



2020 Report on the

# Life-Cycle Cost Analysis

January 2021

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Prepared by:

The Minnesota Department of Transportation  
395 John Ireland Boulevard  
Saint Paul, Minnesota 55155-1899

Phone: 651-296-3000

Toll-Free: 1-800-657-3774

TTY, Voice or ASCII: 1-800-627-3529

To request this document in an alternative format, call 651-366-4718 or 1-800-657-3774 (Greater Minnesota).

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# Contents

- Legislative Request .....4**
- Life-Cycle Cost Analysis Report .....5**
  - Implementation .....5
  - Results.....5
  - Discussion .....6
  - Conclusion.....7
- Appendix A: Summary of LCCA Results .....8**
- Appendix B: Copies of LCCAs .....12**
- Appendix C: Copies of LCCA Exceptions.....45**

# Legislative Request

This report is issued to comply with [Minnesota Statutes 174.185](#).

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

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

## 174.185 PAVEMENT LIFE-CYCLE COST ANALYSIS.

### Subdivision 1. Definitions.

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

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

### Subd. 2. Required analysis.

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

### 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

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[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 presented it in Technical Memorandum 10-04-MAT-01. After the technical memorandum expired, the agency incorporated the LCCA process, with some modifications, into the MnDOT Pavement Design Manual that went into effect Oct. 31, 2014.

The LCCA process, which is consistent with Federal Highway Administration guidelines, is performed on all pavement projects regardless of funding category, but only the results of projects in the reconditioning, resurfacing and road repair funding categories are included in this report. The LCCA process limits the requirement to perform a LCCA to projects with more than 60,000 square yards of pavement 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

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In 2020, 29 construction projects were in the reconditioning, resurfacing and road repair funding categories and required a LCCA according to the MnDOT Pavement Design Manual. Three projects required two LCCAs for a total of 32 LCCAs.

According to the results of the 32 LCCAs:

- Hot-mix asphalt was the low-cost option for 31 LCCAs. Of these, 30 selected the low-cost 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 one LCCA and it was selected for construction.

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

## Discussion

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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 2020, 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:

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

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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)
0306-31	HMA	No	20	HMA on FDR	\$18,637,651.00	HMA	X	No
			20	PCC Overlay	\$32,145,237.00	PCC		
			35	New PCC	\$26,343,626.00	PCC		
1007-21	HMA	No	20	HMA on FDR	\$3,461,033.00	HMA	X	No
			20	HMA Overlay	\$2,811,279.00	HMA		
			20	PCC Overlay	\$3,393,782.00	PCC		
1012-24-1	PCC	No	16	HMA Overlay	\$2,308,871.00	HMA	X	No
			20	HMA on CIR	\$2,429,190.00	HMA		
			20	PCC Overlay	\$4,636,846.00	PCC		
1012-24-2	PCC	No	20	PCC Overlay	\$8,813,508.00	PCC	X	No
			20	HMA on CIR	\$4,117,638.00	HMA		
			35	PCC Overlay	\$7,506,152.00	PCC		
1102-70	HMA	No	20	New HMA	\$10,851,240.00	HMA	X	No
			20	HMA Overlay	\$4,817,226.00	HMA		
			20	PCC Overlay	\$11,241,690.00	PCC		
1106-15-1	HMA	No	17	HMA Overlay	\$3,098,649.00	HMA	X	No
			20	New PCC	\$12,870,778.00	PCC		
			20	HMA on FDR	\$4,104,412.00	HMA		
1106-15-2	HMA	No	20	New PCC	\$6,982,830.00	PCC	X	No
			20	HMA on FDR	\$2,788,799.00	HMA		
			35	New PCC	\$5,459,224.00	PCC		
1302-23	HMA	No	20	PCC Overlay	\$2,998,458.00	PCC	X	No
			20	HMA on CIR	\$1,478,907.00	HMA		
			35	PCC Overlay	\$2,321,606.00	PCC		
1604-45	HMA	No	20	New PCC	\$14,118,861.00	PCC	X	No
			20	HMA on FDR	\$9,186,617.00	HMA		
			35	New PCC	\$14,079,846.00	PCC		
1807-29	HMA	No	20	New HMA	\$1,194,825.00	HMA	X	No
			20	New PCC	\$1,636,902.00	PCC		
			35	New PCC	\$1,608,401.00	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)
1928-71	PCC	No	17	HMA Overlay	\$6,455,682.00	HMA	X	No
			20	HMA on CIR	\$7,408,435.00	HMA		
			20	PCC Overlay	\$8,622,968.00	PCC		
2408-23	HMA	No	15	HMA Overlay	\$5,584,761.00	HMA	X	No
			20	PCC Overlay	\$7,345,201.00	PCC		
			20	HMA on CIR	\$5,701,263.00	HMA		
2786-132	PCC	No	15	HMA Overlay	\$4,970,165.00	HMA	X	No
			20	New PCC	\$10,331,371.00	PCC		
			20	New HMA	\$10,063,289.00	HMA		
3107-37	HMA	No	15	HMA Overlay	\$6,368,304.00	HMA	X	No
			20	New PCC	\$9,279,390.00	PCC		
			20	HMA on FDR	\$7,350,384.00	HMA		
3107-51-1	HMA	No	17	HMA Overlay	\$1,659,698.00	HMA	X	No
			20	HMA on FDR	\$2,668,910.00	HMA		
			20	New PCC	\$6,211,118.00	PCC		
3107-51-2	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		
3206-20	PCC	No	20	PCC Overlay	\$14,767,857.00	PCC	X	No
			20	HMA on CIR	\$7,693,468.00	HMA		
			35	PCC Overlay	\$13,585,780.00	PCC		
3304-27	HMA	No	20	PCC Overlay	\$21,087,029.00	PCC	X	No
			20	HMA on FDR	\$11,695,256.00	HMA		
			35	New PCC	\$16,976,336.00	PCC		
3608-48	PCC	No	20	New HMA	\$2,764,563.00	HMA	X	No
			20	New PCC	\$4,344,738.00	PCC		
			35	New PCC	\$3,993,026.00	PCC		
3703-25	HMA	No	20	New PCC	\$13,769,002.00	PCC	X	No
			20	HMA on CIR	\$7,751,722.00	HMA		
			35	New PCC	\$12,167,596.00	PCC		
4006-35	HMA	No	20	PCC Overlay	\$14,861,833.00	PCC	X	No
			20	HMA on FDR	\$11,209,528.00	HMA		
			35	New PCC	\$18,890,813.00	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)
4203-50	HMA	No	20	PCC Overlay	\$26,008,709.00	PCC	X	No
			20	New HMA	\$24,742,530.00	HMA		
			35	PCC Overlay	\$21,204,036.00	PCC		
5702-47	HMA	No	20	HMA on FDR	\$7,154,096.00	HMA	X	No
			20	PCC Overlay	\$17,736,116.00	PCC		
			35	New PCC	\$16,603,972.00	PCC		
6003-34	PCC	No	20	PCC Overlay	\$8,703,753.00	PCC	X	No
			20	HMA on Crack and Seat	\$3,348,402.00	HMA		
			35	New PCC	\$7,832,789.00	PCC		
6004-26	PCC	Yes	20	New HMA	\$13,582,774.00	HMA	X	No
			35	PCC Overlay	\$18,600,224.00	PCC		
			35	New PCC	\$19,920,203.00	PCC		
6008-17	PCC	No	17	HMA Overlay	\$3,067,660.00	HMA	X	No
			20	New HMA	\$7,279,411.00	HMA		
			20	New PCC	\$12,046,698.00	PCC		
6605-37	HMA	No	15	HMA Overlay	\$3,037,506.00	HMA	X	No
			20	PCC Overlay	\$4,362,481.00	PCC		
			20	HMA Overlay	\$3,167,192.00	HMA		
6810-11	HMA	No	20	HMA on FDR	\$942,665.00	HMA	X	No
			20	New PCC	\$2,103,435.00	PCC		
			35	New PCC	\$1,726,190.00	PCC		
7011-029	HMA	No	20	PCC Overlay	\$9,513,554.00	PCC	X	No
			20	HMA on FDR	\$6,068,579.00	HMA		
			35	PCC Overlay	\$8,070,785.00	PCC		
7201-119	HMA	No	20	HMA on CIR	\$3,283,992.00	HMA	X	No
			20	PCC Overlay	\$4,892,122.00	PCC		
			35	PCC Overlay	\$4,790,903.00	PCC		
7503-38	PCC	No	20	HMA on CIR	\$6,122,922.00	HMA	X	No
			20	PCC Overlay	\$10,171,531.00	PCC		
			35	PCC Overlay	\$9,596,309.00	PCC		
8602-52	HMA	No	15	HMA Overlay	\$3,649,433.00	HMA	X	No
			20	HMA on FDR	\$4,347,710.00	HMA		
			20	PCC Overlay	\$6,101,959.00	PCC		

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

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

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

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

**Definitions:**

**HMA** = Hot-Mix Asphalt

**PCC** = Portland Cement Concrete

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

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

**CPR** = Concrete Pavement Repair

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

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

# Appendix B: Copies of LCCAs

50-Year Analysis Period

Project Number	Analysis Period
0306-31	50
Highway	Discount Rate
87	1.32%
Date	Inflation Rate
	10.11%
Performed By	10/11/14
	0.5870

Notes:

LCCA SUMMARY				
Segment #1	Alternate #1	Alternate #2	Alternate #3	Length
	11' FDR, 4" HMA	Mil 3", 4.5" Whitetop	Mil 4", 6.0" Concrete	12.3
Net Present Cost	\$11,608,587.67	\$18,362,307.91	\$16,379,058.34	Miles
Segment #2	4" Mil, 9" FDR, 4" HMA	Mil 3", 4.5" Whitetop	Mil 4", 6.0" Concrete	14.5
Net Present Cost	\$7,028,663.80	\$14,083,929.00	\$9,968,167.36	Miles
Segment #3				#VALUE!
Net Present Cost				Miles
Segment #4				#VALUE!
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$18,637,651.47</b>	<b>\$32,446,236.93</b>	<b>\$26,347,225.70</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>172.5%</b>	<b>141.3%</b>	<b>#VALUE!</b>

Segment 1														
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length			
A1T	Description	A1T	Description	A1T	Description	A1T	Description	A1T	Description	A1T	Description			
1	11' FDR, 4" HMA	2	Mil 3", 4.5" Whitetop	3	Mil 4", 6.0" Concrete	4	Mil 3", 4.5" Whitetop	5	Mil 4", 6.0" Concrete	6	Mil 3", 4.5" Whitetop	7	Mil 4", 6.0" Concrete	
Pavement Type			Pavement Type			Pavement Type			Pavement Type			Pavement Type		
HMA			PCC			HMA			PCC			HMA		
20-year HMA			20-year HMA			20-year HMA			20-year HMA			20-year HMA		
Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner		
Design Life = 20 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		
Biluminous			Thin Bit.			Thin Bit.			Thin Bit.			Thin Bit.		
Notes:														
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost			
0	Construction	\$ 7,732,709.11	\$ 7,732,709.11	0	Construction	\$ 9,478,157.70	\$ 9,478,157.70	0	Construction	\$ 12,151,713.41	\$ 12,151,713.41			
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -			
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -			
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -			
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -			
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -			
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -			
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -			
8	Crack Treatment	\$ 13,489.32	\$ 12,145.87	8		\$ -	\$ -	8	Crack Treatment	\$ 15,310.48	\$ 13,785.65			
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -			
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -			
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -			
12	Seal	\$ 144,770.98	\$ 123,691.95	12		\$ -	\$ -	12	Seal	\$ 149,114.79	\$ 127,402.25			
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -			
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -			
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -			
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -			
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -			
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -			
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -			
20	Mil/Overlay	\$ 2,970,060.70	\$ 2,384,871.09	20	1st CPR	\$ 6,258,271.22	\$ 4,814,495.20	20	Mil/Overlay	\$ 2,430,511.82	\$ 1,869,795.52			
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -			
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -			
23	Crack Treatment	\$ 26,978.63	\$ 19,994.04	23		\$ -	\$ -	23	Crack Treatment	\$ 30,620.96	\$ 22,647.99			
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -			
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -			
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -			
27	Seal	\$ 87,674.57	\$ 61,532.39	27		\$ -	\$ -	27	Seal	\$ 87,729.86	\$ 61,571.19			
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -			
29		\$ -	\$ -	29	R & R Mainline	\$ 8,334,664.80	\$ 5,623,836.74	29		\$ -	\$ -			
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -			
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -			
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -			
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -			
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -			
35		\$ -	\$ -	35		\$ -	\$ -	35	2nd CPR	\$ 2,690,302.33	\$ 1,700,081.53			
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -			
37	Mil/Overlay	\$ 2,652,601.75	\$ 1,632,865.26	37		\$ -	\$ -	37	Mil/Overlay	\$ 2,430,511.82	\$ 1,496,153.09			
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -			
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -			
40	Crack Treatment	\$ 26,978.63	\$ 15,966.61	40		\$ -	\$ -	40	Crack Treatment	\$ 30,620.96	\$ 18,122.23			
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -			
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -			
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -			
44	Seal	\$ 87,674.57	\$ 49,236.33	44		\$ -	\$ -	44	Seal	\$ 87,729.86	\$ 49,267.38			
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -			
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -			
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -			
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -			
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -			
50	Remaining Life	\$ (824,141.50)	\$ (323,984.37)	50	Remaining Life	\$ (3,571,999.20)	\$ (1,854,181.73)	50	Remaining Life	\$ (571,885.13)	\$ (296,458.68)			
Net Present Cost for Segment			\$ 11,608,587.67	Net Present Cost for Segment			\$ 18,637,651.47	Net Present Cost for Segment			\$ 12,151,713.41			
Maintenance - Net Present Cost for Segment			\$ 3,476,278.54	Maintenance - Net Present Cost for Segment			\$ 6,384,150.21	Maintenance - Net Present Cost for Segment			\$ 4,723,344.92			
Equivalent Annual Cost			\$ 18,644,871.21	Equivalent Annual Cost			\$ 26,717,801.68	Equivalent Annual Cost			\$ 19,212,058.33			
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	28	2	50	24	2	50	28	2	50			
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix			
16	2	12.5 WE (3.C)	12	2	12.5 WE (3.C)	16	2	12.5 WE (3.C)	12	2	12.5 WE (3.C)			
Rounding App. Width	white/77 milliom	SL Mix	Rounding App. Width	white/77 milliom	SL Mix	Rounding App. Width	white/77 milliom	SL Mix	Rounding App. Width	white/77 milliom	SL Mix			
3	No	12.5 WE (3.C)	3	No	12.5 WE (3.C)	3	No	12.5 WE (3.C)	3	No	12.5 WE (3.C)			
Sealed/UTBWC	ML Thickness	ML Thickness	Sealed/UTBWC	ML Thickness	ML Thickness	Sealed/UTBWC	ML Thickness	ML Thickness	Sealed/UTBWC	ML Thickness	ML Thickness			
No	6	6	No	6	6	No	6	6	No	6	6			
ML Top LR/RT spacing	# Dowels per Lane	# Dowels per Lane	ML Top LR/RT spacing	# Dowels per Lane	# Dowels per Lane	ML Top LR/RT spacing	# Dowels per Lane	# Dowels per Lane	ML Top LR/RT spacing	# Dowels per Lane	# Dowels per Lane			
2	6	6	2	6	6	2	6	6	2	6	6			
Design Life	Shoulder Thickness	Shoulder Thickness	Design Life	Shoulder Thickness	Shoulder Thickness	Design Life	Shoulder Thickness	Shoulder Thickness	Design Life	Shoulder Thickness	Shoulder Thickness			
20	4	4	20	4	4	20	4	4	20	4	4			

Segment 2														
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length			
A1T	Description	A1T	Description	A1T	Description	A1T	Description	A1T	Description	A1T	Description			
1	4" Mil, 9" FDR, 4" HMA	2	Mil 3", 4.5" Whitetop	3	Mil 4", 6.0" Concrete	4	Mil 3", 4.5" Whitetop	5	Mil 4", 6.0" Concrete	6	Mil 3", 4.5" Whitetop	7	Mil 4", 6.0" Concrete	
Pavement Type			Pavement Type			Pavement Type			Pavement Type			Pavement Type		
HMA			PCC			HMA			PCC			HMA		
20-year HMA			20-year HMA			20-year HMA			20-year HMA			20-year HMA		
Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner			Ex'p. 5.0 in. or Thinner		
Design Life = 20 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		
Aggregate			Thin Bit.			Thin Bit.			Thin Bit.			Thin Bit.		
Notes:														
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost			
0	Construction	\$ 3,666,777.38	\$ 3,666,777.38	0	Construction	\$ 5,087,534.10	\$ 5,087,534.10	0	Construction	\$ 6,753,378.80	\$ 6,753,378.80			
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -			
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -			
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -			
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -			
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -			
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -			
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -			
8	Crack Treatment	\$ 15,310.48	\$ 13,785.65	8		\$ -	\$ -	8	Crack Treatment	\$ 15,310.48	\$ 13,785.65			
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -			
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -			
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -			
12	Seal	\$ 149,114.79	\$ 127,402.25	12		\$ -	\$ -	12	Seal	\$ 149,114.79	\$ 127,402.25			
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -			
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -			
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -			
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -			
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -			
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -			
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -			
20	Mil/Overlay	\$ 2,430,511.82	\$ 1,869,795.52	20	1st CPR	\$ 7,074,683.41	\$ 5,442,562.03	20	Mil/Overlay	\$ 2,430,511.82	\$ 1,869,795.52			
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -			
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -			
23	Crack Treatment	\$ 30,620.96	\$ 22,647.99	23		\$ -	\$ -	23	Crack Treatment	\$ 30,620.96	\$ 22,647.99			

