
	13	2		13	2	12.5 WE (3,8)	13	2
	Rounding Agg. Width	white/ >7 million	SL Mix	Rounding Agg. Width	white/ >7 million	SL Mix	Rounding Agg. Width	white/ >7 million
	3	Yes	12.5 WE (2,B)	3	No	12.5 WE (2,B)	3	No
	Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness
	Yes	7.5		No			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
	15	Design Life	Shldr Thickness	15	Design Life	Shldr Thickness	15	Design Life
		4.5			1.5			1.5

50-Year Analysis Period

Project Number	Analysis Period
8105-21	50
Highway	Discount Rate
30	1.22%
Date	Inflation Rate
	1
Performed By	Ia/(1+r)
Mike Schoeb	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	BCOA	Concrete reconstruct	9.6 Miles
Net Present Cost	\$5,229,480.77	\$7,018,918.86	\$7,583,531.55	
Segment #2	\$161,390.24			0.2 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$5,390,871.00	\$7,018,918.86	\$7,583,531.55	Total
% of Low Cost	100.0%	130.2%	140.7%	9.9

Segment 1											
SEG	Length	SEG	Length	SEG	Length	ALT	Description	ALT	Description		
1	9.64	1	9.64	1	9.64	ALT	Description	ALT	Description		
1	CIR	2	BCOA	3	Concrete reconstruct						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		PCC							
Primary Category		Primary Category		Primary Category							
20-year HMA		6x6', 5.0 in. or Thinner		> 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		PCC		PCC							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity		
0	Construction	\$ 2,752,675.15	\$ 2,752,675.15	0	Construction	\$ 2,785,627.12	\$ 2,785,627.12	0	Construction		
1		\$ -	\$ -	1		\$ -	\$ -	1			
2		\$ -	\$ -	2		\$ -	\$ -	2			
3		\$ -	\$ -	3		\$ -	\$ -	3			
4		\$ -	\$ -	4		\$ -	\$ -	4			
5		\$ -	\$ -	5		\$ -	\$ -	5			
6		\$ -	\$ -	6		\$ -	\$ -	6			
7		\$ -	\$ -	7		\$ -	\$ -	7			
8	Crack Treatment	\$ 9,999.29	\$ 9,074.83	8		\$ -	\$ -	8			
9		\$ -	\$ -	9		\$ -	\$ -	9			
10		\$ -	\$ -	10		\$ -	\$ -	10			
11		\$ -	\$ -	11		\$ -	\$ -	11			
12	Seal	\$ 42,392.21	\$ 36,651.36	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	\$ 1,856,430.68	\$ 1,456,639.49	20	1st CPR	\$ 2,960,529.38	\$ 2,322,965.26	20	1st CPR		
21		\$ -	\$ -	21		\$ -	\$ -	21			
22		\$ -	\$ -	22		\$ -	\$ -	22			
23	Crack Treatment	\$ 19,943.21	\$ 15,089.31	23		\$ -	\$ -	23			
24		\$ -	\$ -	24		\$ -	\$ -	24			
25		\$ -	\$ -	25		\$ -	\$ -	25			
26		\$ -	\$ -	26		\$ -	\$ -	26			
27	Seal	\$ -	\$ -	27		\$ -	\$ -	27			
28		\$ -	\$ -	28		\$ -	\$ -	28			
29		\$ -	\$ -	29		\$ -	\$ -	29			
30		\$ -	\$ -	30	R & R Mainline	\$ 4,141,049.37	\$ 2,878,196.35	30			
31		\$ -	\$ -	31		\$ -	\$ -	31			
32		\$ -	\$ -	32		\$ -	\$ -	32			
33		\$ -	\$ -	33		\$ -	\$ -	33			
34		\$ -	\$ -	34		\$ -	\$ -	34			
35		\$ -	\$ -	35		\$ -	\$ -	35	2nd CPR		
36		\$ -	\$ -	36		\$ -	\$ -	36			
37	Mill/Overlay	\$ 1,856,430.68	\$ 1,185,289.45	37		\$ -	\$ -	37			
38		\$ -	\$ -	38		\$ -	\$ -	38			
39		\$ -	\$ -	39		\$ -	\$ -	39			
40	Crack Treatment	\$ 19,943.21	\$ 12,278.40	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	\$ (436,807.22)	\$ (238,217.22)	50	Remaining Life	\$ (1,774,735.44)	\$ (967,869.88)	50	Remaining Life		
	Net Present Cost for Segment	\$ 5,229,480.77			Net Present Cost for Segment	\$ 7,018,918.86			Net Present Cost for Segment	\$ 7,583,531.55	
	Maintenance - Net Present Cost for Segment	\$ 2,476,805.62			Maintenance - Net Present Cost for Segment	\$ 4,233,291.74			Maintenance - Net Present Cost for Segment	\$ 2,039,097.34	
	Equivalent Annual Cost	\$ 140,330.10			Equivalent Annual Cost	\$ 188,348.64			Equivalent Annual Cost	\$ 203,499.70	
	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
	4	2	12.5 WE (4,C)		4	2			4	2	
	Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix		Rounding Agg. Width	white/ >7 million	SL Mix
	8	Yes	12.5 WE (4,B)		8	Yes			8	No	
	Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness	
	No				Yes	5			No	7.5	
	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				6				1.5		
	Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness	
	20	3			5				20		