35-Year Analysis Period

Project Number	Analysis Period
1007-21	35
Highway	Discount Rate
25	1.22%
Date	Inflation Rate
7/31/2019	1
Performed By	ia/(1+r)
EL	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	4" Mill and Overlay	SFDR (4" Grade Raise)	Whitetopping (0.5" Grade Raise)	4.8
Net Present Cost	\$2,811,279.05	\$3,461,033.35	\$3,393,782.85	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$2,811,279.05</b>	<b>\$3,461,033.35</b>	<b>\$3,393,782.85</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>123.1%</b>	<b>120.7%</b>	<b>4.8</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	4.81	1	4.81	1	4.81						
ALT	Description	ALT	Description	ALT	Description						
1	4" Mill and Overlay	2	SFDR (4" Grade Raise)	3	Whitetopping (0.5" Grade Raise)						
Pavement Type		Pavement Type		Pavement Type							
HMA		HMA		PCC							
Primary Category		Primary Category		Primary Category							
Overlay		20-year HMA		6'x6', 5.5 in. or Thicker							
Secondary Category		Secondary Category		Secondary Category							
Rural		Rural		Design Life = 20 years							
Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Bituminous		Thick Bit.							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,559,498.85	\$ 1,559,498.85	0	Construction	\$ 2,537,195.00	\$ 2,537,195.00	0	Construction	\$ 2,286,624.33	\$ 2,286,624.33
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 9,978.63	\$ 9,622.15	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 46,321.24	\$ 42,551.59	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 5,003.17	\$ 4,540.61	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 77,152.16	\$ 66,704.04	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 969,927.75	\$ 808,619.84	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 9,978.63	\$ 8,021.89	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	Mill/Overlay	\$ 1,146,914.83	\$ 899,921.25	20	1st CPR	\$ 1,411,030.71	\$ 1,107,158.52
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 46,321.24	\$ 35,474.87	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 9,978.63	\$ 7,549.97	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ 46,321.24	\$ 33,387.90	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 969,927.75	\$ 682,363.41	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 9,978.63	\$ 6,769.37	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (522,268.79)	\$ (341,642.91)	35	Remaining Life	\$ (134,931.16)	\$ (88,265.42)	35	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 2,811,279.05		Net Present Cost for Segment		\$ 3,461,033.35		Net Present Cost for Segment		\$ 3,393,782.85	
Maintenance - Net Present Cost for Segment		\$ 1,251,780.20		Maintenance - Net Present Cost for Segment		\$ 923,838.36		Maintenance - Net Present Cost for Segment		\$ 1,107,158.52	
Equivalent Annual Cost		99,169.45		Equivalent Annual Cost		122,089.90		Equivalent Annual Cost		119,717.60	
Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period		Total Lane Width	# of Lanes	Analysis Period	
24	2	35		24	2	35		24	2	35	
Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix		Total Shldr Width	# of Shldrs	ML Mix	
6	2	12.5 WE (4,C)		6	2	12.5 WE (4,C)		6	2	12.5 WE (4,C)	
Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix		Rounding Agg. Width	white/ >7 milliom	SL Mix	
3	No	12.5 WE (4,C)		3	No	12.5 WE (3,C)		3	Yes	12.5 WE (3,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No	6		
ML Top Lift/It spacing				ML Top Lift/It spacing				ML Top Lift/It spacing			
2				2				6			
Design Life	Shldr Thickness			Design Life	Shldr Thickness			Design Life	Shldr Thickness		
15	4			20	4			20	4		

35-Year Analysis Period

Project Number	Analysis Period
1012-24-1	35
Highway	Discount Rate
	1.22%
Date	Inflation Rate
	1
Performed By	Ia/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	3" Mill & Overlay	20-Year Bit (CIR)	20-Year Concrete (UBOL)	5.0
Net Present Cost	\$2,308,871.97	\$2,429,190.77	\$4,636,846.91	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$2,308,871.97</b>	<b>\$2,429,190.77</b>	<b>\$4,636,846.91</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>105.2%</b>	<b>200.8%</b>	<b>5.0</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	4.985	1	4.985	1	4.985						
ALT	Description	ALT	Description	ALT	Description						
1	3" Mill & Overlay	2	20-Year Bit (CIR)	3	20-Year Concrete (UBOL)						
Pavement Type		Pavement Type		Pavement Type							
HMA		HMA		PCC							
Primary Category		Primary Category		Primary Category							
Overlay		20-year HMA		> 11' Joint Spacing							
Secondary Category		Secondary Category		Secondary Category							
Rural		Rural		Design Life = 20 years							
Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Bituminous		PCC							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,169,329.66	\$ 1,169,329.66	0	Construction	\$ 1,638,861.61	\$ 1,638,861.61	0	Construction	\$ 3,682,424.62	\$ 3,682,424.62
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 10,340.20	\$ 9,970.80	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 5,184.45	\$ 4,705.14	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 25,019.88	\$ 21,631.63	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16	Mill/Overlay	\$ 1,068,508.64	\$ 880,068.97	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19	Crack Treatment	\$ 10,340.20	\$ 8,212.37	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	Mill/Overlay	\$ 1,068,508.64	\$ 838,400.21	20	1st CPR	\$ 1,216,374.29	\$ 954,422.29
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Seal	\$ -	\$ -	23	Crack Treatment	\$ 10,340.20	\$ 7,823.54	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31	Mill/Overlay	\$ 1,068,508.64	\$ 733,705.40	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34	Crack Treatment	\$ 10,340.20	\$ 6,846.58	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (763,220.46)	\$ (499,261.81)	35	Remaining Life	\$ (125,706.90)	\$ (82,231.36)	35	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 2,308,871.97		Net Present Cost for Segment		\$ 2,429,190.77		Net Present Cost for Segment		\$ 4,636,846.91	
Maintenance - Net Present Cost for Segment		\$ 1,139,542.31		Maintenance - Net Present Cost for Segment		\$ 790,329.16		Maintenance - Net Present Cost for Segment		\$ 954,422.29	
Equivalent Annual Cost		81,446.76		Equivalent Annual Cost		85,691.07		Equivalent Annual Cost		163,567.38	

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
12	2	9.5 WE (4,F)	12	2	9.5 WE (4,F)	12	2	9.5 WE (4,F)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	9.5 WE (4,F)	3	Yes	9.5 WE (4,F)	3	No	
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No			No	6	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
1.5			1.5			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
16	7		20	7		20	6	

50-Year Analysis Period

Project Number	Analysis Period
1012-024-2	50
Highway	Discount Rate
	1.22%
Date	Inflation Rate
	1
Performed By	la/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20-Year Bit (CIR)	20-Year Concrete UBOL	35-Year Concrete UBOL	3.6
Net Present Cost	\$4,117,638.39	\$8,813,508.39	\$7,506,152.42	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$4,117,638.39</b>	<b>\$8,813,508.39</b>	<b>\$7,506,152.42</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>214.0%</b>	<b>182.3%</b>	<b>3.6</b>

Segment 1															
SEG 1				SEG 1				SEG 1				SEG 1			
Length				Length				Length				Length			
Description				Description				Description				Description			
20-Year Bit (CIR)				20-Year Concrete UBOL				20-Year Concrete UBOL				35-Year Concrete UBOL			
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 = 20 years				Design Life = 35 years			
Shoulder Category				Shoulder Category				Shoulder Category				Shoulder Category			
Bituminous				PCC				PCC				PCC			
Notes:				Notes:				Notes:				Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,166,124.05	\$ 2,166,124.05	0	Construction	\$ 5,018,928.06	\$ 5,018,928.06	0	Construction	\$ 5,680,225.50	\$ 5,680,225.50	0	Construction	\$ 5,680,225.50	\$ 5,680,225.50
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 7,535.00	\$ 6,838.37	8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 34,163.96	\$ 29,537.40	12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Mill/Overlay	\$ 1,463,169.15	\$ 1,148,068.69	20	1st CPR	\$ 1,658,361.24	\$ 1,301,225.24	20	1st CPR	\$ 1,148,456.10	\$ 901,130.60	20	1st CPR	\$ 1,148,456.10	\$ 901,130.60
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 15,028.27	\$ 11,370.60	23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35	R & R Mainline	\$ 4,815,179.20	\$ 3,149,856.73	35	2nd CPR	\$ 1,413,734.15	\$ 924,796.32	35	2nd CPR	\$ 1,413,734.15	\$ 924,796.32
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 1,463,169.15	\$ 934,200.76	37		\$ -	\$ -	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 15,028.27	\$ 9,252.43	40		\$ -	\$ -	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ -	\$ -	44		\$ -	\$ -	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (344,275.09)	\$ (187,753.90)	50	Remaining Life	\$ (1,203,794.80)	\$ (656,501.64)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment				\$ 4,117,638.39	Net Present Cost for Segment				\$ 8,813,508.39	Net Present Cost for Segment				\$ 7,506,152.42	
Maintenance - Net Present Cost for Segment				\$ 1,951,514.34	Maintenance - Net Present Cost for Segment				\$ 3,794,580.33	Maintenance - Net Present Cost for Segment				\$ 1,825,926.93	
Equivalent Annual Cost				110,494.45	Equivalent Annual Cost				236,505.42	Equivalent Annual Cost				201,423.27	
Total Lane Width				48	Total Lane Width				48	Total Lane Width				48	
# of Lanes				4	# of Lanes				4	# of Lanes				4	
Analysis Period				50	Analysis Period				50	Analysis Period				50	
Total Shldr Width				24	Total Shldr Width				24	Total Shldr Width				24	
# of Shldrs				4	# of Shldrs				4	# of Shldrs				4	
ML Mix				9.5 WE (4,F)	ML Mix				9.5 WE (4,F)	ML Mix				9.5 WE (4,F)	
Rounding Agg. Width				6	Rounding Agg. Width				6	Rounding Agg. Width				6	
white/ >7 milliom				Yes	white/ >7 milliom				No	white/ >7 milliom				Yes	
SL Mix				9.5 WE (4,F)	SL Mix				9.5 WE (4,F)	SL Mix				9.5 WE (4,F)	
Sealed/UTBWC				No	Sealed/UTBWC				No	Sealed/UTBWC				No	
ML Thickness				6	ML Thickness				6	ML Thickness				6	
ML Top Lift/It spacing				1.5	ML Top Lift/It spacing				1.5	ML Top Lift/It spacing				1.5	
Design Life				20	Design Life				20	Design Life				35	
Shldr Thickness				7	Shldr Thickness				6	Shldr Thickness				7	

35-Year Analysis Period

Project Number	Analysis Period
1102-70	35
Highway	Discount Rate
2	1.22%
Date	Inflation Rate
9/26/2018	1
Performed By	Ia/(1+r)
KO	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	4.5" Mill & Overlay	5" BCOA	New HMA	12.9
Net Present Cost	\$4,817,226.40	\$11,241,690.00	\$10,851,240.54	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$4,817,226.40</b>	<b>\$11,241,690.00</b>	<b>\$10,851,240.54</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>233.4%</b>	<b>225.3%</b>	<b>12.9</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	12.9	1	12.9	1	12.9						
ALT	Description	ALT	Description	ALT	Description						
1	4.5" Mill & Overlay	2	5" BCOA	3	New HMA						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		HMA							
Primary Category		Primary Category		Primary Category							
Overlay		6'x6', 5.0 in. or Thinner		20-year HMA							
Secondary Category		Secondary Category		Secondary Category							
Rural		Design Life = 20 years		Rural							
Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Thin Bit.		Bituminous							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,124,469.16	\$ 3,124,469.16	0	Construction	\$ 7,000,676.05	\$ 7,000,676.05	0	Construction	\$ 8,834,921.79	\$ 8,834,921.79
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 26,656.42	\$ 25,704.12	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 92,019.37	\$ 84,530.79	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8	Crack Treatment	\$ 13,365.21	\$ 12,129.57
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12	Seal	\$ 147,608.53	\$ 127,619.03
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Mill/Overlay	\$ 2,312,505.31	\$ 1,814,496.27	20	1st CPR	\$ 3,786,288.61	\$ 2,970,893.31	20	Mill/Overlay	\$ 2,529,475.31	\$ 1,984,740.75
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 26,656.42	\$ 20,168.62	23		\$ -	\$ -	23	Crack Treatment	\$ 26,656.42	\$ 20,168.62
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 92,019.37	\$ 66,326.68	27		\$ -	\$ -	27	Seal	\$ 92,019.37	\$ 66,326.68
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30	R & R Mainline	\$ 9,454,590.23	\$ 6,571,321.59	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (486,843.22)	\$ (318,469.23)	35	Remaining Life	\$ (8,103,934.48)	\$ (5,301,200.95)	35	Remaining Life	\$ (297,585.33)	\$ (194,665.89)
Net Present Cost for Segment		\$ 4,817,226.40		Net Present Cost for Segment		\$ 11,241,690.00		Net Present Cost for Segment		\$ 10,851,240.54	
Maintenance - Net Present Cost for Segment		\$ 1,692,757.24		Maintenance - Net Present Cost for Segment		\$ 4,241,013.95		Maintenance - Net Present Cost for Segment		\$ 2,016,318.75	
Equivalent Annual Cost		169,930.37		Equivalent Annual Cost		396,556.93		Equivalent Annual Cost		382,783.61	

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
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 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	12.5 WE (2,A)	3	Yes	12.5 WE (2,A)	3	No	12.5 WE (2,A)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	5.0		No		
ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing		
2			6			2		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	3		20	3.0		20	3	

50-Year Analysis Period

Project Number	Analysis Period
1106-15-1	50
Highway	Discount Rate
201	2.7%
Date	Inflation Rate
6/13/2019	1
Performed By	Is(1)=1
ESD	0.1879

Notes:

LCCA SUMMARY				
Segment #1	Alternative #1	Alternative #2	Alternative #3	Length
	3' Mill, Rectam, 4.5" HMA - Widening	20 yr Concrete, not widened	35 yr Concrete	3.3 miles
Net Present Cost	\$ 489,677.89	\$ 4,872,842.09	\$ 4,872,842.09	
Segment #2	3' Mill, Rectam, 4.5" HMA	20Yr concrete, not widened	35 yr Concrete, not widened	0.8 miles
Net Present Cost	\$ 322,121.89	\$ 1,009,989.23	\$ 795,713.82	
Segment #3				0.0 miles
Net Present Cost				
Segment #4				0.0 miles
Net Present Cost				
<b>Project Net Present Cost</b>	<b>\$ 788,799.77</b>	<b>\$ 6,982,830.26</b>	<b>\$ 5,659,224.38</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>250.4%</b>	<b>195.8%</b>	<b>3.9</b>

Segment 1							
SEG	Length	SEG	Length	SEG	Length		
ALT	Description	ALT	Description	ALT	Description		
1	3' Mill, Rectam, 4.5" HMA - Widening	2	20 yr Concrete, not widened	3	35 yr Concrete		
Prepared Type	HMA	Prepared Type	PCC	Prepared Type	PCC		
Primary Category	> 31' joint Spacing	Primary Category	> 31' joint Spacing	Primary Category	> 31' joint Spacing		
Secondary Category	Shoulder Category	Secondary Category	Shoulder Category	Secondary Category	Shoulder Category		
Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category		
Blimbous	Thin Bit	Blimbous	Thin Bit	Blimbous	Thin Bit		
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,530,094.94	\$ 1,530,094.94	0	Construction	\$ 3,689,724.40	\$ 3,689,724.40
1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -
20	Mill/Overlay	\$ 660,501.01	\$ 518,258.97	20	1st CPR	\$ 985,141.69	\$ 772,986.73
21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 660,501.01	\$ 421,711.12	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -
40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -
44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (155,412.00)	\$ (84,751.50)	50	Remaining Life	\$ (729,092.89)	\$ (971,616.21)
Net Present Cost for Segment	\$ 2,488,677.89	Net Present Cost for Segment	\$ 5,972,842.09	Net Present Cost for Segment	\$ 4,671,510.16		
Maintenance - Net Present Cost for Segment	\$ (55,945.95)	Maintenance - Net Present Cost for Segment	\$ (2,263,117.62)	Maintenance - Net Present Cost for Segment	\$ (95,785.16)		
Equipment Annual Cost	\$ 65,931.88	Equipment Annual Cost	\$ 65,931.88	Equipment Annual Cost	\$ 65,931.88		