50-Year Analysis Period

Project Number	Analysis Period
8209-111	50
Highway	Discount Rate
95	1.22%
Date	Inflation Rate
11/27/2018	1
Performed By	$1/(1+r)$
EL	0.9879

Notes:	

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	Whitetopping (20 Year)	Whitetopping (35 year)	2.4 Miles
Net Present Cost	\$2,134,627.17	\$3,090,672.38	\$2,871,544.79	
Segment #2				0.0 Miles
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$2,134,627.17	\$3,090,672.38	\$2,871,544.79	Total
% of Low Cost	100.0%	144.8%	134.5%	2.4

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	2.421	1	2.421	1	2.421	1	2.421	1	2.421	1	2.421
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	CIR	2	Whitetopping (20 Year)	3	Whitetopping (35 year)						
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC	Pavement Type	PCC
Primary Category	20-year HMA	Primary Category	6"x6", 5.5 in. or Thicker	Primary Category	> 11' Joint Spacing	Primary Category	6"x6", 5.5 in. or Thicker	Primary Category	> 11' Joint Spacing	Primary Category	6"x6", 5.5 in. or Thicker
Secondary Category	Rural	Secondary Category	Design Life = 20 years	Secondary Category	Design Life = 35 years	Secondary Category	Design Life = 20 years	Secondary Category	Design Life = 35 years	Secondary Category	Design Life = 20 years
Shoulder Category	Bituminous	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,122,232.62	\$ 1,122,232.62	0	Construction	\$ 1,680,157.97	\$ 1,680,157.97	0	Construction	\$ 2,043,325.57	\$ 2,043,325.57
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 2,525.15	\$ 2,291.69	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	\$ 797,547.85	\$ 625,792.12	20	1st CPR	\$ 728,815.92	\$ 571,861.94	20	1st CPR	\$ 591,671.43	\$ 464,252.17
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 5,036.32	\$ 3,810.55	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	\$ 1,775,433.86	\$ 1,161,402.73	35	2nd CPR	\$ 556,395.65	\$ 363,967.05
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 739,770.39	\$ 472,326.84	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 5,036.32	\$ 3,100.70	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	\$ (174,063.62)	\$ (94,927.35)	50	Remaining Life	\$ (591,811.29)	\$ (322,750.26)	50	Remaining Life	\$ -	\$ -
	Net Present Cost for Segment	\$ 2,134,627.17			Net Present Cost for Segment	\$ 3,090,672.38			Net Present Cost for Segment	\$ 2,871,544.79	
	Maintenance - Net Present Cost for Segment	\$ 1,012,394.56			Maintenance - Net Present Cost for Segment	\$ 1,410,514.41			Maintenance - Net Present Cost for Segment	\$ 828,219.22	
	Equivalent Annual Cost	\$ 57,281.49			Equivalent Annual Cost	\$ 82,936.41			Equivalent Annual Cost	\$ 77,056.25	

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
16	2	12.5 WE (3,C)	16	2	12.5 WE (3,C)	16	2	12.5 WE (3,C)
Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million				

Project Number	Analysis Period
8408-58	3S
Highway	Discount Rate
US 75	1.58%
Date	Inflation Rate
1/5/2017	1
Performed By	Ia/(1+r)
Nathan Bausman	0.9844

DA - 2016/2017 prices

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	1.5" Mill & 3.0" Overlay	6" Mill, 1.0" PAB& 6" UBL	5.0" Mill & 5.0" OL	1.2 Miles
Net Present Cost	\$513,161.48	\$768,865.15	\$490,902.52	
Segment #2	3" Mill & 3" OL	3.0" Mill & 3.0" OL	3.0" Mill & 3.0" OL	0.4 Miles
Net Present Cost	\$235,828.61	\$235,828.61	\$235,828.61	
Segment #3	1.5" Mill & 3.0" OL	6.0" Mill, 1.0" PAB, 6.0" UBL	5.0" Mill & 5.0" OL	4.6 Miles
Net Present Cost	\$2,000,013.98	\$2,996,502.63	\$1,913,261.11	
Segment #4				0.0 Miles
Net Present Cost				
Segment #5				0.0 Miles
Net Present Cost				
Segment #6				0.0 Miles
Net Present Cost				
Segment #7				0.0 Miles
Net Present Cost				
Segment #8				0.0 Miles
Net Present Cost				
Project Net Present Cost				Total 6.1
% of Low Cost				

BID ADJUSTMENT FACTOR SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	1.5" Mill & 3.0" Overlay	6" Mill, 1.0" PAB& 6" UBL	5.0" Mill & 5.0" OL	1.2 Miles
Net Present Cost	\$513,161.48	\$213,489.52	\$221,489.52	
Segment #2	3" Mill & 3" OL	3.0" Mill & 3.0" OL	3.0" Mill & 3.0" OL	0.4 Miles
Net Present Cost	\$150,684.23	\$150,684.23	\$150,684.23	
Segment #3	1.5" Mill & 3.0" OL	6.0" Mill, 1.0" PAB, 6.0" UBL	5.0" Mill & 5.0" OL	4.6 Miles
Net Present Cost	\$1,292,099.47	\$831,831.78	\$785,269.78	
Segment #4				0.0 Miles
Net Present Cost				
Segment #5				0.0 Miles
Net Present Cost				
Segment #6				0.0 Miles
Net Present Cost				
Segment #7				0.0 Miles
Net Present Cost				
Segment #8				0.0 Miles
Net Present Cost				
Project Net Present Cost				Total 6.1
Bid Adjustment Factor				

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	1.17	1	1.17	1	1.17	1	1.17	1	1.17		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	1.5" Mill & 3.0" Overlay	2	6" Mill, 1.0" PAB& 6" UBL	3	5.0" Mill & 5.0" OL	4	5.0" Mill & 5.0" OL	5	5.0" Mill & 5.0" OL		
Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA	Pavement Type	HMA		
Primary Category	Overlay, DL = 13 to 17 years	Primary Category	Overlay, DL = 13 to 17 years	Primary Category	Overlay, DL = 13 to 17 years	Primary Category	Overlay, DL = 13 to 17 years	Primary Category	Overlay, DL = 13 to 17 years		
Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Rural		
ShoulderCategory	Aggregate	ShoulderCategory	Aggregate	ShoulderCategory	Aggregate	ShoulderCategory	Aggregate	ShoulderCategory	Aggregate		
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:	Notes:		
Year	Activity	Cost/per Mile	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/per Mile	Year	Activity	Cost	Pres. Cost/Per Mile
0	1.5" Mill & 3.0" OL	\$ 155,244.41	\$ 155,244.41	0	6.5" Mill, 1.0" PAB & 6.0" UBL	\$ 474,730.45	\$ 474,730.45	0	5.0" Mill & 5.0" OL	\$ 247,366.52	\$ 247,366.52
1	-	\$ -	\$ -	1	-	\$ -	\$ -	1	-	\$ -	\$ -
2	-	\$ -	\$ -	2	-	\$ -	\$ -	2	-	\$ -	\$ -
3	Crack Treatment	\$ 2,464.00	\$ 2,350.80	3	-	\$ -	\$ -	3	Crack Treatment	\$ 2,464.00	\$ 2,350.80
4	-	\$ -	\$ -	4	-	\$ -	\$ -	4	-	\$ -	\$ -
5	-	\$ -	\$ -	5	-	\$ -	\$ -	5	-	\$ -	\$ -
6	-	\$ -	\$ -	6	-	\$ -	\$ -	6	-	\$ -	\$ -
7	Seal	\$ 7,778.03	\$ 6,969.67	7	-	\$ -	\$ -	7	Seal	\$ 7,778.03	\$ 6,969.67
8	-	\$ -	\$ -	8	-	\$ -	\$ -	8	-	\$ -	\$ -
9	-	\$ -	\$ -	9	-	\$ -	\$ -	9	-	\$ -	\$ -
10	-	\$ -	\$ -	10	-	\$ -	\$ -	10	-	\$ -	\$ -
11	-	\$ -	\$ -	11	-	\$ -	\$ -	11	-	\$ -	\$ -
12	-	\$ -	\$ -	12	-	\$ -	\$ -	12	-	\$ -	\$ -