Segment 2							
SEG	Length	SEG	Length	SEG	Length		
ALT	Description	ALT	Description	ALT	Description		
1	3' Mill, Rectam, 4.5" HMA	2	20Yr concrete, not widened	3	35 yr Concrete, not widened		
Prepared Type	HMA	Prepared Type	PCC	Prepared Type	PCC		
Primary Category	> 31' joint Spacing	Primary Category	> 31' joint Spacing	Primary Category	> 31' joint Spacing		
Secondary Category	Shoulder Category	Secondary Category	Shoulder Category	Secondary Category	Shoulder Category		
Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category		
Blimbous	Thin Bit	Blimbous	Thin Bit	Blimbous	Thin Bit		
Notes:	Notes:	Notes:	Notes:	Notes:	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 165,022.72	\$ 165,022.72	0	Construction	\$ 625,852.48	\$ 625,852.48
1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -
20	Mill/Overlay	\$ 109,818.85	\$ 86,188.84	20	1st CPR	\$ 155,383.51	\$ 121,881.70
21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 109,818.85	\$ 70,116.89	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -
40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -
44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (25,839.72)	\$ (14,051.50)	50	Remaining Life	\$ (126,635.57)	\$ (89,051.67)
Net Present Cost for Segment	\$ 222,121.88	Net Present Cost for Segment	\$ 1,009,989.23	Net Present Cost for Segment	\$ 785,713.82		
Maintenance - Net Present Cost for Segment	\$ (16,059.14)	Maintenance - Net Present Cost for Segment	\$ (58,125.75)	Maintenance - Net Present Cost for Segment	\$ (10,961.34)		
Equipment Annual Cost	\$ 65,931.88	Equipment Annual Cost	\$ 65,931.88	Equipment Annual Cost	\$ 65,931.88		

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	24	2	50	24	2	50
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix
12	2	12.5 WE (L,C)									
Rounding App. Width	white/1/2 million	SL Mix	Rounding App. Width	white/1/2 million	SL Mix	Rounding App. Width	white/1/2 million	SL Mix	Rounding App. Width	white/1/2 million	SL Mix
4	No	12.5 WE (L,C)									
Sealed/UT/BWC	ML Thickness		Sealed/UT/BWC	ML Thickness		Sealed/UT/BWC	ML Thickness		Sealed/UT/BWC	ML Thickness	
No	7		No	7		No	7		No	7	
ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing		
No			No			No			No		
Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness	
15	3		15	3		15	3		15	3	

35-Year Analysis Period

Project Number	Analysis Period
1106-15-2	35
Highway	Discount Rate
200	1.22%
Date	Inflation Rate
7/12/2019	1
Performed By	la/(1+r)
KO	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	3" Mill, Reclaim, 4.5" HMA	20 yr Concrete	2" Mill & 3" HMA	11.6
Net Present Cost	\$4,104,412.24	\$12,870,778.46	\$3,098,649.78	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$4,104,412.24</b>	<b>\$12,870,778.46</b>	<b>\$3,098,649.78</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>132.5%</b>	<b>415.4%</b>	<b>100.0%</b>	<b>11.6</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	11.6	1	11.6	1	11.6						
ALT	Description	ALT	Description	ALT	Description						
1	3" Mill, Reclaim, 4.5" HMA	2	20 yr Concrete	3	2" Mill & 3" HMA						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		HMA							
Primary Category		Primary Category		Primary Category							
20-year HMA		> 11' Joint Spacing		Overlay							
Secondary Category		Secondary Category		Secondary Category							
Rural		Design Life = 20 years		Rural							
Shoulder Category		Shoulder Category		Shoulder Category							
Bituminous		Thin Bit.		Bituminous							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,663,291.83	\$ 2,663,291.83	0	Construction	\$ 10,821,592.73	\$ 10,821,592.73	0	Construction	\$ 1,528,871.17	\$ 1,528,871.17
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3	Crack Treatment	\$ 23,980.30	\$ 23,123.61
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7	Seal	\$ 79,116.84	\$ 72,678.27
8	Crack Treatment	\$ 12,023.44	\$ 10,911.84	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 128,800.61	\$ 111,358.13	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17	Mill/Overlay	\$ 1,522,388.87	\$ 1,238,790.71
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Mill/Overlay	\$ 1,757,388.93	\$ 1,378,926.85	20	1st CPR	\$ 2,611,607.96	\$ 2,049,185.73	20	Crack Treatment	\$ 23,980.30	\$ 18,816.03
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 23,980.30	\$ 18,143.83	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24	Seal	\$ 79,116.84	\$ 59,139.40
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 79,116.84	\$ 57,026.66	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33	Mill/Overlay	\$ 1,522,388.87	\$ 1,020,320.50
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (206,751.64)	\$ (135,246.90)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (1,319,403.69)	\$ (863,089.91)
Net Present Cost for Segment		\$ 4,104,412.24		Net Present Cost for Segment		\$ 12,870,778.46		Net Present Cost for Segment		\$ 3,098,649.78	
Maintenance - Net Present Cost for Segment		\$ 1,441,120.41		Maintenance - Net Present Cost for Segment		\$ 2,049,185.73		Maintenance - Net Present Cost for Segment		\$ 1,569,778.61	
Equivalent Annual Cost		144,785.45		Equivalent Annual Cost		454,023.94		Equivalent Annual Cost		109,306.61	

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
6	2	12.5 WE (3,C)	6	2	12.5 WE (3,B)	6	2	12.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	12.5 WE (3,C)	3	No	12.5 WE (2,A)	3	No	12.5 WE (3,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	7		No	7	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
1.5			15			1.5		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	4.5		20	3		17	2	

50-Year Analysis Period

Project Number	Analysis Period
1302-23	50
Highway	Discount Rate
61	1.7%
Date	Inflation Rate
5/28/2019	1
Performed By	MLT/AVL
Eric Lauer-Hess	0.9879

Notes: For the Whitetopping Design on segment 1, the existing pavement consists of approximately 9" of bituminous over 1" of 1.5AG over 8-7-8 concrete to a width of 11'. The existing pavement has to be widened as the new driving lane is over the outside edge of the existing pavement.

LCCA SUMMARY				
	Alternative #1	Alternative #2	Alternative #3	Length
Segment #1	3" MIU/3" CIR/3" HMA	Whitetopping (20 year)	Whitetopping (35 year)	0.6
Net Present Cost	\$495,767.29	\$1,605,184.97	\$918,173.09	Miles
Segment #2	3" MIU/3" CIR/3" HMA	Whitetopping (20 year)	Whitetopping (35 year)	1.2
Net Present Cost	\$979,189.90	\$1,889,063.30	\$1,502,432.01	Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$1,478,907.19</b>	<b>\$2,998,458.27</b>	<b>\$2,321,606.00</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>202.7%</b>	<b>157.0%</b>	<b>1.8</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	0.618	1	0.618	1	0.618						
ALT	Description	ALT	Description	ALT	Description						
1	3" MIU/3" CIR/3" HMA	2	Whitetopping (20 year)	3	Whitetopping (35 year)						
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	PCC						
Primary Category		Primary Category		Primary Category							
Secondary Category		Secondary Category		Secondary Category							
Rural	Design Life = 30 years	Rural	Design Life = 35 years	Rural	Design Life = 35 years						
Shoulder Category	Bluminous	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.						
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 279,786.93	\$ 279,786.93	0	Construction	\$ 647,915.17	\$ 647,915.17	0	Construction	\$ 656,785.43	\$ 656,785.43
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				7				7			
8	Crack Treatment	\$ 645.31	\$ 585.65	8				8			
9				9				9			
10				10				10			
11				11				11			
12	Seal	\$ 9,801.84	\$ 8,474.45	12				12			
13				13				13			
14				14				14			
15				15				15			
16				16				16			
17				17				17			
18				18				18			
19				19				19			
20	MIU/Overlay	\$ 155,336.62	\$ 121,884.14	20	1st CPR	\$ 155,782.81	\$ 122,234.24	20	1st CPR	\$ 120,881.59	\$ 94,458.41
21				21				21			
22				22				22			
23	Crack Treatment	\$ 1,287.05	\$ 973.80	23				23			
24				24				24			
25				25				25			
26				26				26			
27	Seal	\$ 6,091.73	\$ 4,350.86	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	\$ 462,032.17	\$ 302,239.04	35	2nd CPR	\$ 103,844.68	\$ 67,930.15
36				36				36			
37	MIU/Overlay	\$ 155,336.62	\$ 99,178.96	37				37			
38				38				38			
39				39				39			
40	Crack Treatment	\$ 1,287.05	\$ 792.39	40				40			
41				41				41			
42				42				42			
43				43				43			
44	Seal	\$ 6,091.73	\$ 3,572.91	44				44			
45				45				45			
46				46				46			
47				47				47			
48				48				48			
49				49				49			
50	Remaining Life	\$ 126,549.79	\$ 10,932.80	50	Remaining Life	\$ (115,028.06)	\$ (62,993.48)	50	Remaining Life	\$ (77,821.04)	\$ (39,059.26)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 219,920.36				\$ 1,076,284.17				\$ 979,189.90			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 13,499.36				\$ 27,086.61				\$ 26,776.26			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
\$ 13,499.36				\$ 27,086.61				\$ 26,776.26			
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	16	2	50	16	2	50	24	2	50
Total Shoulder Width	# of Shoulders	ML Mix.	Total Shoulder Width	# of Shoulders	ML Mix.	Total Shoulder Width	# of Shoulders	ML Mix.	Total Shoulder Width	# of Shoulders	ML Mix.
16	2	0.5 WE (A,C)	16	2	0.5 WE (A,C)	16	2	0.5 WE (A,C)	16	2	0.5 WE (A,C)
Rounding Agg. Width	white/ >7 milliom	SL Mix.	Rounding Agg. Width	white/ >7 milliom	SL Mix.	Rounding Agg. Width	white/ >7 milliom	SL Mix.	Rounding Agg. Width	white/ >7 milliom	SL Mix.
3	No	8	3	Yes	8	3	No	8	3	Yes	12.5 WE (A,C)
Sealed/UTBWC	ML Thickness	Sealed/UTBWC	ML Thickness	Sealed/UTBWC	ML Thickness	Sealed/UTBWC	ML Thickness	Sealed/UTBWC	ML Thickness	Sealed/UTBWC	ML Thickness
No	7.5	No	7.5	No	7.5	No	7.5	No	7.5	No	8
ML Top Layer Spacing	1.5	ML Top Layer Spacing	1.5	ML Top Layer Spacing	1.5	ML Top Layer Spacing	1.5	ML Top Layer Spacing	1.5	ML Top Layer Spacing	1.5
Design Life	Shldr Thickness	Design Life	Shldr Thickness	Design Life	Shldr Thickness	Design Life	Shldr Thickness	Design Life	Shldr Thickness	Design Life	Shldr Thickness
20	6.5	20	6	20	6.5	20	6	20	6	20	6.5

Segment 2											
SEG	Length	SEG	Length	SEG	Length						
2	1.211	2	1.211	2	1.211						
ALT	Description	ALT	Description	ALT	Description						
1	3" MIU/3" CIR/3" HMA	2	Whitetopping (20 year)	3	Whitetopping (35 year)						
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	PCC						
Primary Category		Primary Category		Primary Category							
Secondary Category		Secondary Category		Secondary Category							
Rural	Design Life = 30 years	Rural	Design Life = 35 years	Rural	Design Life = 35 years						
Shoulder Category	Bluminous	Shoulder Category	Thick Bit.	Shoulder Category	Thick Bit.						
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 548,255.62	\$ 548,255.62	0	Construction	\$ 1,041,936.43	\$ 1,041,936.43	0	Construction	\$ 1,061,118.11	\$ 1,061,118.11
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				7				7			
8	Crack Treatment	\$ 1,264.51	\$ 1,147.61	8				8			
9				9				9			
10				10				10			
11				11				11			
12	Seal	\$ 19,207.16	\$ 16,606.08	12				12			
13				13				13			
14				14				14			
15				15				15			
16				16				16			
17				17				17			
18				18				18			
19				19				19			
20	MIU/Overlay	\$ 304,389.41	\$ 238,837.70	20	1st CPR	\$ 416,744.44	\$ 326,996.54	20	1st CPR	\$ 313,650.92	\$ 246,104.70
21				21				21			
22				22				22			
23	Crack Treatment	\$ 2,522.03	\$ 1,968.20	23				23			
24				24				24			
25				25				25			
26				26				26			
27	Seal	\$ 11,937.04	\$ 8,604.10	27				27			
28				28				28			
29				29				29			
30				30				30			
31				31				31			
32				32				32			
33				33				33			
34				34				34			
35				35	R & R Mainline	\$ 1,193,736.23	\$ 780,884.35	35	2nd CPR	\$ 298,110.14	\$ 195,009.20
36				36				36			
37	MIU/Overlay	\$ 304,389.41	\$ 194,345.82	37				37			
38				38				38			
39				39				39			
40	Crack Treatment	\$ 2,522.03	\$ 1,552.73	40				40			
41				41				41			
42				42				42			
43				43				43			
44	Seal	\$ 11,937.04	\$ 7,001.29	44				44			
45				45				45			
46				46				46			
47											

50-Year Analysis Period

Project Number	Analysis Period
1604-45	50
Highway	Discount Rate
61	1.22%
Date	Inflation Rate
7/24/2019	1
Performed By	la/(1+r)
A. Thorson	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Concrete 20 year	35 year concrete	Reclaim (mill 4", FDR 6" and pave 4.5")	17.1 Miles
Net Present Cost	\$14,118,861.01	\$14,079,846.95	\$9,186,617.77	
Segment #2				0.0 Miles
Net Present Cost				
Segment #3				0.0 Miles
Net Present Cost				
Segment #4				0.0 Miles
Net Present Cost				
<b>Project Net Present Cost</b>	<b>\$14,118,861.01</b>	<b>\$14,079,846.95</b>	<b>\$9,186,617.77</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>153.7%</b>	<b>153.3%</b>	<b>100.0%</b>	<b>17.1</b>

Segment 1											
SEG 1			SEG 1			SEG 1			SEG 1		
ALT 1			ALT 2			ALT 3			ALT 3		
Description			Description			Description			Description		
Concrete 20 year			35 year concrete			35 year concrete			Reclaim (mill 4", FDR 6" and pave 4.5")		
Pavement Type			Pavement Type			Pavement Type			Pavement Type		
PCC			PCC			PCC			HMA		
Primary Category			Primary Category			Primary Category			Primary Category		
6"x6", 5.5 in. or Thicker			> 11' Joint Spacing			20-year HMA			20-year HMA		
Secondary Category			Secondary Category			Secondary Category			Secondary Category		
Design Life = 20 years			Design Life = 35 years			Design Life = 35 years			Rural		
Shoulder Category			Shoulder Category			Shoulder Category			Shoulder Category		
Thin Bit.			Thick Bit.			Thick Bit.			Bituminous		
Notes:			Notes:			Notes:			Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 7,384,426.86	\$ 7,384,426.86	0	Construction	\$ 10,230,691.99	\$ 10,230,691.99	0	Construction	\$ 4,697,954.64	\$ 4,697,954.64
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8	Crack Treatment	\$ 17,710.12	\$ 16,072.77
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12	Seal	\$ 220,276.25	\$ 190,445.92
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	1st CPR	\$ 4,445,266.15	\$ 3,487,956.89	20	1st CPR	\$ 2,774,190.10	\$ 2,176,755.04	20	Mill/Overlay	\$ 3,232,839.44	\$ 2,536,632.05
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23	Crack Treatment	\$ 35,322.16	\$ 26,725.24
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27	Seal	\$ 149,755.32	\$ 107,942.20
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	\$ 6,872,817.76	\$ 4,495,864.09	35	2nd CPR	\$ 2,556,594.17	\$ 1,672,399.92	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37		\$ -	\$ -	37		\$ -	\$ -	37	Mill/Overlay	\$ 2,942,745.59	\$ 1,878,877.20
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40		\$ -	\$ -	40		\$ -	\$ -	40	Crack Treatment	\$ 35,322.16	\$ 21,746.73
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44		\$ -	\$ -	44		\$ -	\$ -	44	Seal	\$ 149,755.32	\$ 87,834.19
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (2,290,939.25)	\$ (1,249,386.83)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ (692,410.73)	\$ (377,613.18)
Net Present Cost for Segment		\$ 14,118,861.01		Net Present Cost for Segment		\$ 14,079,846.95		Net Present Cost for Segment		\$ 9,186,617.77	
Maintenance - Net Present Cost for Segment		\$ 6,734,434.15		Maintenance - Net Present Cost for Segment		\$ 3,849,154.96		Maintenance - Net Present Cost for Segment		\$ 4,488,663.13	
Equivalent Annual Cost		378,871.50		Equivalent Annual Cost		377,824.58		Equivalent Annual Cost		246,517.59	

  

Total Lane Width	# of Lanes	Analysis Period
24	2	50
Total Shldr Width	# of Shldrs	ML Mix
16	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
Yes	6.5	
ML Top Lift/It spacing		
6		
Design Life	Shldr Thickness	
20	3	

  

Total Lane Width	# of Lanes	Analysis Period
24	2	50
Total Shldr Width	# of Shldrs	ML Mix
16	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No	8	
ML Top Lift/It spacing		
15		
Design Life	Shldr Thickness	
35	4	

  

Total Lane Width	# of Lanes	Analysis Period
24	2	50
Total Shldr Width	# of Shldrs	ML Mix
16	2	9.5 WE (4,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	9.5 WE (3,B)
Sealed/UTBWC	ML Thickness	
No		
ML Top Lift/It spacing		
2		
Design Life	Shldr Thickness	
20	4	

50-Year Analysis Period

Project Number	Analysis Period
1807-29	50
Highway	Discount Rate
210	1.2%
Date	Inflation Rate
3/2/2015	
Performed By	by/for
Samuel Nages	0.9879