13	ML Overlay 3.5"	\$ 180,790.06	\$ 147,457.83	13	-	\$ -	\$ -	13	-	\$ -	\$ -
14	-	\$ -	\$ -	14	-	\$ -	\$ -	14	-	\$ -	\$ -
15	-	\$ -	\$ -	15	-	\$ -	\$ -	15	-	\$ -	\$ -
16	Crack Treatment	\$ 2,464.00	\$ 1,917.39	16	-	\$ -	\$ -	16	-	\$ -	\$ -
17	-	\$ -	\$ -	17	-	\$ -	\$ -	17	-	\$ -	\$ -
18	-	\$ -	\$ -	18	-	\$ -	\$ -	18	-	\$ -	\$ -
19	-	\$ -	\$ -	19	-	\$ -	\$ -	19	-	\$ -	\$ -
20	Seal	\$ 7,778.03	\$ 5,684.68	20	1st CPR	\$ 249,594.40	\$ 182,119.25	20	Crack Treatment	\$ 2,464.00	\$ 1,800.85
21	-	\$ -	\$ -	21	-	\$ -	\$ -	21	-	\$ -	\$ -
22	-	\$ -	\$ -	22	-	\$ -	\$ -	22	-	\$ -	\$ -
23	-	\$ -	\$ -	23	-	\$ -	\$ -	23	-	\$ -	\$ -
24	-	\$ -	\$ -	24	-	\$ -	\$ -	24	Seal	\$ 7,778.03	\$ 5,339.16
25	-	\$ -	\$ -	25	-	\$ -	\$ -	25	-	\$ -	\$ -
26	-	\$ -	\$ -	26	-	\$ -	\$ -	26	-	\$ -	\$ -
27	-	\$ -	\$ -	27	-	\$ -	\$ -	27	-	\$ -	\$ -
28	Crack Treatment	\$ 2,464.00	\$ 1,988.59	28	-	\$ -	\$ -	28	-	\$ -	\$ -
29	-	\$ -	\$ -	29	-	\$ -	\$ -	29	-	\$ -	\$ -
30	-	\$ -	\$ -	30	-	\$ -	\$ -	30	-	\$ -	\$ -
31	-	\$ -	\$ -	31	-	\$ -	\$ -	31	-	\$ -	\$ -
32	Seal	\$ 7,778.03	\$ 4,709.85	32	-	\$ -	\$ -	32	ML Overlay 3.5"	\$ 180,790.06	\$ 107,771.43
33	-	\$ -	\$ -	33	-	\$ -	\$ -	33	-	\$ -	\$ -
34	-	\$ -	\$ -	34	-	\$ -	\$ -	34	-	\$ -	\$ -
35	Remaining Life	\$ (16,435.46)	\$ (9,494.99)	35	0/0 Remaining	\$ -	\$ -	35	Remaining Life	\$ (156,684.72)	\$ (90,518.91)
Net Present Cost for Segment		\$ 513,161.48	Net Present Cost for Segment			\$ 768,865.15	Net Present Cost for Segment			\$ 490,902.52	
Maintenance - Net Present Cost for Segment		\$ 311,525.52	Maintenance - Net Present Cost for Segment			\$ 213,430.52	Maintenance - Net Present Cost for Segment			\$ 201,483.69	
Equivalent Annual Cost		\$ 19,200.13	Equivalent Annual Cost			\$ 28,767.38	Equivalent Annual Cost			\$ 18,367.30	
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 Shdr Width	# of Shdrs	ML Mix		Total Shdr Width	# of Shdrs	ML Mix		Total Shdr Width	# of Shdrs	ML Mix	
16	N	TYPE SP 9.5 WEARING COURSE									

35-Year Analysis Period				
Project Number	Analysis Period			
8504-79	35			
Highway	Discount Rate			
61	1.32%			
Date	Inflation Rate			
1/12/2018	1			
Performed By	la/(1+r)			
trm	0.9870			
T. H. 61 NB & SB From 9.338-22.155				
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 Miles
Net Present Cost	\$10,854,498.80	\$4,792,894.69	\$5,107,483.32	
Segment #2				1.0 Miles
Net Present Cost				
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
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%	15.7

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	12.695	1	12.695	1	12.695	1	12.695	1	12.695	1	12.695
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	6.5" UBOL-20 YR FIX	2	1.5" Mill and 3" Bit. Overlay-15 YR FIX	3	3.5" Mill and 5" Bit. Overlay-20 YR FIX	3	3.5" Mill and 5" Bit. Overlay-20 YR FIX	3	3.5" Mill and 5" Bit. Overlay-20 YR FIX	3	3.5" Mill and 5" Bit. Overlay-20 YR FIX
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
PCC		HMA		HMA		HMA		HMA		HMA	
Primary Category		Primary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
> 11' Joint Spacing		Overlay		Rural		Rural		Rural		Rural	
Design Life = 20 years		Shoulder Category		Bituminous		Bituminous		Bituminous		Bituminous	
Shoulder Category		Notes:		Notes:		Notes:		Notes:		Notes:	
Thick Bit.											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 8,175,277.56	\$ 8,175,277.56	0	Construction	\$ 2,002,875.81	\$ 2,002,875.81	0	Construction	\$ 3,201,779.30	\$ 3,201,779.30
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3	Crack Treatment	\$ 34,891.14	\$ 33,545.14	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7	Seal	\$ 85,425.50	\$ 77,932.97	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15	Mill/Overlay	\$ 2,155,483.04	\$ 1,770,585.46	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18	Crack Treatment	\$ 34,891.14	\$ 27,555.09	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	1st CPR	\$ 3,482,669.00	\$ 2,679,221.24	20		\$ -	\$ -	20	Mill/Overlay	\$ 2,421,906.01	\$ 1,863,175.06
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22	Seal	\$ 85,425.50	\$ 64,016.74	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29	Mill/Overlay	\$ 2,155,483.04	\$ 1,473,616.10	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32	Crack Treatment	\$ 34,891.14	\$ 22,933.45	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (1,160,644.71)	\$ (733,445.69)	35	Remaining Life	\$ (284,930.12)	\$ (180,055.76)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 10,854,498.80				\$ 4,792,894.69				\$ 5,107,483.32			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 2,679,221.24				\$ 2,790,018.87				\$ 1,905,704.02			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
389,271.63				171,886.14				183,168.14			
Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
29	2	35	24	2	35	24	2	35	24	2	35
Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix	Total Shdr Width	# of Shdrs	ML Mix
8	2		13	2	12.5 WE (4,B)	13	2	12.5 WE (4,B)	13	2	12.5 WE (4,B)
Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix	Rounding Agg. Width	white/>7 million	SL Mix
3	No	12.5 WE (2,B)	3	No	12.5 WE (2,B)	3	No	12.5 WE (2,B)	3	No	12.5 WE (2,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
ML Top Lift/Jt spacing	# Dowels per Lane		ML Top Lift/Jt spacing	# Dowels per Lane		ML Top Lift/Jt spacing	# Dowels per Lane		ML Top Lift/Jt spacing	# Dowels per Lane	
15			1.5			1.5			2		
Design Life	Shldr Thickness	4.5	Design Life	Shldr Thickness	1.5	Design Life	Shldr Thickness	1.5	Design Life	Shldr Thickness	4.5

50-Year Analysis Period

Project Number	Analysis Period
8604-42	50
Highway	Discount Rate
25	1.32%
Date	Inflation Rate
3/15/2018	1
Performed By	la/(1+r)
Samuel Nigon	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	4" Mill, 6" FDR, HMA	6" PCC (Mainline), 3" HMA (Shld)	5" Mill, 6" Whitetopping, 3" HMA (Shld)	6.5 Miles
Net Present Cost	\$3,252,707.20	\$5,314,356.62	\$6,505,639.79	
Segment #2				1.0 Miles
Net Present Cost				
Segment #3				1.0 Miles
Net Present Cost				
Segment #4				1.0 Miles
Net Present Cost				
Project Net Present Cost	\$3,252,707.20	\$5,314,356.62	\$6,505,639.79	Total
% of Low Cost	100.0%	163.4%	200.0%	9.5

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length
1	6.508	1	6.508	1	6.508	1	6.508	1	6.508	1	6.508
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description
1	4" Mill, 6" FDR, HMA	2	6" PCC (Mainline), 3" HMA (Shld)	3	5" Mill, 6" Whitetopping, 3" HMA (Shld)	4	5" Mill, 6" Whitetopping, 3" HMA (Shld)	5	5" Mill, 6" Whitetopping, 3" HMA (Shld)	6	5" Mill, 6" Whitetopping, 3" HMA (Shld)
Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type		Pavement Type	
HMA		PCC		PCC		PCC		PCC		PCC	
Primary Category		Primary Category		Primary Category		Primary Category		Primary Category		Primary Category	
20-year HMA		6'x6', 5.5 in. or Thicker		6'x6', 5.5 in. or Thicker		6'x6', 5.5 in. or Thicker		6'x6', 5.5 in. or Thicker		6'x6', 5.5 in. or Thicker	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Rural		Design Life = 35 years		Design Life = 20 years		Design Life = 20 years		Design Life = 20 years		Design Life = 20 years	
Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category		Shoulder Category	
Bituminous		Thin Bit.		Thin Bit.		Thin Bit.		Thin Bit.		Thin Bit.	
Notes:		Notes:		Notes:		Notes:		Notes:		Notes:	
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,814,839.85	\$ 1,814,839.85	0	Construction	\$ 3,676,378.90	\$ 3,676,378.90	0	Construction	\$ 3,227,215.63	\$ 3,227,215.63
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 6,890.77	\$ 6,204.50	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 72,243.17	\$ 61,724.08	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	\$ 1,026,882.88	\$ 789,982.17	20		\$ 1,076,963.00	\$ 828,508.87	20		\$ 2,142,316.14	\$ 1,648,086.26
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 13,781.55	\$ 10,193.16	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 43,461.36	\$ 30,502.36	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		\$ -	\$ -	35		\$ 3,552,706.65	\$ 2,245,060.30
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 1,026,882.88	\$ 632,119.54	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 13,781.55	\$ 8,156.25	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 43,461.36	\$ 24,407.05	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (241,619.50)	\$ (125,421.77)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ (1,184,235.55)	\$ (614,722.40)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
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	
24	2	50		26	2	50					