Notes:

LCCA SUMMARY				
Segment #	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 yr HMA	35 yr PCC	35 yr PCC	0.1
Net Present Cost	\$140,913.53	\$180,926.40	\$180,926.40	Miles
Segment #2	20 yr HMA	35 yr PCC	35 yr PCC	0.1
Net Present Cost	\$434,089.87	\$605,460.28	\$592,723.70	Miles
Segment #3	20 yr HMA	35 yr PCC	35 yr PCC	0.1
Net Present Cost	\$665,733.52	\$643,789.43	\$659,779.06	Miles
Segment #4	20 yr HMA	35 yr PCC	35 yr PCC	0.1
Net Present Cost	\$1,044,200.18	\$1,044,200.18	\$1,044,200.18	Miles
<b>Project Net Present Cost</b>	<b>\$1,194,925.04</b>	<b>\$1,636,302.90</b>	<b>\$1,608,401.18</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>137.0%</b>	<b>134.6%</b>	<b>0.8</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	0.121	1	0.121	1	0.255						
ALT	Description	ALT	Description	ALT	Description						
1	20 yr HMA	2	35 yr PCC	3	35 yr PCC						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		PCC							
Primary Category		Primary Category		Primary Category							
20 year HMA		6'W', 5.0 in. or Thinner		> 11' Joint Spacing							
Secondary Category		Secondary Category		Secondary Category							
Urban		Design Life = 35 years		Design Life = 35 years							
Shoulder Category		Shoulder Category		Shoulder Category							
Thick Bit		PCC		PCC							
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 97,160.81	\$ 97,160.81	0	Construction	\$ 106,662.22	\$ 106,662.22	0	Construction	\$ 155,986.82	\$ 155,986.82
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 116.08	\$ 105.35	8		\$ -	\$ -	8	Crack Treatment	\$ 424.52	\$ 385.27
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 1,679.72	\$ 1,447.06	12		\$ -	\$ -	12	Seal	\$ 5,961.06	\$ 5,153.80
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Mil/Overlay	\$ 29,423.61	\$ 23,087.10	20	1st CPR	\$ 49,188.30	\$ 38,595.17	20	1st CPR	\$ 97,944.95	\$ 76,852.04
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 231.32	\$ 175.17	23		\$ -	\$ -	23	Crack Treatment	\$ 846.69	\$ 640.61
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 936.80	\$ 675.23	27		\$ -	\$ -	27	Seal	\$ 3,302.06	\$ 2,380.09
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30	R & R Mainline	\$ 98,997.11	\$ 68,806.98	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mil/Overlay	\$ 34,576.20	\$ 22,075.49	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 231.32	\$ 142.54	40		\$ -	\$ -	40	Crack Treatment	\$ 846.69	\$ 531.28
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 936.80	\$ 549.45	44		\$ -	\$ -	44	Seal	\$ 3,302.06	\$ 1,936.72
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (8,135.34)	\$ (4,436.69)	50	Remaining Life	\$ (42,427.33)	\$ (23,138.17)	50	Remaining Life	\$ (26,811.54)	\$ (14,621.95)
Net Present Cost for Segment		\$ 140,913.53		Net Present Cost for Segment		\$ 106,662.22		Net Present Cost for Segment		\$ 155,986.82	
Maintenance - Net Present Cost for Segment		\$ 434,089.87		Maintenance - Net Present Cost for Segment		\$ 605,460.28		Maintenance - Net Present Cost for Segment		\$ 592,723.70	
Equivalent Annual Cost		\$ 3,783.16		Equivalent Annual Cost		\$ 5,123.40		Equivalent Annual Cost		\$ 6,062.81	

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
22	2	50	22	2	50	22	2	50	22	2	50
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix
16	2	12.5 WE (I.C)									
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
0	No	0									
Sealed/UTBWC	ML Thickness	ML Thickness									
No	No	4.5	No	No	4.5	No	No	7	No	No	7
ML Top Lift/spacing			ML Top Lift/spacing			ML Top Lift/spacing			ML Top Lift/spacing		
2			6			15			2		
Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness	
20	2		20	4.5		20	7		20	2	

Segment 3											
SEG	Length	SEG	Length	SEG	Length						
3	0.304	3	0.304	3	0.304						
ALT	Description	ALT	Description	ALT	Description						
1	20 yr HMA	2	35 yr PCC	3	35 yr PCC						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		PCC							
Primary Category		Primary Category		Primary Category							
20 year HMA		6'W', 5.0 in. or Thinner		> 11' Joint Spacing							
Secondary Category		Secondary Category		Secondary Category							
Urban		Design Life = 35 years		Design Life = 35 years							
Shoulder Category		Shoulder Category		Shoulder Category							
Thick Bit		PCC		PCC							
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 315,177.23	\$ 315,177.23	0	Construction	\$ 348,565.84	\$ 348,565.84	0	Construction	\$ 508,384.71	\$ 508,384.71
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 437.47	\$ 397.02	8		\$ -	\$ -	8	Crack Treatment	\$ 101.18	\$ 93.64
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 6,142.92	\$ 5,311.03	12		\$ -	\$ -	12	Seal	\$ 1,469.69	\$ 1,270.66
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Mil/Overlay	\$ 100,933.10	\$ 79,196.68	20	1st CPR	\$ 185,089.80	\$ 143,229.83	20	1st CPR	\$ 75,938.44	\$ 59,584.73
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 872.32	\$ 660.16	23		\$ -	\$ -	23	Crack Treatment	\$ 205.78	\$ 155.70
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 3,402.80	\$ 2,452.71	27		\$ -	\$ -	27	Seal	\$ 818.74	\$ 590.14
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30	R & R Mainline	\$ 329,436.88	\$ 228,971.78	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33	</						

35-Year Analysis Period

Project Number	Analysis Period
1928-71	35
Highway	Discount Rate
US 52	1.22%
Date	Inflation Rate
2/5/2020	1
Performed By	la/(1+r)
AMIIR A.	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	4" Mill/2" SMA over 2" HMA	Mill 1"/CIR 3"/2" HMA with 2" SMA	20-Year Concrete (UBOL)	7.9
Net Present Cost	\$6,455,682.15	\$7,408,435.48	\$8,622,968.67	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$6,455,682.15</b>	<b>\$7,408,435.48</b>	<b>\$8,622,968.67</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>114.8%</b>	<b>133.6%</b>	<b>7.9</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	7.92	1	7.92	1	7.92						
ALT	Description	ALT	Description	ALT	Description						
1	4" Mill/2" SMA over 2" HMA	2	Mill 1"/CIR 3"/2" HMA with 2" SMA	3	20-Year Concrete (UBOL)						
Pavement Type	Primary Category	Pavement Type	Primary Category	Pavement Type	Primary Category						
HMA	Overlay	HMA	20-year HMA	PCC	> 11' Joint Spacing						
Secondary Category	Rural	Secondary Category	Rural	Secondary Category	Design Life = 20 years						
Rural		Rural		Rural							
Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category						
Bituminous		Bituminous		PCC							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,691,306.49	\$ 3,691,306.49	0	Construction	\$ 4,499,960.35	\$ 4,499,960.35	0	Construction	\$ 7,051,259.68	\$ 7,051,259.68
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 18,438.80	\$ 17,780.08	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 9,245.00	\$ 8,390.27	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17	Mill/Overlay	\$ 2,979,439.32	\$ 2,424,414.56	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Crack Treatment	\$ 18,438.80	\$ 14,467.92	20	Mill/Overlay	\$ 4,078,267.56	\$ 3,199,993.20	20	1st CPR	\$ 2,003,082.32	\$ 1,571,709.00
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 18,438.80	\$ 13,951.05	23		\$ -	\$ -
24	Seal	\$ -	\$ -	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	Mill/Overlay	\$ 2,979,439.32	\$ 1,996,850.52	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (2,582,180.74)	\$ (1,689,137.42)	35	Remaining Life	\$ (479,796.18)	\$ (313,859.40)	35	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 6,455,682.15		Net Present Cost for Segment		\$ 7,408,435.48		Net Present Cost for Segment		\$ 8,622,968.67	
Maintenance - Net Present Cost for Segment		\$ 2,764,375.66		Maintenance - Net Present Cost for Segment		\$ 2,908,475.13		Maintenance - Net Present Cost for Segment		\$ 1,571,709.00	
Equivalent Annual Cost		227,727.82		Equivalent Annual Cost		261,336.73		Equivalent Annual Cost		304,180.07	

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
27	2	35	27	2	35	24	2	35
Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
10	2	SMA	10	2	SMA	13	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes	12.5 WE (3,C)	3	Yes	12.5 WE (3,C)	3	No	
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			Yes			Yes	9.5	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
2			2			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
17	5		20	5		20	9.5	

35-Year Analysis Period

Project Number	Analysis Period
2408-23	35
Highway	Discount Rate
251	1.22%
Date	Inflation Rate
2/27/2019	1
Performed By	la/(1+r)
JPS	0.9879

From I-35 to TH 218.

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 Year WhiteTopping	20 Year HMA (CIR)	3.5in HMA Mill and Overlay	16.4
Net Present Cost	\$7,345,201.85	\$5,701,263.14	\$5,584,761.77	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$7,345,201.85</b>	<b>\$5,701,263.14</b>	<b>\$5,584,761.77</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>131.5%</b>	<b>102.1%</b>	<b>100.0%</b>	<b>16.4</b>

Segment 1															
SEG		Length		SEG		Length		SEG		Length					
1		16.4		1		16.4		1		16.4					
ALT		Description		ALT		Description		ALT		Description					
1		20 Year WhiteTopping		2		20 Year HMA (CIR)		3		3.5in HMA Mill and Overlay					
Pavement Type			Pavement Type			Pavement Type			Pavement Type						
PCC			HMA			HMA			HMA						
Primary Category			Primary Category			Primary Category			Primary Category						
6'x6', 5.5 in. or Thicker			20-year HMA			Overlay			Overlay						
Secondary Category			Secondary Category			Secondary Category			Secondary Category						
Design Life = 20 years			Rural			Rural			Rural						
Shoulder Category			Shoulder Category			Shoulder Category			Shoulder Category						
Aggregate			Bituminous			Bituminous			Bituminous						
Notes:				Notes:				Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost				
0	Construction	\$ 4,919,942.04	\$ 4,919,942.04	0	Construction	\$ 3,735,624.38	\$ 3,735,624.38	0	Construction	\$ 2,506,727.03	\$ 2,506,727.03				
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -				
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -				
3		\$ -	\$ -	3		\$ -	\$ -	3	Crack Treatment	\$ 33,856.25	\$ 32,646.75				
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -				
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -				
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -				
7		\$ -	\$ -	7		\$ -	\$ -	7	Seal	\$ 136,188.55	\$ 125,105.46				
8		\$ -	\$ -	8	Crack Treatment	\$ 16,975.13	\$ 15,405.73	8		\$ -	\$ -				
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -				
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -				
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -				
12		\$ -	\$ -	12	Seal	\$ 202,034.23	\$ 174,674.28	12		\$ -	\$ -				
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -				
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -				
15		\$ -	\$ -	15		\$ -	\$ -	15	Mill/Overlay	\$ 2,334,055.89	\$ 1,945,880.91				
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -				
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -				
18		\$ -	\$ -	18		\$ -	\$ -	18	Crack Treatment	\$ 33,856.25	\$ 27,217.29				
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -				
20	1st CPR	\$ 3,090,899.82	\$ 2,425,259.81	20	Mill/Overlay	\$ 2,334,055.89	\$ 1,831,405.83	20		\$ -	\$ -				
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -				
22		\$ -	\$ -	22		\$ -	\$ -	22	Seal	\$ 136,188.55	\$ 104,299.27				
23		\$ -	\$ -	23	Crack Treatment	\$ 33,856.25	\$ 25,616.11	23		\$ -	\$ -				
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -				
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -				
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -				
27		\$ -	\$ -	27	Seal	\$ 136,188.55	\$ 98,163.40	27		\$ -	\$ -				
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -				
29		\$ -	\$ -	29		\$ -	\$ -	29	Mill/Overlay	\$ 2,334,055.89	\$ 1,642,054.61				
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -				
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -				
32		\$ -	\$ -	32		\$ -	\$ -	32	Crack Treatment	\$ 33,856.25	\$ 22,967.63				
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -				
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -				
35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (274,594.81)	\$ (179,626.61)	35	Remaining Life	\$ (1,256,799.33)	\$ (822,137.17)				
Net Present Cost for Segment				\$ 7,345,201.85				Net Present Cost for Segment				\$ 5,701,263.14			
Maintenance - Net Present Cost for Segment				\$ 2,425,259.81				Maintenance - Net Present Cost for Segment				\$ 1,965,638.75			
Equivalent Annual Cost				259,106.12				Equivalent Annual Cost				201,115.26			

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
26	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
2	2		4	2	12.5 WE (3,B)	4	2	12.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	Yes		3	No	12.5 WE (3,B)	3	No	12.5 WE (3,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
Yes	6		No			No		
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
6			1.5			1.5		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	6		20	3.5		15	3.5	

35-Year Analysis Period

Table with 2 columns: Project Number, Analysis Period, Highway, Construction Rate, Date, Inflation Rate, Performed By, SIP.

Notes: FY23 Project - proposed 4" Bit MBSO (BOC Sections). Seg 1: (R44) From RP 222+0.454 to RP 224+0.888 = 1.033 miles. Seg 2: (R42) From RP 222+0.442 to RP 224+0.200 = 1.757 miles. Seg 3: (R44) From RP 35+0.380 to RP 35+0.539 = 1.159 miles. LCCA for Final ADR (approved by Permit Design) Aug. 2023; stayed to keep this template!

LCCA SUMMARY table with columns: Alternative #1, Alternative #2, Alternative #3, Length, Net Present Cost, % of Low Cost.

Segment 1 LCCA table with columns: Year, Activity, Cost, Present Cost, and sub-tables for Seg 1, Seg 2, Seg 3.

Summary table for Segment 1 with columns: Total Lane Width, # of Lanes, Analysis Period, Total Shoulder Width, # of Shoulders, ML Mix, Rounding Agg. Width, white/77 million, SL Mix, Sealed/UTBWC, ML Thickness, ML Top Lift/ft spacing, Design Life, Shoulder Thickness.

Segment 3 LCCA table with columns: Year, Activity, Cost, Present Cost, and sub-tables for Seg 1, Seg 2, Seg 3.

Summary table for Segment 3 with columns: Total Lane Width, # of Lanes, Analysis Period, Total Shoulder Width, # of Shoulders, ML Mix, Rounding Agg. Width, white/77 million, SL Mix, Sealed/UTBWC, ML Thickness, ML Top Lift/ft spacing, Design Life, Shoulder Thickness.

Segment 2 LCCA table with columns: Year, Activity, Cost, Present Cost, and sub-tables for Seg 1, Seg 2, Seg 3.

Summary table for Segment 2 with columns: Total Lane Width, # of Lanes, Analysis Period, Total Shoulder Width, # of Shoulders, ML Mix, Rounding Agg. Width, white/77 million, SL Mix, Sealed/UTBWC, ML Thickness, ML Top Lift/ft spacing, Design Life, Shoulder Thickness.