50-Year Analysis Period

Project Number	Analysis Period
8611-26	50
Highway	Discount Rate
24	1.3%
Date	Inflation Rate
4/4/2018	1
Performed By	$1/(1+r)$
Scott Zeidler	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 yr HMA	20 year PCC	35 year PCC	1.0 Miles
Net Present Cost	\$1,443,682.73	\$2,626,595.69	\$2,000,189.36	Miles
Segment #2				1.0 Miles
Segment #3				1.0 Miles
Segment #4				1.0 Miles
Project Net Present Cost	\$1,443,682.73	\$2,626,595.69	\$2,000,189.36	Total
% of Low Cost	100.0%	181.9%	138.5%	4.0

Segment 1									
SEG		Length		SEG		Length		SEG	
1	1	ALT	Description	1	1	ALT	Description	1	Length
		20 yr HMA				20 year PCC			
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			
Urban			Design Life = 20 years			Design Life = 35 years			
Shoulder Category			Shoulder Category			Shoulder Category			
Thick Bit.			PCC			PCC			
Notes:									
Notes:									
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity
0	Construction	\$ 1,215,854.09	\$ 1,215,854.09	0	Construction	\$ 1,782,580.80	\$ 1,782,580.80	0	Construction
1		\$ -	\$ -	1		\$ -	\$ -	1	
2		\$ -	\$ -	2		\$ -	\$ -	2	
3		\$ -	\$ -	3		\$ -	\$ -	3	
4		\$ -	\$ -	4		\$ -	\$ -	4	
5		\$ -	\$ -	5		\$ -	\$ -	5	
6		\$ -	\$ -	6		\$ -	\$ -	6	
7		\$ -	\$ -	7		\$ -	\$ -	7	
8	Crack Treatment	\$ 970.58	\$ 873.92	8		\$ -	\$ -	8	
9		\$ -	\$ -	9		\$ -	\$ -	9	
10		\$ -	\$ -	10		\$ -	\$ -	10	
11		\$ -	\$ -	11		\$ -	\$ -	11	
12	Seal	\$ 10,227.24	\$ 8,738.09	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	\$ 152,806.26	\$ 117,554.03	20	1st CPR	\$ 208,398.34	\$ 160,321.08	20	1st CPR
21		\$ -	\$ -	21		\$ -	\$ -	21	
22		\$ -	\$ -	22		\$ -	\$ -	22	
23	Crack Treatment	\$ 1,941.16	\$ 1,435.73	23		\$ -	\$ -	23	
24		\$ -	\$ -	24		\$ -	\$ -	24	
25		\$ -	\$ -	25		\$ -	\$ -	25	
26		\$ -	\$ -	26		\$ -	\$ -	26	
27	Seal	\$ 6,161.64	\$ 4,324.41	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	\$ 1,361,512.53	\$ 860,380.00	35	2nd CPR
36		\$ -	\$ -	36		\$ -	\$ -	36	
37	Mill/Overlay	\$ 182,990.21	\$ 112,643.51	37		\$ -	\$ -	37	
38		\$ -	\$ -	38		\$ -	\$ -	38	
39		\$ -	\$ -	39		\$ -	\$ -	39	
40	Crack Treatment	\$ 1,941.16	\$ 1,148.83	40		\$ -	\$ -	40	
41		\$ -	\$ -	41		\$ -	\$ -	41	
42		\$ -	\$ -	42		\$ -	\$ -	42	
43		\$ -	\$ -	43		\$ -	\$ -	43	
44	Seal	\$ 6,161.64	\$ 3,460.26	44		\$ -	\$ -	44	
45		\$ -	\$ -	45		\$ -	\$ -	45	
46		\$ -	\$ -	46		\$ -	\$ -	46	
47		\$ -	\$ -	47		\$ -	\$ -	47	
48		\$ -	\$ -	48		\$ -	\$ -	48	
49		\$ -	\$ -	49		\$ -	\$ -	49	
50	Remaining Life	\$ (43,056.52)	\$ (22,350.12)	50	Remaining Life	\$ (340,378.13)	\$ (176,686.19)	50	Remaining Life
Net Present Cost for Segment					Net Present Cost for Segment				
\$ 1,443,682.73					\$ 2,626,595.69				
Maintenance - Net Present Cost for Segment					\$ 844,014.89				
Equivalent Annual Cost					\$ 39,625.98				
					Equivalent Annual Cost				
\$ 72,094.39					Equivalent Annual Cost				
\$ 54,900.89									
Total Lane Width					Total Lane Width				
# of Lanes					# of Lanes				
Analysis Period					Analysis Period				
22					22				
Total Shldr Width					Total Shldr Width				
# of Shldrs					# of Shldrs				
ML Mix					ML Mix				