35-Year Analysis Period

Project Number	Analysis Period
3101-37	35
Highway	Discount Rate
1	1.22%
Date	Inflation Rate
15-Oct-19	1
Performed By	la/(1+r)
A. Thorson	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Mill 2.5", Overlay 3.5"	20 year HMA	20 year PCC	17.5
Net Present Cost	\$6,368,304.13	\$7,350,384.34	\$9,279,389.74	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$6,368,304.13</b>	<b>\$7,350,384.34</b>	<b>\$9,279,389.74</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>115.4%</b>	<b>145.7%</b>	<b>17.5</b>

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	17.5			1	17.5			1	17.5		
ALT	Description			ALT	Description			ALT	Description		
1	Mill 2.5", Overlay 3.5"			2	20 year HMA			3	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		
Aggregate			Bituminous			Aggregate			Aggregate		
Notes:				Notes:				Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 2,815,219.18	\$ 2,815,219.18	0	Construction	\$ 4,833,542.57	\$ 4,833,542.57	0	Construction	\$ 6,001,279.45	\$ 6,001,279.45
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 36,117.72	\$ 34,827.42	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 139,089.42	\$ 127,770.26	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8	Crack Treatment	\$ 18,109.00	\$ 16,434.78	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 246,002.86	\$ 212,688.58	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 2,726,157.74	\$ 2,272,772.60	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 36,117.72	\$ 29,035.30	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	Mill/Overlay	\$ 3,046,843.98	\$ 2,390,691.60	20	1st CPR	\$ 4,177,824.77	\$ 3,278,110.29
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 139,089.42	\$ 106,520.89	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 36,117.72	\$ 27,327.17	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ 144,538.15	\$ 104,181.71	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 2,726,157.74	\$ 1,917,906.03	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 36,117.72	\$ 24,501.78	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (1,467,931.09)	\$ (960,249.33)	35	Remaining Life	\$ (358,452.23)	\$ (234,482.07)	35	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 6,368,304.13		Net Present Cost for Segment		\$ 7,350,384.34		Net Present Cost for Segment		\$ 9,279,389.74	
Maintenance - Net Present Cost for Segment		\$ 3,553,084.95		Maintenance - Net Present Cost for Segment		\$ 2,516,841.77		Maintenance - Net Present Cost for Segment		\$ 3,278,110.29	
Equivalent Annual Cost		224,645.51		Equivalent Annual Cost		259,288.94		Equivalent Annual Cost		327,335.69	

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
6	2	9.5 WE (3,B)	6	2	9.5 WE (3,B)	6	2	9.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No		3	No	9.5 WE (3,B)	3	No	
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No			No		
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
1.5			2			6		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
15	0		20	2		20	0	

35-Year Analysis Period

Project Number	Analysis Period
3107-51-1	35
Highway	Discount Rate
6	1.32%
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	2.0" Mill & 2.0" HMA	Reclaim	20 yr Concrete	6.2
Net Present Cost	\$1,659,698.02	\$2,668,910.22	\$6,211,118.07	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$1,659,698.02</b>	<b>\$2,668,910.22</b>	<b>\$6,211,118.07</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>160.8%</b>	<b>374.2%</b>	<b>6.2</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	6.2	1	6.2	1	6.2						
ALT	Description	ALT	Description	ALT	Description						
1	2.0" Mill & 2.0" HMA	2	Reclaim	3	20 yr Concrete						
Pavement Type		Pavement Type		Pavement Type							
HMA		HMA		PCC							
Primary Category		Primary Category		Primary Category							
Overlay		20-year HMA		> 11' Joint Spacing							
Secondary Category		Secondary Category		Secondary Category							
Rural		Rural		Design Life = 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	\$ 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	Crack Treatment	\$ 7,658.77	\$ 6,896.00	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 74,591.52	\$ 63,730.50	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	Seal	\$ 43,885.16	\$ 30,799.79	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	Total Lane Width			# of Lanes	Total Lane Width			# of Lanes
28			2	28			2	28			2
Total Shldr Width			# of Shldrs	Total Shldr Width			# of Shldrs	Total Shldr Width			# of Shldrs
0			2	0			2	0			2
Rounding Agg. Width			white/ >7 milliom	Rounding Agg. Width			white/ >7 milliom	Rounding Agg. Width			white/ >7 milliom
8			No	8			No	8			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				1.5				12			
Design Life			Shldr Thickness	Design Life			Shldr Thickness	Design Life			Shldr Thickness
17			5	20			5	6			

50-Year Analysis Period

Project Number	Analysis Period
3107-51-2	50
Highway	Discount Rate
6	1.32%
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
Net Present Cost	\$987,800.25	\$2,831,799.84	\$2,235,860.71	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$987,800.25</b>	<b>\$2,831,799.84</b>	<b>\$2,235,860.71</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>286.7%</b>	<b>226.3%</b>	<b>1.7</b>

Segment 1																	
SEG		Length		SEG		Length		SEG		Length							
1		1.675		1		1.675		1		1.675							
ALT		Description		ALT		Description		ALT		Description							
1		Reclaim		2		20 yr Concrete		3		35 yr Concrete							
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:				Notes:									
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost						
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		Net Present Cost for Segment		\$ 2,831,799.84		Net Present Cost for Segment		\$ 2,235,860.71							
Maintenance - Net Present Cost for Segment		\$ 435,510.24		Maintenance - Net Present Cost for Segment		\$ 1,044,780.57		Maintenance - Net Present Cost for Segment		\$ 448,841.44							
Equivalent Annual Cost		27,112.99		Equivalent Annual Cost		77,726.81		Equivalent Annual Cost		61,369.56							
Total Lane Width			# of Lanes			Total Lane Width			# of Lanes			Total Lane Width			# of Lanes		
28			2			28			2			28			2		
Total Shldr Width			# of Shldrs			Total Shldr Width			# of Shldrs			Total Shldr Width			# of Shldrs		
0			2			0			2			0			2		
Rounding Agg. Width			white/ >7 milliom			Rounding Agg. Width			white/ >7 milliom			Rounding Agg. Width			white/ >7 milliom		
8			No			8			No			3			No		
Sealed/UTBWC			ML Thickness			Sealed/UTBWC			ML Thickness			Sealed/UTBWC			ML Thickness		
No			6			No			6			No			6		
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			12			12			12			12			12		
Design Life			Shldr Thickness			Design Life			Shldr Thickness			Design Life			Shldr Thickness		
20			5			6			6			6			6		

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
Net Present Cost	\$7,693,468.39	\$14,767,857.11	\$13,585,780.83	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$7,693,468.39</b>	<b>\$14,767,857.11</b>	<b>\$13,585,780.83</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>192.0%</b>	<b>176.6%</b>	<b>17.2</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	17.2	1	17.2	1	17.2						
ALT	Description	ALT	Description	ALT	Description						
1	CIR	2	Unbonded Concrete Overlay - 20	3	Unbonded Concrete Overlay - 35						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		PCC							
Primary Category		Primary Category		Primary Category							
20-year HMA		6'x6', 5.5 in. or Thicker		> 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	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	1st CPR	\$ 3,619,967.48	\$ 2,840,390.23	20	1st CPR	\$ 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	R & R Mainline	\$ 5,973,758.97	\$ 3,907,743.43	35	2nd CPR	\$ 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 Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	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 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
0	No	12.5 WE (3,B)	0	No	SL Mix	0	No	SL Mix
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	6		No	7	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
1.5			6			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	5		20	6		35	7	

50 Year Analysis Period

Project Number	Analysis Period
3304-27	50
Highway	Discount Rate
47	5.00%
Rate	Inflation Rate
4.7500%	3.00%
Performed by	By (Year)
Samuel Nigon	0.9870

Notes:

LCCA SUMMARY				
Segment #	Alternative #1	Alternative #2	Alternative #3	Length
1	M11 3" FOR 8" HMA 5'	6" PCC (Maximim) 3" HMA (SHD)	5" MIL 6" White Topping 3" HMA (SHD)	21.0 Miles
2	M11 3" FOR 8" HMA 5'	6" PCC (Maximim) 3" HMA (SHD)	5" MIL 6" White Topping 3" HMA (SHD)	6.3 Miles
3	M11 3" FOR 8" HMA 5'	6" PCC (Maximim) 3" HMA (SHD)	5" MIL 6" White Topping 3" HMA (SHD)	0.1 Miles
4	M11 3" FOR 8" HMA 5'	6" PCC (Maximim) 3" HMA (SHD)	5" MIL 6" White Topping 3" HMA (SHD)	0.8 Miles
<b>Project Net Present Cost</b>	<b>\$11,695,256.02</b>	<b>\$16,976,336.08</b>	<b>\$21,087,029.80</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>145.3%</b>	<b>180.4%</b>	<b>77.7</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
M11 3" FOR 8" HMA 5'	21.0	6" PCC (Maximim) 3" HMA (SHD)	6.3	5" MIL 6" White Topping 3" HMA (SHD)	0.1	5" MIL 6" White Topping 3" HMA (SHD)	0.8	5" MIL 6" White Topping 3" HMA (SHD)	0.1		
Pavement Type	HMA	PCC	HMA	HMA	HMA	HMA	HMA	HMA	HMA		
Primary Category	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA		
Secondary Category	Design Life: 20 years	Design Life: 20 years	Design Life: 20 years	Design Life: 20 years	Design Life: 20 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	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category		
Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 5,419,978.17	\$ 5,419,978.17	0	Construction	\$ 11,050,937.85	\$ 11,050,937.85	0	Construction	\$ 8,855,260.82	\$ 8,855,260.82
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				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				17				17			
18				18				18			
19				19				19			
20	M11/Overlay	\$ 4,369,639.21	\$ 3,361,568.44	20	1st CPM	\$ 2,390,154.55	\$ 2,389,557.27	20	1st CPM	\$ 6,379,688.77	\$ 4,907,871.09
21				21				21			
22				22				22			
23				23				23			
24				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				33				33			
34				34				34			
35				35				35			
36				36				36			
37	M11/Overlay	\$ 3,454,107.61	\$ 2,128,249.19	37				37			
38				38				38			
39				39				39			
40				40				40			
41				41				41			
42				42				42			
43				43				43			
44				44				44			
45				45				45			
46				46				46			
47				47				47			
48				48				48			
49				49				49			
50	Remaining Life	\$ 1812,781.20	\$ (421,879.97)	50	Remaining Life	\$ (13,639,912.64)	\$ (3,889,435.54)	50	Remaining Life	\$ (13,639,912.64)	\$ (3,889,435.54)
Net Present Cost for Segment	\$ 11,695,256.02			Net Present Cost for Segment	\$ 11,050,937.85			Net Present Cost for Segment	\$ 8,855,260.82		
Maintenance - Net Present Cost for Segment	\$ 1,510,941.91			Maintenance - Net Present Cost for Segment	\$ 4,806,931.91			Maintenance - Net Present Cost for Segment	\$ 30,258.25		
Equivalent Annual Cost	\$ 300,013.75			Equivalent Annual Cost	\$ 486,903.00			Equivalent Annual Cost	\$ 7,282.80		
Total Lane Width	24	# of Lanes	2	Total Lane Width	26	# of Lanes	2	Total Lane Width	26	# of Lanes	2
Total Shoulder Width	8	# of Shoulders	2	Total Shoulder Width	6	# of Shoulders	2	Total Shoulder Width	11	# of Shoulders	2
Rounding Agg. Width	3	white / 7 million	SL Mix	Rounding Agg. Width	3	white / 7 million	SL Mix	Rounding Agg. Width	3	white / 7 million	SL Mix
Sealed/UTBWC	No	ML Thickness	6	Sealed/UTBWC	No	ML Thickness	6	Sealed/UTBWC	No	ML Thickness	6
ML Top Lift/ft spacing	2.5	# DOWELS per Lane	6	ML Top Lift/ft spacing	2.5	# DOWELS per Lane	6	ML Top Lift/ft spacing	2.5	# DOWELS per Lane	6
Design Life	30	Slab Thickness	3	Design Life	30	Slab Thickness	3	Design Life	30	Slab Thickness	3

Segment 2											
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
M11 3" FOR 8" HMA 5'	21.0	6" PCC (Maximim) 3" HMA (SHD)	6.3	5" MIL 6" White Topping 3" HMA (SHD)	0.1	5" MIL 6" White Topping 3" HMA (SHD)	0.8	5" MIL 6" White Topping 3" HMA (SHD)	0.1		
Pavement Type	HMA	PCC	HMA	HMA	HMA	HMA	HMA	HMA	HMA		
Primary Category	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA	6 in. or thicker	20 year HMA		
Secondary Category	Design Life: 20 years	Design Life: 20 years	Design Life: 20 years	Design Life: 20 years	Design Life: 20 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	Shoulder Category	Shoulder Category	Shoulder Category	Shoulder Category		
Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:	Blumhous	Notes:		
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 97,089.93	\$ 97,089.93	0	Construction	\$ 182,374.16	\$ 182,374.16	0	Construction	\$ 164,060.96	\$ 164,060.96
1				1				1			
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				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				17				17			
18				18				18			
19				19				19			
20	M11/Overlay	\$ 71,624.53	\$ 55,300.83	20	1st CPM	\$ 54,986.04	\$ 42,300.83	20	1st CPM	\$ 108,888.22	\$ 83,220.12
21				21				21			
22				22				22			
23				23				23			
24				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				33				33			
34				34				34			
35				35				35			
36				36				36			
37	M11/Overlay	\$ 57,421.77	\$ 35,347.19	37				37			
38				38				38			
39				39				39			
40				40				40			
41				41				41			
42				42				42			
43				43				43			
44				44				44			
45				45				45			
46				46				46			
47				47				47			
48				48				48			
49				49				49			
50	Remaining Life	\$ (13,511.00)	\$ (7,013.00)	50	Remaining Life	\$ (10,512.00)	\$ (5,950.00)	50	Remaining Life	\$ (10,512.00)	\$ (5,950.00)
Net Present Cost for Segment	\$ 97,089.93			Net Present Cost for Segment	\$ 182,374.16			Net Present Cost for Segment			

50-Year Analysis Period

Project Number	Analysis Period
3608-48	50
Highway	Discount Rate
S3	1.22%
Date	Inflation Rate
7/11/2019	1
Performed By	la/(1+r)
Ed Welch	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	New HMA	20 year PCC	35 year PCC	1.9
Net Present Cost	\$2,764,563.81	\$4,344,738.85	\$3,993,026.40	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$2,764,563.81</b>	<b>\$4,344,738.85</b>	<b>\$3,993,026.40</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>157.2%</b>	<b>144.4%</b>	<b>1.9</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	1.85	1	1.85	1	1.85						
ALT	Description	ALT	Description	ALT	Description						
1	New HMA	2	20 year PCC	3	35 year PCC						
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		> 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:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,913,342.08	\$ 1,913,342.08	0	Construction	\$ 2,395,022.28	\$ 2,395,022.28	0	Construction	\$ 3,080,840.22	\$ 3,080,840.22
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 4,012.50	\$ 3,641.54	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 53,335.67	\$ 46,112.83	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	\$ 547,196.83	\$ 429,355.39	20	1st CPR	\$ 1,368,941.99	\$ 1,074,133.80	20	1st CPR	\$ 569,510.28	\$ 446,863.53
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 8,002.79	\$ 6,055.02	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 33,734.91	\$ 24,315.80	27		\$ -	\$ -	27		\$ -	\$ -
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30	R & R Mainline	\$ 1,898,016.66	\$ 1,319,198.14	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -	35	2nd CPR	\$ 711,337.73	\$ 465,322.65
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 621,431.42	\$ 396,770.06	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 8,002.79	\$ 4,927.06	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 33,734.91	\$ 19,786.13	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (146,219.16)	\$ (79,742.09)	50	Remaining Life	\$ (813,435.71)	\$ (443,615.37)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 2,764,563.81		Net Present Cost for Segment		\$ 4,344,738.85		Net Present Cost for Segment		\$ 3,993,026.40	
Maintenance - Net Present Cost for Segment		\$ 851,221.74		Maintenance - Net Present Cost for Segment		\$ 1,949,716.57		Maintenance - Net Present Cost for Segment		\$ 912,186.17	
Equivalent Annual Cost		74,185.48		Equivalent Annual Cost		116,588.56		Equivalent Annual Cost		107,150.56	

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
50	4	50	50	4	50	50	4	50
Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
0	0	9.5 WE (3,B)	0	0		0	0	
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
0	No	9.5 WE (3,B)	3	No		3	No	
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			Yes	5		Yes	7.5	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
2			6			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	5		20	5		35	7.5	

50-Year Analysis Period

Project Number	Analysis Period
3703-25	50
Highway	Discount Rate
	1.22%
Date	Inflation Rate
	1
Performed By	la/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 Year HMA	20 Year PCC	35 Year PCC	22.3
Net Present Cost	\$7,751,722.40	\$13,769,002.62	\$12,167,596.06	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$7,751,722.40</b>	<b>\$13,769,002.62</b>	<b>\$12,167,596.06</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>177.6%</b>	<b>157.0%</b>	<b>22.3</b>

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	22.3			1	22.3			1	22.3		
ALT	Description			ALT	Description			ALT	Description		
1	20 Year HMA			2	20 Year PCC			3	35 Year PCC		
Pavement Type			Pavement Type			Pavement Type			Pavement Type		
HMA			PCC			PCC			PCC		
Primary Category			Primary Category			Primary Category			Primary Category		
20-year HMA			6'x6', 5.5 in. or Thicker			> 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:				Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 3,607,184.10	\$ 3,607,184.10	0	Construction	\$ 7,371,901.54	\$ 7,371,901.54	0	Construction	\$ 7,371,901.54	\$ 7,371,901.54
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 26,879.38	\$ 24,394.31	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 232,560.78	\$ 201,066.85	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	\$ 2,687,652.91	\$ 2,108,854.04	20	1st CPR	\$ 4,122,116.16	\$ 3,234,398.79	20	1st CPR	\$ 3,025,414.74	\$ 2,373,877.26
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 53,609.91	\$ 40,562.00	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 137,291.96	\$ 98,958.73	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	\$ 6,695,465.50	\$ 4,379,848.84	35	2nd CPR	\$ 3,702,226.84	\$ 2,421,817.27
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 3,052,335.67	\$ 1,948,848.02	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 53,609.91	\$ 33,005.91	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 137,291.96	\$ 80,524.21	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (718,196.63)	\$ (391,675.78)	50	Remaining Life	\$ (2,231,821.83)	\$ (1,217,146.55)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 7,751,722.40				\$ 13,769,002.62				\$ 12,167,596.06			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 4,144,538.30				\$ 6,397,101.08				\$ 4,795,694.52			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
208,013.00				369,483.25				326,510.43			

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
28	2	50	27	2	50	27	2	50
Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
12	2	9.5 WE (3,B)	13	2		13	2	
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
1	No	12.5 WE (2,B)	1	No	12.5 WE (2,B)	1	No	12.5 WE (2,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	6		No	6	
ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing		
1			6			12		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	3		20	3		35	3	

50-Year Analysis Period

Project Number	Analysis Period
5006-35	50
Highway	Discount Rate
40	1.2%
Date	Inflation Rate
10/24/2019	3.0%
Performed By	Initial Cost
Mike Schaub	0.8879

Notes:

LCCA SUMMARY					
Segment #1	Alternative #1	Alternative #2	Alternative #3	Length	
	FCR and Overlay	BCDA	Concrete Reconstruct	11.9	
	Net Present Cost	\$2,277,004.21	\$4,829,877.58		
	Segment #2	FCR and Overlay	Concrete Reconstruct	12.9	
	Net Present Cost	\$8,108,020.39	\$13,774,028.87		
	Segment #3	Madison Lake Reconstruct	BCDA	Concrete Reconstruct	0.4
	Net Present Cost	\$673,698.33	\$448,807.10		
	Segment #4			0.0	
	Net Present Cost				
	<b>Project Net Present Cost</b>	<b>\$11,209,528.91</b>	<b>\$14,861,833.31</b>	<b>\$18,890,813.37</b>	
	<b>% of Low Cost</b>	<b>100.0%</b>	<b>132.6%</b>	<b>168.5%</b>	

Segment 1					Segment 2					Segment 3																																																																																																																																																																																																																																																																																																																																																																																																																																	
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length																																																																																																																																																																																																																																																																																																																																																																																																																														
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description																																																																																																																																																																																																																																																																																																																																																																																																																														
1	FCR and Overlay	2	BCDA	3	Concrete Reconstruct	1	FCR and Overlay	2	BCDA	3	Concrete Reconstruct	1	Madison Lake Reconstruct																																																																																																																																																																																																																																																																																																																																																																																																																														
<table border="1"> <thead> <tr> <th>Year</th> <th>Activity</th> <th>Cost</th> <th>Present Cost</th> <th>Year</th> <th>Activity</th> <th>Cost</th> <th>Present Cost</th> </tr> </thead> <tbody> <tr><td>1</td><td>Construction</td><td>\$ 1,137,406.99</td><td>\$ 1,137,406.99</td><td>1</td><td>Construction</td><td>\$ 1,110,112.41</td><td>\$ 1,110,112.41</td></tr> <tr><td>2</td><td></td><td>\$ -</td><td>\$ -</td><td>2</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>3</td><td></td><td>\$ -</td><td>\$ -</td><td>3</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>4</td><td></td><td>\$ -</td><td>\$ -</td><td>4</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>5</td><td></td><td>\$ -</td><td>\$ -</td><td>5</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>6</td><td></td><td>\$ -</td><td>\$ -</td><td>6</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>7</td><td></td><td>\$ -</td><td>\$ -</td><td>7</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>8</td><td></td><td>\$ -</td><td>\$ -</td><td>8</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>9</td><td></td><td>\$ -</td><td>\$ -</td><td>9</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>10</td><td></td><td>\$ -</td><td>\$ -</td><td>10</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>11</td><td></td><td>\$ -</td><td>\$ -</td><td>11</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>12</td><td></td><td>\$ -</td><td>\$ -</td><td>12</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>13</td><td></td><td>\$ -</td><td>\$ -</td><td>13</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>14</td><td></td><td>\$ -</td><td>\$ -</td><td>14</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>15</td><td></td><td>\$ -</td><td>\$ -</td><td>15</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>16</td><td></td><td>\$ -</td><td>\$ -</td><td>16</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>17</td><td></td><td>\$ -</td><td>\$ -</td><td>17</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>18</td><td></td><td>\$ -</td><td>\$ -</td><td>18</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>19</td><td></td><td>\$ -</td><td>\$ -</td><td>19</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>20</td><td></td><td>\$ -</td><td>\$ -</td><td>20</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>21</td><td></td><td>\$ -</td><td>\$ -</td><td>21</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>22</td><td></td><td>\$ -</td><td>\$ -</td><td>22</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>23</td><td></td><td>\$ -</td><td>\$ -</td><td>23</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>24</td><td></td><td>\$ -</td><td>\$ -</td><td>24</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>25</td><td></td><td>\$ -</td><td>\$ -</td><td>25</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>26</td><td></td><td>\$ -</td><td>\$ -</td><td>26</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>27</td><td></td><td>\$ -</td><td>\$ -</td><td>27</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>28</td><td></td><td>\$ -</td><td>\$ -</td><td>28</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>29</td><td></td><td>\$ -</td><td>\$ -</td><td>29</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>30</td><td></td><td>\$ -</td><td>\$ -</td><td>30</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>31</td><td></td><td>\$ -</td><td>\$ -</td><td>31</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>32</td><td></td><td>\$ -</td><td>\$ -</td><td>32</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>33</td><td></td><td>\$ -</td><td>\$ -</td><td>33</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>34</td><td></td><td>\$ -</td><td>\$ -</td><td>34</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>35</td><td></td><td>\$ -</td><td>\$ -</td><td>35</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>36</td><td></td><td>\$ -</td><td>\$ -</td><td>36</td><td></td><td>\$ -</td><td>\$ -</td></tr> <tr><td>37</td><td></td><td>\$ -</td><td>\$ 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Equation Annual Cost	Equation Annual Cost	Equation Annual Cost	Equation Annual Cost
Total Lane Width	# of Lanes	Analysis Period	Total Lane Width
28	2	50	28
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width
16	2	12.5 WE (4.8)	16
Rounding Agg. Width	white / >7 million	SL Mix	Rounding Agg. Width
0	No		0
Sealed/UTBWC	ML Thickness	12.5 WE (4.8)	Sealed/UTBWC
No	No		No
ML Top Lift/ft spacing		5	ML Top Lift/ft spacing
2	6		2
Design Life	Shoulder Thickness	5	Design Life
20	5		20

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Equation Annual Cost	Equation Annual Cost	Equation Annual Cost	Equation Annual Cost
Total Lane Width	# of Lanes	Analysis Period	Total Lane Width
28	2	50	28
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width
16	2	12.5 WE (4.8)	16
Rounding Agg. Width	white / >7 million	SL Mix	Rounding Agg. Width
0	No		0
Sealed/UTBWC	ML Thickness	12.5 WE (4.8)	Sealed/UTBWC
No	No		No
ML Top Lift/ft spacing		5	ML Top Lift/ft spacing
2	6		2
Design Life	Shoulder Thickness	5	Design Life
20	5		20

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Equation Annual Cost	Equation Annual Cost	Equation Annual Cost	Equation Annual Cost
Total Lane Width	# of Lanes	Analysis Period	Total Lane Width
24	2	50	24
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width
18	2	12.5 WE (4.2)	18
Rounding Agg. Width	white / >7 million	SL Mix	Rounding Agg. Width
0	No		0
Sealed/UTBWC	ML Thickness	12.5 WE (2.8)	Sealed/UTBWC
No	No		No
ML Top Lift/ft spacing		5	ML Top Lift/ft spacing
2	6		2
Design Life	Shoulder Thickness	5	Design Life
20	5		20

Segment 4					Segment 5				
SEG	Length	SEG	Length	SEG	Length				
ALT	Description	ALT	Description	ALT	Description				
1	Concrete Reconstruct	2	Concrete Reconstruct	3	Concrete				

50 Year Analysis Period

Project Number	Analysis Period
4203-50	50
Highway	Discount Rate
170	5.0%
Date	Inflation Rate
10/2017	3.5%
Performed By	Initial Cost
0.8502	

LCCA SUMMARY				
Segment #	Alternative #1	Alternative #2	Alternative #3	Level
Segment #1	35 Year Concrete - Unbound 2 Lane	20 Year Bituminous - Unbound 2 Lane	20 Year Bituminous - Unbound 2 Lane	1A.1
Segment #2	35 Year Concrete - Divided 4 Lane	20 Year Bituminous - Divided 4 Lane	20 Year Bituminous - Divided 4 Lane	3.1
Segment #3	35 Year Concrete - 4 Lane Curb and Gutter Section	20 Year Concrete - 4 Lane Curb and Gutter Section	20 Year Bituminous - 4 Lane Curb and Gutter Section	3.1
Segment #4				1.0
Project Net Present Cost	\$21,204,036.92	\$26,008,709.73	\$24,787,530.15	Total
% of Low Cost	100.0%	122.7%	116.7%	21.5

Segment 1											
Segment	Length	SSG	Length	SSG	Length	SSG	Length	SSG	Length	SSG	Length
1	14.8	1	14.8	1	14.8	1	14.8	1	14.8	1	14.8
1	Description	A1.1	Description	A1.1	Description	A1.1	Description	A1.1	Description	A1.1	Description
1	35 Year Concrete - Unbound 2 Lane	2	20 Year Concrete - Unbound 2 Lane	3	20 Year Bituminous - Unbound 2 Lane	4	20 Year Bituminous - Unbound 2 Lane	5	20 Year Bituminous - Unbound 2 Lane	6	20 Year Bituminous - Unbound 2 Lane
1	ICC	1	ICC	2	ICC	3	ICC	4	ICC	5	ICC
1	Primary Category	1	Primary Category	2	Primary Category	3	Primary Category	4	Primary Category	5	Primary Category
1	Secondary Category	1	Secondary Category	2	Secondary Category	3	Secondary Category	4	Secondary Category	5	Secondary Category
1	Design Life - 30 Years	1	Design Life - 30 Years	2	Design Life - 30 Years	3	Design Life - 30 Years	4	Design Life - 30 Years	5	Design Life - 30 Years
1	Shoulder Category	1	Shoulder Category	2	Shoulder Category	3	Shoulder Category	4	Shoulder Category	5	Shoulder Category
1	ICC	1	ICC	2	ICC	3	ICC	4	ICC	5	ICC
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
1	Construction	\$ 12,814,461.09	\$ 12,814,461.09	1	Construction	\$ 8,849,712.92	\$ 8,849,712.92	1	Construction	\$ 11,881,101.91	\$ 11,881,101.91
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				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				17				17			
18				18				18			
19				19				19			
20	1st CPM	\$ 2,901,300.88	\$ 2,370,439.22	20	1st CPM	\$ 5,076,944.65	\$ 3,900,521.32	20	MID/Overlay	\$ 3,213,486.63	\$ 2,472,138.94
21				21				21			
22				22				22			
23				23				23			
24				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				33				33			
34				34				34			
35	2nd CPM	\$ 2,894,871.76	\$ 1,829,305.00	35	R & R Mainline	\$ 6,831,029.29	\$ 4,086,151.96	35			
36				36				36			
37				37				37			
38				38				38			
39				39				39			
40				40				40			
41				41				41			
42				42				42			
43				43				43			
44				44				44			
45				45				45			
46				46				46			
47				47				47			
48				48				48			
49				49				49			
50				50				50			
Net Present Cost for Segment			\$ 14,834,459.69	Net Present Cost for Segment			\$ 18,276,189.45	Net Present Cost for Segment			\$ 17,051,584.43
Maintenance - Net Present Cost for Segment			\$ 4,000,781.24	Maintenance - Net Present Cost for Segment			\$ 4,000,781.24	Maintenance - Net Present Cost for Segment			\$ 4,000,781.24
Equipment Annual Cost			\$ 400,000.00	Equipment Annual Cost			\$ 400,000.00	Equipment Annual Cost			\$ 400,000.00
Total Lane Width			# of Lanes	Total Lane Width			# of Lanes	Total Lane Width			# of Lanes
27			2	27			2	27			2
Total Shoulder Width			# of Shoulders	Total Shoulder Width			# of Shoulders	Total Shoulder Width			# of Shoulders
17			2	17			2	17			2
Rounding Agg. Width			whichever / 2 million	Rounding Agg. Width			whichever / 2 million	Rounding Agg. Width			whichever / 2 million
0			Yes	0			Yes	0			Yes
Sealed/OTBWC			ML Thickness	Sealed/OTBWC			ML Thickness	Sealed/OTBWC			ML Thickness
No			6	No			6	No			6
ML Top Lift/TS spacing			# Dowels per Lane	ML Top Lift/TS spacing			# Dowels per Lane	ML Top Lift/TS spacing			# Dowels per Lane
15			12	15			12	15			12
Design Life			Shoulder Thickness	Design Life			Shoulder Thickness	Design Life			Shoulder Thickness
6			3	6			3	6			3

Segment 2											
Segment	Length	SSG	Length	SSG	Length	SSG	Length	SSG	Length	SSG	Length
2	5.2	1	5.2	1	5.2	1	5.2	1	5.2	1	5.2
2	Description	A1.1	Description	A1.1	Description	A1.1	Description	A1.1	Description	A1.1	Description
2	35 Year Concrete - Divided 4 Lane	2	20 Year Concrete - Divided 4 Lane	3	20 Year Bituminous - Divided 4 Lane	4	20 Year Bituminous - Divided 4 Lane	5	20 Year Bituminous - Divided 4 Lane	6	20 Year Bituminous - Divided 4 Lane
2	ICC	1	ICC	2	ICC	3	ICC	4	ICC	5	ICC
2	Primary Category	1	Primary Category	2	Primary Category	3	Primary Category	4	Primary Category	5	Primary Category
2	Secondary Category	1	Secondary Category	2	Secondary Category	3	Secondary Category	4	Secondary Category	5	Secondary Category
2	Design Life - 30 Years	1	Design Life - 30 Years	2	Design Life - 30 Years	3	Design Life - 30 Years	4	Design Life - 30 Years	5	Design Life - 30 Years
2	Shoulder Category	1	Shoulder Category	2	Shoulder Category	3	Shoulder Category	4	Shoulder Category	5	Shoulder Category
2	ICC	1	ICC	2	ICC	3	ICC	4	ICC	5	ICC
Notes:											
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
1	Construction	\$ 1,802,951.91	\$ 1,802,951.91	1	Construction	\$ 1,802,951.91	\$ 1,802,951.91	1	Construction	\$ 1,486,464.84	\$ 1,486,464.84
2				2				2			
3				3				3			
4				4				4			
5				5				5			
6				6				6			
7				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				17				17			
18				18				18			
19				19				19			
20				20				20			
21	1st CPM	\$ 1,008,797.50	\$ 776,069.08	21	1st CPM	\$ 1,675,957.74	\$ 1,289,354.20	21	MID/Overlay	\$ 1,136,054.07	\$ 874,160.02
22				22				22			
23				23				23			
24				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				33				33			
34				34				34			
35	2nd CPM	\$ 1,118,442.74	\$ 707,408.84	35	R & R Mainline	\$ 8,425,009.43	\$ 2,184,680.61	35			
36				36				36			
37				37				37			
38				38				38			
39				39				39			
40				40				40			
41				41				41			
42				42				42			
43				43				43			
44				44				44			
45				45				45			
46				46				46			
47				47				47			
48				48				48			
49</											

50-Year Analysis Period

Project Number	Analysis Period
5702-47	50
Highway	Discount Rate
1	3.2%
Date	Inflation Rate
7/15/2019	1
Performed By	Initial
KD	0.9870

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	20 yr. Reclam/Bit	20 year BCDA	35 year concrete	2.0
Net Present Cost	\$1,073,206.09	\$1,150,972.86	\$1,150,972.86	Miles
Segment #2	20 yr. Reclam/Bit	20 year BCDA	35 year concrete	13.9
Net Present Cost	\$6,130,706.12	\$15,602,143.64	\$14,453,044.21	Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$7,154,096.21</b>	<b>\$17,736,116.50</b>	<b>\$16,603,972.34</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>247.9%</b>	<b>232.1%</b>	<b>15.9</b>