50-Year Analysis Period

Project Number	Analysis Period
SP 8630-173	50
Highway	Discount Rate
I-94	1.22%
Date	Inflation Rate
11/1/2018	1
Performed By	Ia/(1+r)
Matt Masterson	0.9879

Notes:

LCCA SUMMARY	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 YR Alt D - Concrete Reconstruct - 9.0"	35 YR Alt D - Concrete Reconstruct - 9.5"	35 YR Alt D - Bituminous Reconstruct -10"	9.1 Miles
Net Present Cost	\$29,257,824.08	\$29,266,036.30	\$50,302,149.77	
Segment #2	20YR Alt B-Mod - I-94 Hasty to Clearwater Unbonded Overlay - 9"	35YR Alt B-MOD - I-94 Hasty to Clearwater Unbonded Overlay - 9.5"	35 YR Alt D - Bituminous Reconstruct -10"	5.2 Miles
Net Present Cost	\$17,484,829.49	\$20,814,908.15	\$17,486,235.53	
Segment #3				0.0 Miles
Segment #4				0.0 Miles
Project Net Present Cost	\$46,742,653.57	\$50,080,944.45	\$67,788,385.30	Total
% of Low Cost	100.0%	107.1%	145.0%	14.3

Segment 1			
SEG	Length	SEG	Length
1	9.13	1	9.13
ALT	Description	ALT	Description
1	20 YR Alt D - Concrete Reconstruct - 9.0"	2	35 YR Alt D - Concrete Reconstruct - 9.5"
Pavement Type		Pavement Type	
PCB		PCB	
Primary Category		Primary Category	
>11' Joint Spacing		>11' Joint Spacing	
Secondary Category		Secondary Category	
Design Life = 20 years		Design Life = 35 years	
Shoulder Category		Shoulder Category	
Thick Bit		Thick Bit	
Notes:		Notes:	
Year	Activity	Cost	Present Cost
0	Construction	\$ 21,912,576.88	\$ 21,912,576.88
1		\$ -	\$ -
2		\$ -	\$ -
3		\$ -	\$ -
4		\$ -	\$ -
5		\$ -	\$ -
6		\$ -	\$ -
7		\$ -	\$ -
8		\$ -	\$ -
9		\$ -	\$ -
10		\$ -	\$ -
11		\$ -	\$ -
12		\$ -	\$ -
13		\$ -	\$ -
14		\$ -	\$ -
15		\$ -	\$ -
16		\$ -	\$ -
17		\$ -	\$ -
18		\$ -	\$ -
19		\$ -	\$ -
20	1st CPR	\$ 2,953,841.42	\$ 2,317,717.59
21		\$ -	\$ -
22		\$ -	\$ -
23		\$ -	\$ -
24		\$ -	\$ -
25		\$ -	\$ -
26		\$ -	\$ -
27		\$ -	\$ -
28		\$ -	\$ -
29		\$ -	\$ -
30		\$ -	\$ -
31		\$ -	\$ -
32		\$ -	\$ -
33		\$ -	\$ -
34		\$ -	\$ -
35	R & R Mainline	\$ 9,709,189.08	\$ 6,351,280.67
36		\$ -	\$ -
37		\$ -	\$ -
38		\$ -	\$ -
39		\$ -	\$ -
40		\$ -	\$ -
41		\$ -	\$ -
42		\$ -	\$ -
43		\$ -	\$ -
44		\$ -	\$ -
45		\$ -	\$ -
46		\$ -	\$ -
47		\$ -	\$ -
48		\$ -	\$ -
49		\$ -	\$ -
50	Remaining Life	\$ (2,427,297.27)	\$ (1,323,751.05)
		50	50
		Remaining Life	Remaining Life
		\$ 29,257,824.08	\$ 29,266,036.30
		Net Present Cost for Segment	Net Present Cost for Segment
		\$ 7,345,247.20	\$ 1,472,682.20
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 2,427,297.27	\$ 1,323,751.05
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ (387,775.68)	\$ (211,477.38)
		Remaining Life	Remaining Life
		\$ 29,266,036.30	\$ 50,302,149.77
		Net Present Cost for Segment	Net Present Cost for Segment
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,116.85	\$ 785,116.85
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 1,472,682.20	\$ 1,935,966.39
		Maintenance - Net Present Cost for Segment	Maintenance - Net Present Cost for Segment
		\$ 785,116.85	\$ 1,349,829.20
		Equivalent Annual Cost	Equivalent Annual Cost
		\$ 785,1	

Appendix C: Copies of LCCA Exceptions

Office Memorandum

TO: Shiloh Wahl
District Engineer – District 4

FROM: Nathan Bausman
Soils Engineer – District 4

DATE: November 5, 2018

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

SP #	2180-115
Highway #	94 (EB)
Project Limits	RP 18+00.400 to RP 23+00.839
Project Description	Pavement Rehabilitation of I-94 EB between 0.6 mile east of TH 114 and 0.1 miles west of TH 29 to reduce maintenance patching and provide an acceptable ride.

LCCA Results

Alternative	Design Life	Total Present Cost	Initial Cost	Requested Selection	% of Low Cost
12" Bituminous Reconstruct.	20	\$6,596,795.85	\$5,385,085.44	No	111.5
8" Concrete Reconstruct.	20	\$5,916,081.24	\$4,530,578.27	No	100.0
8" Unbonded Overlay	35	\$6,485,747.94	\$3,653,638.20	Yes	109.6

Reason for Request

Over the 50 year pavement lifecycle the net present cost of an 8" concrete reconstruct was lower than an 8" unbonded overlay for this project. The District has decided to complete an 8" unbonded overlay due to the lower initial cost of pavement fix. Other considerations that influenced this decision included the duration of a bituminous/concrete reconstruction project and the continuity of the pavement designs for the I-94 corridor (SP 2180-109 to the northwest of this segment was also an unbonded concrete overlay).

The roadway was graded and constructed in 1967 with 9" x 24' wide concrete with 3' and 10' bituminous shoulders. A 5" bituminous overlay was completed in 1988 and the last rehab consisted of 4.5" mill and 4.5" HMA overlay in 2004.


Shiloh Wahl
District Engineer

11-5-18
Date

Office Memorandum

TO: Shiloh Wahl
District Engineer – District 4

FROM: Nathan Bausman
Soils Engineer – District 4

DATE: February 27, 2019

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

SP #	8408-58
Highway #	75
Project Limits	RP 227+00.113 to RP 233+00.200
Project Description	Pavement Rehabilitation of US 75 between Wilkin County Road 184 and the Clay/Wilkin County line to provide an acceptable ride for the traveling public (projected RQI in 2016 was below the acceptable 2.5 by 2018).

LCCA Results

Alternative	Design Life	Total Present Cost	Initial Cost	Requested Selection	% of Low Cost
1.5" Mill & 3" Bituminous Overlay	13	\$2,749,004.06	\$974,694.84	Yes	104.1
5" Mill & 5" Bituminous Overlay	20	\$2,639,992.25	\$1,502,554.53	No	100.0
6" Unbonded Overlay	20	\$4,001,296.39	\$2,805,349.85	No	151.6

Reason for Request

Over the 35 year pavement lifecycle the net present cost of a 5" mill and 5" bituminous overlay was lower than a 1.5" mill and 3" bituminous overlay for this project. The District has decided to complete a 1.5" mill and 3" bituminous overlay due to the lower initial cost of pavement fix. Other considerations that influenced this decision included the duration of a longer term thick bituminous overlay/unbonded concrete overlay project and the continuity of the pavement designs for the US 75 corridor (SP 8408-57 to the south of this segment was also a medium mill and bituminous overlay).

The roadway was graded and constructed with a bituminous surfacing treatment in 1947. 9-7-9 by 22' concrete was added in 1949. 10' of gravel shoulders were added in 1989. A 4.5" HMA overlay was completed in 1991. The last rehab consisted of 4.5" mill, crack and sealing of the in-place concrete and 5" HMA overlay in 2004.


Shiloh Wahl
District Engineer

3-1-19
Date