Segment 1					Segment 1					Segment 1																																																																																																																																																																																																																																																																																																																																																																																																																																																		
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length																																																																																																																																																																																																																																																																																																																																																																																																																																													
1	2.0	1	2.0	1	2.0	1	2.0	1	2.0	1	2.0	1	2.0	1	2.0																																																																																																																																																																																																																																																																																																																																																																																																																																													
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1	20 yr. Reclam/Bit	2	20 yr. Reclam/Bit	3	20 yr. Reclam/Bit	4	20 yr. Reclam/Bit	5	20 yr. Reclam/Bit	6	20 yr. Reclam/Bit	7	20 yr. Reclam/Bit	8	20 yr. Reclam/Bit																																																																																																																																																																																																																																																																																																																																																																																																																																													
<table border="1"> <tr> <th>Year</th> <th>Activity</th> <th>Cost</th> <th>Present Cost</th> <th>Year</th> <th>Activity</th> <th>Cost</th> <th>Present Cost</th> </tr> <tr> <td>0</td> <td>Construction</td> <td>\$ 540,873.93</td> <td>\$ 540,873.93</td> <td>0</td> <td>Construction</td> <td>\$ 1,061,111.89</td> <td>\$ 1,061,111.89</td> </tr> <tr> <td>1</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>1</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>2</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>2</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>3</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>3</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>4</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>4</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>5</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>5</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>6</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>6</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>7</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>7</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>8</td> <td>Crack Treatment</td> <td>\$ 2,069.25</td> <td>\$ 1,877.94</td> <td>8</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>9</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>9</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>10</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>10</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>11</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>11</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>12</td> <td>Seal</td> <td>\$ 22,083.93</td> <td>\$ 19,091.27</td> <td>12</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>13</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>13</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>14</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>14</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>15</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>15</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>16</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>16</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>17</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>17</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>18</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>18</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>19</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>19</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>20</td> <td>Mil/Overlay</td> <td>\$ 337,990.88</td> <td>\$ 265,200.01</td> <td>20</td> <td>1st CPR</td> <td>\$ 550,043.44</td> <td>\$ 435,512.19</td> </tr> <tr> <td>21</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>21</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>22</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>22</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>23</td> <td>Crack Treatment</td> <td>\$ 4,127.03</td> <td>\$ 3,122.57</td> <td>23</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>24</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>24</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>25</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>25</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>26</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>26</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>27</td> <td>Seal</td> <td>\$ 13,959.84</td> <td>\$ 10,042.12</td> <td>27</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>28</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>28</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>29</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>29</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>30</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>30</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>31</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>31</td> <td>R &amp; R Mainline</td> <td>\$ 1,381,158.96</td> <td>\$ 950,943.19</td> </tr> <tr> <td>32</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>32</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>33</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>33</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>34</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>34</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>35</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>35</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>36</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>36</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>37</td> <td>Mil/Overlay</td> <td>\$ 337,990.88</td> <td>\$ 215,799.68</td> <td>37</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>38</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>38</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>39</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>39</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>40</td> <td>Crack Treatment</td> <td>\$ 4,127.03</td> <td>\$ 2,540.88</td> <td>40</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>41</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>41</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>42</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>42</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>43</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>43</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>44</td> <td>Seal</td> <td>\$ 13,959.84</td> <td>\$ 8,187.70</td> <td>44</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>45</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>45</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>46</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>46</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>47</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>47</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>48</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>48</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>49</td> <td></td> <td>\$ -</td> <td>\$ -</td> <td>49</td> <td></td> <td>\$ -</td> <td>\$ -</td> </tr> <tr> <td>50</td> <td>Remaining Life</td> <td>\$ (70,527.29)</td> <td>\$ (63,372.01)</td> <td>50</td> <td>Remaining Life</td> <td>\$ (951,921.27)</td> <td>\$ (722,812.47)</td> </tr> <tr> <td>Net Present Cost for Segment</td> <td></td> <td>\$ 1,073,206.09</td> <td></td> <td>Net Present Cost for Segment</td> <td></td> <td>\$ 1,073,206.09</td> <td></td> </tr> <tr> <td>Maintenance - Net Present Cost for Segment</td> <td></td> <td>\$ 482,516.16</td> <td></td> <td>Maintenance - Net Present Cost for Segment</td> <td></td> <td>\$ 1,073,206.09</td> <td></td> </tr> <tr> <td>Equivalent Annual Cost</td> <td></td> <td>\$ 27,462.08</td> <td></td> <td>Equivalent Annual Cost</td> <td></td> <td>\$ 27,263.93</td> <td></td> </tr> </table>					Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	0	Construction	\$ 540,873.93	\$ 540,873.93	0	Construction	\$ 1,061,111.89	\$ 1,061,111.89	1		\$ -	\$ -	1		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -	8	Crack Treatment	\$ 2,069.25	\$ 1,877.94	8		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -	12	Seal	\$ 22,083.93	\$ 19,091.27	12		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -	20	Mil/Overlay	\$ 337,990.88	\$ 265,200.01	20	1st CPR	\$ 550,043.44	\$ 435,512.19	21		\$ -	\$ -	21		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -	23	Crack Treatment	\$ 4,127.03	\$ 3,122.57	23		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -	27	Seal	\$ 13,959.84	\$ 10,042.12	27		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -	31		\$ -	\$ -	31	R & R Mainline	\$ 1,381,158.96	\$ 950,943.19	32		\$ -	\$ -	32		\$ -	\$ 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48		\$ -	\$ -	48		\$ -	\$ -																																																																																																																																																																																																																																																																																																																																																																																																																																																					
49		\$ -	\$ -	49		\$ -	\$ -																																																																																																																																																																																																																																																																																																																																																																																																																																																					
50	Remaining Life	\$ (528,688.72)	\$ (288,326.21)	50	Remaining Life	\$ (4,185,571.01)	\$ (2,283,189.74)																																																																																																																																																																																																																																																																																																																																																																																																																																																					
Net Present Cost for Segment		\$ 6,130,706.12		Net Present Cost for Segment		\$ 6,130,706.12																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Maintenance - Net Present Cost for Segment		\$ 3,251,182.24		Maintenance - Net Present Cost for Segment		\$ 6,018,844.37																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Equivalent Annual Cost		\$ 364,613.97		Equivalent Annual Cost		\$ 418,674.53																																																																																																																																																																																																																																																																																																																																																																																																																																																						

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	28	2	50	28	2	50
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix
12	2	12.5 WE (3,C)	12	2	12.5 WE (3,C)	18	2	12.5 WE (3,C)	18	2	12.5 WE (3,C)
Rounding Agg. Width	white/ >? millim	SL Mix	Rounding Agg. Width	white/ >? millim	SL Mix	Rounding Agg. Width	white/ >? millim	SL Mix	Rounding Agg. Width	white/ >? millim	SL Mix
20	No	0.5 WE (2,A)	20	No	0.5 WE (2,A)	18	No	0.5 WE (2,A)	18	No	0.5 WE (2,A)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No			No			No		
ML Top Layer spacing	5.0		ML Top Layer spacing	5.0		ML Top Layer spacing	5		ML Top Layer spacing	7	
1.5			1.5			1.5			1.5		
Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness		Design Life	Shoulder Thickness	
20	4.5		20	3.0		20	3.0		20	7	

50-Year Analysis Period

Project Number	Analysis Period
6003-34	50
Highway	Discount Rate
2	1.22%
Date	Inflation Rate
7/16/2019	1
Performed By	Ia/(1+r)
KO	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Mill, C&S, HMA	unbonded conc. Overlay	New 35 yr conc.	5.3
Net Present Cost	\$3,348,402.51	\$8,703,753.02	\$7,832,789.21	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$3,348,402.51</b>	<b>\$8,703,753.02</b>	<b>\$7,832,789.21</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>259.9%</b>	<b>233.9%</b>	<b>5.3</b>

Segment 1											
SEG 1		Length		SEG 1		Length		SEG 1		Length	
1		5.265		1		5.265		1		5.265	
ALT 1		Description		ALT 2		Description		ALT 3		Description	
1		Mill, C&S, HMA		2		unbonded conc. Overlay		3		New 35 yr conc.	
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		
Bituminous			Thick Bit.			Thick Bit.			Thick Bit.		
Notes:				Notes:				Notes:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,803,497.34	\$ 1,803,497.34	0	Construction	\$ 5,058,528.16	\$ 5,058,528.16	0	Construction	\$ 6,365,942.55	\$ 6,365,942.55
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 6,155.87	\$ 5,586.74	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 71,391.19	\$ 61,723.23	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	\$ 1,085,017.94	\$ 851,354.15	20	1st CPR	\$ 1,380,857.54	\$ 1,083,483.28	20	1st CPR	\$ 989,614.56	\$ 776,496.35
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 12,277.65	\$ 9,289.44	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 42,730.93	\$ 30,800.05	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	R & R Mainline	\$ 4,947,247.51	\$ 3,236,249.41	35	2nd CPR	\$ 1,055,337.04	\$ 690,350.31
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 1,085,017.94	\$ 692,759.67	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 12,277.65	\$ 7,558.96	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 42,730.93	\$ 25,062.46	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (255,298.34)	\$ (139,229.52)	50	Remaining Life	\$ (1,236,811.88)	\$ (674,507.83)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 3,348,402.51		Net Present Cost for Segment		\$ 8,703,753.02		Net Present Cost for Segment		\$ 7,832,789.21	
Maintenance - Net Present Cost for Segment		\$ 1,544,905.17		Maintenance - Net Present Cost for Segment		\$ 3,645,224.86		Maintenance - Net Present Cost for Segment		\$ 1,466,846.66	
Equivalent Annual Cost		89,852.45		Equivalent Annual Cost		233,560.20		Equivalent Annual Cost		210,188.38	

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
27	2	50	27	2	50	28	2	50
Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix	Total Shldr Width	# of Shldrs	ML Mix
10	2	12.5 WE (3,C)	10	2	12.5 WE (3,C)	9	2	12.5 WE (3,C)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
4	No	12.5 WE (2,B)	4	No	12.5 WE (2,B)	4	No	12.5 WE (2,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	7		No	7	
ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing		
1.5			15			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	5		20	4		35	4	



35-Year Analysis Period

Project Number	Analysis Period
COB-17	35
Highway	Discount Rate
56	3.7%
Date	Inflation Rate
7/22/2019	1
Performed By	MLT/SL
ICD	0.0879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	17 yr MII & OL	20 yr HMA	20 yr PCC	9.1
Net Present Cost	\$1,936,146.38	\$1,708,536.09	\$1,930,021.79	Miles
Segment #2	Urban MII & OL	20 yr HMA	20 yr PCC	0.4
Net Present Cost	\$141,544.33	\$170,875.84	\$487,676.88	Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$3,067,660.66</b>	<b>\$7,279,411.89</b>	<b>\$12,046,698.61</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>237.3%</b>	<b>392.7%</b>	<b>9.4</b>

Segment 1				Segment 1				Segment 1							
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	9.079	1	9.079	1	9.079	1	9.079	1	9.079	1	9.079	1	9.079		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	17 yr MII & OL	2	20 yr HMA	3	20 yr PCC	4	20 yr HMA	5	20 yr PCC	6	20 yr HMA	7	20 yr PCC		
Pavement Type: HMA				Pavement Type: HMA				Pavement Type: PCC							
Primary Category: Overlay				Primary Category: 2 1/2" Joint Sealing				Primary Category: 2 1/2" Joint Sealing							
Secondary Category: Rural				Secondary Category: Rural				Secondary Category: Urban							
Shoulder Category: Bituminous				Shoulder Category: Bituminous				Shoulder Category: PCC							
Notes:				Notes:				Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,974,284.79	\$ 1,974,284.79	0	Construction	\$ 5,757,774.95	\$ 5,757,774.95	0	Construction	\$ 9,644,817.04	\$ 9,644,817.04	0	Construction	\$ 221,965.11	\$ 221,965.11
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 18,784.28	\$ 18,113.22	3		\$ -	\$ -	3	Crack Treatment	\$ 724.14	\$ 698.27	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 64,736.04	\$ 59,467.79	7	Crack Treatment	\$ 9,418.22	\$ 8,547.48	7	Seal	\$ 2,495.61	\$ 2,292.51	7	Crack Treatment	\$ 363.08	\$ 329.51
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11	Seal	\$ 105,619.59	\$ 91,316.33	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12		\$ -	\$ -	12	Seal	\$ 4,071.69	\$ 3,520.29
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17	MI/Overlay	\$ 1,539,087.86	\$ 1,252,378.93	17		\$ -	\$ -	17	MI/Overlay	\$ 68,321.11	\$ 55,593.92	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Crack Treatment	\$ 18,784.28	\$ 14,739.00	20	MI/Overlay	\$ 1,540,264.13	\$ 1,208,560.91	20	Crack Treatment	\$ 724.14	\$ 568.30	20	MI/Overlay	\$ 60,857.57	\$ 47,359.28
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23	Crack Treatment	\$ 18,784.28	\$ 14,212.45	23		\$ -	\$ -	23	Crack Treatment	\$ 724.14	\$ 547.90
24	Seal	\$ 64,736.04	\$ 48,389.83	24		\$ -	\$ -	24	Seal	\$ 2,495.61	\$ 1,865.45	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27	Seal	\$ 64,736.04	\$ 46,661.12	27		\$ -	\$ -	27	Seal	\$ 2,495.61	\$ 1,798.81
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -	32		\$ -	\$ -
33	MI/Overlay	\$ 1,537,030.67	\$ 1,030,133.58	33		\$ -	\$ -	33	MI/Overlay	\$ 78,621.79	\$ 52,693.32	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (1,332,093.24)	\$ (871,390.80)	35	Remaining Life	\$ (181,207.55)	\$ (118,537.19)	35	Remaining Life	\$ (68,138.88)	\$ (44,573.15)	35	Remaining Life	\$ (7,100.88)	\$ (4,645.06)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 2,926,136.33				\$ 2,008,536.05				\$ 11,559,021.71				\$ 487,676.88			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 1,551,811.55				\$ 1,350,763.10				\$ 1,914,204.69				\$ 54,088.81			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
103,220.40				247,220.05				407,720.99				17,203.05			
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 Shoulder Width	# of Shoulders	ML Mix		Total Shoulder Width	# of Shoulders	ML Mix		Total Shoulder Width	# of Shoulders	ML Mix		Total Shoulder Width	# of Shoulders	ML Mix	
12	2	12.5 WE (1,C)		12	2	12.5 WE (1,C)		12	2	12.5 WE (1,C)		12	2	12.5 WE (1,C)	
Rounding Agg. Width	white/ >7 millim	SL Mix		Rounding Agg. Width	white/ >7 millim	SL Mix		Rounding Agg. Width	white/ >7 millim	SL Mix		Rounding Agg. Width	white/ >7 millim	SL Mix	
4	No	12.5 WE (1,C)		4	No	12.5 WE (1,C)		4	No	12.5 WE (1,C)		4	No	12.5 WE (1,C)	
Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness			Sealed/UTBWC	ML Thickness		
No				No				No				No			
ML Top Layer spacing				ML Top Layer spacing				ML Top Layer spacing				ML Top Layer spacing			
1.5				1.5				1.5				1.5			
Design Life	Shoulder Thickness			Design Life	Shoulder Thickness			Design Life	Shoulder Thickness			Design Life	Shoulder Thickness		
17	5			20	5			17	5			20	5		

Segment 2				Segment 2				Segment 2							
SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length	SEG	Length		
1	15	1	15	1	15	1	15	1	15	1	15	1	15		
ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description	ALT	Description		
1	Urban MII & OL	2	20 yr HMA	3	20 yr PCC	4	20 yr HMA	5	20 yr PCC	6	20 yr HMA	7	20 yr PCC		
Pavement Type: HMA				Pavement Type: HMA				Pavement Type: PCC							
Primary Category: Overlay				Primary Category: 2 1/2" Joint Sealing				Primary Category: 2 1/2" Joint Sealing							
Secondary Category: Urban				Secondary Category: Urban				Secondary Category: Urban							
Shoulder Category: Thick Bit.				Shoulder Category: Thick Bit.				Shoulder Category: PCC							
Notes:				Notes:				Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 72,406.01	\$ 72,406.01	0	Construction	\$ 221,965.11	\$ 221,965.11	0	Construction	\$ 433,588.06	\$ 433,588.06	0	Construction	\$ 433,588.06	\$ 433,588.06
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 724.14	\$ 698.27	3		\$ -	\$ -	3	Crack Treatment	\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 2,495.61	\$ 2,292.51	7	Crack Treatment	\$ 363.08	\$ 329.51	7	Seal	\$ 4,071.69	\$ 3,520.29	7	Crack Treatment	\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12	Seal	\$ 4,071.69	\$ 3,520.29	12		\$ -	\$ -	12		\$ -	\$ -
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17	MI/Overlay	\$ 68,321.11	\$ 55,593.92	17		\$ -	\$ -	17	MI/Overlay	\$ 60,857.57	\$ 47,359.28	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20	Crack Treatment	\$ 724.14	\$ 568.30	20	1st CPR	\$ 2,439,579.84	\$ 1,914,204.69	20	Crack Treatment	\$ -	\$ -	20	1st CPR	\$ 68,914.11	\$ 54,088.81
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -	21			

35-Year Analysis Period

Project Number	Analysis Period
6605-37	35
Highway	Discount Rate
21	1.22%
Date	Inflation Rate
4/10/2019	1
Performed By	la/(1+r)
trm	0.9879

TH 21 From 1.7 Mi. N. I-35 to TH 99

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Medium Bit. Mill and Overlay-15 YR FIX	Whitetopping-20 YR FIX	Heavy Bit. Mill and Overlay-20 YR FIX	8.1
Net Present Cost	\$3,037,505.85	\$4,362,481.34	\$3,167,191.94	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$3,037,505.85</b>	<b>\$4,362,481.34</b>	<b>\$3,167,191.94</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>143.6%</b>	<b>104.3%</b>	<b>8.1</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	8.1	1	8.1	1	8.1						
ALT	Description	ALT	Description	ALT	Description						
1	Medium Bit. Mill and Overlay-15 YR FIX	2	Whitetopping-20 YR FIX	3	Heavy Bit. Mill and Overlay-20 YR FIX						
Pavement Type	HMA	Pavement Type	PCC	Pavement Type	HMA						
Primary Category	Overlay	Primary Category	> 11' Joint Spacing	Primary Category	20-year HMA						
Secondary Category	Rural	Secondary Category	Design Life = 20 years	Secondary Category	Rural						
Shoulder Category	Bituminous	Shoulder Category	PCC	Shoulder Category	Bituminous						
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,278,307.76	\$ 1,278,307.76	0	Construction	\$ 2,991,265.18	\$ 2,991,265.18	0	Construction	\$ 1,944,323.79	\$ 1,944,323.79
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3	Crack Treatment	\$ 16,768.94	\$ 16,169.87	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7	Seal	\$ 69,794.39	\$ 64,114.49	7		\$ -	\$ -	7		\$ -	\$ -
8		\$ -	\$ -	8		\$ -	\$ -	8	Crack Treatment	\$ 8,407.75	\$ 7,630.43
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12		\$ -	\$ -	12		\$ -	\$ -	12	Seal	\$ 106,492.40	\$ 92,070.95
13		\$ -	\$ -	13		\$ -	\$ -	13		\$ -	\$ -
14		\$ -	\$ -	14		\$ -	\$ -	14		\$ -	\$ -
15	Mill/Overlay	\$ 1,350,750.27	\$ 1,126,108.06	15		\$ -	\$ -	15		\$ -	\$ -
16		\$ -	\$ -	16		\$ -	\$ -	16		\$ -	\$ -
17		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18	Crack Treatment	\$ 16,768.94	\$ 13,480.67	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20	1st CPR	\$ 1,747,561.96	\$ 1,371,216.16	20	Mill/Overlay	\$ 1,498,082.02	\$ 1,175,462.92
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22	Seal	\$ 69,794.39	\$ 53,451.66	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23	Crack Treatment	\$ 16,768.94	\$ 12,687.61
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27		\$ -	\$ -	27		\$ -	\$ -	27	Seal	\$ 69,794.39	\$ 50,307.13
28		\$ -	\$ -	28		\$ -	\$ -	28		\$ -	\$ -
29	Mill/Overlay	\$ 1,350,750.27	\$ 950,279.60	29		\$ -	\$ -	29		\$ -	\$ -
30		\$ -	\$ -	30		\$ -	\$ -	30		\$ -	\$ -
31		\$ -	\$ -	31		\$ -	\$ -	31		\$ -	\$ -
32	Crack Treatment	\$ 16,768.94	\$ 11,375.82	32		\$ -	\$ -	32		\$ -	\$ -
33		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35	Remaining Life	\$ (727,327.07)	\$ (475,782.10)	35	Remaining Life	\$ -	\$ -	35	Remaining Life	\$ (176,244.94)	\$ (115,290.90)
Net Present Cost for Segment		\$ 3,037,505.85		Net Present Cost for Segment		\$ 4,362,481.34		Net Present Cost for Segment		\$ 3,167,191.94	
Maintenance - Net Present Cost for Segment		\$ 1,759,198.09		Maintenance - Net Present Cost for Segment		\$ 1,371,216.16		Maintenance - Net Present Cost for Segment		\$ 1,222,868.14	
Equivalent Annual Cost		107,149.73		Equivalent Annual Cost		153,888.98		Equivalent Annual Cost		111,724.48	

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 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,B)	0	2		4	2	12.5 WE (3,B)
Rounding Agg. Width	white/>7 milliom	SL Mix	Rounding Agg. Width	white/>7 milliom	SL Mix	Rounding Agg. Width	white/>7 milliom	SL Mix
3	No	12.5 WE (3,B)	3	Yes		3	No	12.5 WE (3,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			Yes	6		No		
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
1.5			15			2		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
15	3		20	0		20	5	

50-Year Analysis Period

Project Number	Analysis Period
6810-11	50
Highway	Discount Rate
313	1.22%
Date	Inflation Rate
6/6/2019 updated 6/18/19	1
Performed By	la/(1+r)
KO	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	Reclaim	20 yr Concrete	35 Yr Concrete	0.8
Net Present Cost	\$942,665.25	\$2,103,435.24	\$1,726,190.22	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$942,665.25</b>	<b>\$2,103,435.24</b>	<b>\$1,726,190.22</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>223.1%</b>	<b>183.1%</b>	<b>0.8</b>

Segment 1											
SEG	Length	ALT	Description	SEG	Length	ALT	Description	SEG	Length	Description	
1	0.816	1	Reclaim	1	0.816	2	20 yr Concrete	3	0.816	35 Yr Concrete	
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		> 11' Joint Spacing		> 11' Joint Spacing		> 11' Joint Spacing		> 11' Joint Spacing		> 11' Joint Spacing	
Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category		Secondary Category	
Rural		Design Life = 20 years		Design Life = 20 years		Design Life = 20 years		Design Life = 35 years		Design Life = 35 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:			
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 549,846.98	\$ 549,846.98	0	Construction	\$ 1,426,776.37	\$ 1,426,776.37	0	Construction	\$ 1,426,776.37	\$ 1,426,776.37
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 1,280.14	\$ 1,161.79	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 17,081.03	\$ 14,767.88	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	\$ 278,865.76	\$ 218,810.69	20	1st CPR	\$ 299,816.58	\$ 235,249.65	20	1st CPR	\$ 224,218.60	\$ 175,932.06
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 2,553.20	\$ 1,931.79	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 9,415.31	\$ 6,786.46	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	\$ 852,451.57	\$ 557,632.48	35	2nd CPR	\$ 188,766.35	\$ 123,481.79
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 278,865.76	\$ 178,049.55	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 2,553.20	\$ 1,571.92	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 9,415.31	\$ 5,522.25	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (65,615.47)	\$ (35,784.06)	50	Remaining Life	\$ (213,112.89)	\$ (116,223.27)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 942,665.25				\$ 2,103,435.24				\$ 1,726,190.22			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 392,818.26				\$ 676,658.87				\$ 299,413.85			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
25,295.88				56,444.47				46,321.32			

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
36	3	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
6	2	12.5 WE (3,C)	6	2	12.5 WE (3,C)	6	2	12.5 WE (3,C)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
10	No	12.5 WE (3,C)	10	No	12.5 WE (2,A)	10	No	12.5 WE (2,A)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			No	7		No	7	
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			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	4.5		7	7		7	7	

50-Year Analysis Period

Project Number	Analysis Period
7011-29	50
Highway	Discount Rate
	1.22%
Date	Inflation Rate
	1
Performed By	la/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	SFDR + BIT OL	35 Year Whitetopping	20 Year Whitetopping	6.9
Net Present Cost	\$6,068,579.02	\$8,070,784.51	\$9,513,553.56	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$6,068,579.02</b>	<b>\$8,070,784.51</b>	<b>\$9,513,553.56</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>133.0%</b>	<b>156.8%</b>	<b>6.9</b>

Segment 1											
SEG	Length			SEG	Length			SEG	Length		
1	6.909			1	6.909			1	6.909		
ALT	Description			ALT	Description			ALT	Description		
1	SFDR + BIT OL			2	35 Year Whitetopping			3	20 Year Whitetopping		
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 = 35 years				Design Life = 20 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	\$ 3,303,640.28	\$ 3,303,640.28	0	Construction	\$ 6,317,066.12	\$ 6,317,066.12	0	Construction	\$ 5,335,115.93	\$ 5,335,115.93
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 7,176.06	\$ 6,512.62	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	\$ 2,231,845.84	\$ 1,751,207.20	20	1st CPR	\$ 1,102,892.64	\$ 865,379.46	20	1st CPR	\$ 1,677,744.83	\$ 1,316,434.48
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 14,312.38	\$ 10,828.95	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	2nd CPR	\$ 1,358,001.83	\$ 888,338.94	35	R & R Mainline	\$ 5,527,114.07	\$ 3,615,570.00
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 1,935,829.83	\$ 1,235,984.03	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 14,312.38	\$ 8,811.68	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	\$ (455,489.37)	\$ (248,405.72)	50	Remaining Life	\$ -	\$ -	50	Remaining Life	\$ (1,381,778.52)	\$ (753,566.85)
Net Present Cost for Segment				Net Present Cost for Segment				Net Present Cost for Segment			
\$ 6,068,579.02				\$ 8,070,784.51				\$ 9,513,553.56			
Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment				Maintenance - Net Present Cost for Segment			
\$ 2,764,938.74				\$ 1,753,718.40				\$ 4,178,437.63			
Equivalent Annual Cost				Equivalent Annual Cost				Equivalent Annual Cost			
162,846.82				216,574.85				255,290.73			

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 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
3	No	12.5 WE (3,C)	3	Yes	12.5 WE (3,C)	3	Yes	12.5 WE (3,C)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
Yes			Yes	8		Yes	6.5	
ML Top Lift/It spacing			ML Top Lift/It spacing			ML Top Lift/It spacing		
2.5			15			12		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	5		35	8		20	6.5	

50-Year Analysis Period

Project Number	Analysis Period
7201-119	50
Highway	Discount Rate
	1.22%
Date	Inflation Rate
	1
Performed By	la/(1+r)
	0.9879

Notes:

LCCA SUMMARY				
	Alternate #1	Alternate #2	Alternate #3	Length
Segment #1	CIR	Whitetopping	UBOL	6.3
Net Present Cost	\$3,283,992.11	\$4,892,121.71	\$4,790,902.75	Miles
Segment #2				0.0
Net Present Cost				Miles
Segment #3				0.0
Net Present Cost				Miles
Segment #4				0.0
Net Present Cost				Miles
<b>Project Net Present Cost</b>	<b>\$3,283,992.11</b>	<b>\$4,892,121.71</b>	<b>\$4,790,902.75</b>	<b>Total</b>
<b>% of Low Cost</b>	<b>100.0%</b>	<b>149.0%</b>	<b>145.9%</b>	<b>6.3</b>

Segment 1											
SEG	Length	SEG	Length	SEG	Length						
1	6.3	1	6.3	1	6.3						
ALT	Description	ALT	Description	ALT	Description						
1	CIR	2	Whitetopping	3	UBOL						
Pavement Type		Pavement Type		Pavement Type							
HMA		PCC		PCC							
Primary Category		Primary Category		Primary Category							
20-year HMA		6'x6', 5.5 in. or Thicker		> 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		Aggregate		Aggregate							
Notes:		Notes:		Notes:							
Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 1,837,671.63	\$ 1,837,671.63	0	Construction	\$ 2,703,634.90	\$ 2,703,634.90	0	Construction	\$ 3,410,963.11	\$ 3,410,963.11
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	7		\$ -	\$ -	7		\$ -	\$ -
8	Crack Treatment	\$ 6,545.94	\$ 5,940.75	8		\$ -	\$ -	8		\$ -	\$ -
9		\$ -	\$ -	9		\$ -	\$ -	9		\$ -	\$ -
10		\$ -	\$ -	10		\$ -	\$ -	10		\$ -	\$ -
11		\$ -	\$ -	11		\$ -	\$ -	11		\$ -	\$ -
12	Seal	\$ 65,489.40	\$ 56,620.67	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	\$ 1,018,830.09	\$ 799,420.17	20	1st CPR	\$ 1,301,720.82	\$ 1,021,389.04	20	1st CPR	\$ 863,345.37	\$ 677,419.83
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23	Crack Treatment	\$ 13,055.62	\$ 9,878.07	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	24		\$ -	\$ -	24		\$ -	\$ -
25		\$ -	\$ -	25		\$ -	\$ -	25		\$ -	\$ -
26		\$ -	\$ -	26		\$ -	\$ -	26		\$ -	\$ -
27	Seal	\$ 35,690.87	\$ 25,725.64	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	\$ 2,470,755.12	\$ 1,616,248.19	35	2nd CPR	\$ 1,073,940.51	\$ 702,519.80
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37	Mill/Overlay	\$ 1,018,830.09	\$ 650,500.21	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40	Crack Treatment	\$ 13,055.62	\$ 8,037.93	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44	Seal	\$ 35,690.87	\$ 20,933.34	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50	Remaining Life	\$ (239,724.73)	\$ (130,736.30)	50	Remaining Life	\$ (823,585.04)	\$ (449,150.41)	50	Remaining Life	\$ -	\$ -
Net Present Cost for Segment		\$ 3,283,992.11		Net Present Cost for Segment		\$ 4,892,121.71		Net Present Cost for Segment		\$ 4,790,902.75	
Maintenance - Net Present Cost for Segment		\$ 1,446,320.48		Maintenance - Net Present Cost for Segment		\$ 2,188,486.81		Maintenance - Net Present Cost for Segment		\$ 1,379,939.63	
Equivalent Annual Cost		88,124.04		Equivalent Annual Cost		131,277.27		Equivalent Annual Cost		128,561.11	

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 (3,B)	4	2	12.5 WE (3,B)	4	2	12.5 WE (3,B)
Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix	Rounding Agg. Width	white/ >7 milliom	SL Mix
20	No	12.5 WE (3,B)	16	Yes	12.5 WE (3,B)	16	Yes	12.5 WE (3,B)
Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness		Sealed/UTBWC	ML Thickness	
No			Yes	6.0		Yes	6.5	
ML Top Lift/ft spacing			ML Top Lift/ft spacing			ML Top Lift/ft spacing		
1.5			6			15		
Design Life	Shldr Thickness		Design Life	Shldr Thickness		Design Life	Shldr Thickness	
20	3		20	6.0		35	6.5	

50 Year Analysis Period

Project Number	Analysis Period
7503-38	50
Highway	Discount Rate
10-28	1.2%
Date	Inflation Rate
7/26/2019	
Performed By	Reviewed By
Naresh Ravipati	0-8/19

Notes:	
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LCCA SUMMARY				
Segment #1	Alternate #1	Alternate #2	Alternate #3	Length
1	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.4
2	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
3	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
4	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
5	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
6	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
7	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
8	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
9	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
10	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
11	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
12	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
13	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
14	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
15	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
16	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
17	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
18	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
19	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
20	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
21	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
22	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
23	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
24	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
25	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
26	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
27	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
28	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
29	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
30	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
31	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
32	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
33	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
34	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
35	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
36	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
37	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
38	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
39	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
40	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
41	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
42	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
43	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
44	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
45	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
46	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
47	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
48	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
49	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
50	3" Mill & 3" Overlay	3" Mill & 3" Overlay	3" Mill & 3" Overlay	0.3
Net Present Cost for Segment		\$ 119,927.62		\$ 119,927.62
Maintenance - Net Present Cost for Segment		\$ 110,836.17		\$ 110,836.17
Equivalent Annual Cost		\$ 3,399.57		\$ 3,399.57

Segment 1

SSG	Length	SSG	Length	SSG	Length
ALT	Description	ALT	Description	ALT	Description
1	3" Mill & 3" Overlay	2	3" Mill & 3" Overlay	3	3" Mill & 3" Overlay
Pavement Type		Pavement Type		Pavement Type	
HMA		HMA		HMA	
Primary Category		Primary Category		Primary Category	
20 year HMA		20 year HMA		20 year HMA	
Secondary Category		Secondary Category		Secondary Category	
Rural		Rural		Rural	
Shoulder Category		Shoulder Category		Shoulder Category	
Shoulder		Shoulder		Shoulder	
Notes:		Notes:		Notes:	

Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost	Year	Activity	Cost	Present Cost
0	Construction	\$ 89,956.52	\$ 89,956.52	0	Construction	\$ 104,738.83	\$ 104,738.83	0	Construction	\$ 105,336.84	\$ 105,336.84
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	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		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -
20		\$ -	\$ -	20		\$ -	\$ -	20		\$ -	\$ -
21		\$ -	\$ -	21		\$ -	\$ -	21		\$ -	\$ -
22		\$ -	\$ -	22		\$ -	\$ -	22		\$ -	\$ -
23		\$ -	\$ -	23		\$ -	\$ -	23		\$ -	\$ -
24		\$ -	\$ -	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		\$ -	\$ -	33		\$ -	\$ -	33		\$ -	\$ -
34		\$ -	\$ -	34		\$ -	\$ -	34		\$ -	\$ -
35		\$ -	\$ -	35		\$ -	\$ -	35		\$ -	\$ -
36		\$ -	\$ -	36		\$ -	\$ -	36		\$ -	\$ -
37		\$ -	\$ -	37		\$ -	\$ -	37		\$ -	\$ -
38		\$ -	\$ -	38		\$ -	\$ -	38		\$ -	\$ -
39		\$ -	\$ -	39		\$ -	\$ -	39		\$ -	\$ -
40		\$ -	\$ -	40		\$ -	\$ -	40		\$ -	\$ -
41		\$ -	\$ -	41		\$ -	\$ -	41		\$ -	\$ -
42		\$ -	\$ -	42		\$ -	\$ -	42		\$ -	\$ -
43		\$ -	\$ -	43		\$ -	\$ -	43		\$ -	\$ -
44		\$ -	\$ -	44		\$ -	\$ -	44		\$ -	\$ -
45		\$ -	\$ -	45		\$ -	\$ -	45		\$ -	\$ -
46		\$ -	\$ -	46		\$ -	\$ -	46		\$ -	\$ -
47		\$ -	\$ -	47		\$ -	\$ -	47		\$ -	\$ -
48		\$ -	\$ -	48		\$ -	\$ -	48		\$ -	\$ -
49		\$ -	\$ -	49		\$ -	\$ -	49		\$ -	\$ -
50		\$ -	\$ -	50		\$ -	\$ -	50		\$ -	\$ -
Net Present Cost for Segment		\$ 200,892.19		Net Present Cost for Segment		\$ 234,212.72		Net Present Cost for Segment		\$ 234,212.72	
Maintenance - Net Present Cost for Segment		\$ 110,836.17		Maintenance - Net Present Cost for Segment		\$ 122,355.37		Maintenance - Net Present Cost for Segment		\$ 122,355.37	
Equivalent Annual Cost		\$ 3,399.57		Equivalent Annual Cost		\$ 4,007.95		Equivalent Annual Cost		\$ 4,007.95	

Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period	Total Lane Width	# of Lanes	Analysis Period
20	2	50	20	2	50	20	2	50
Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix	Total Shoulder Width	# of Shoulders	ML Mix
0	0	12.5 WE (3.8)	0	0	12.5 WE (3.8)	0	0	12.5 WE (3.8)
Rounding Agg. Width	wh/ty /7 million	SL Mix	Rounding Agg. Width	wh/ty /7 million	SL Mix	Rounding Agg. Width	wh/ty /7 million	SL Mix
3	No	12.5 WE (3.8)	3	No	12.5 WE (3.8)	3	No	12.5 WE (3.8)
Sealed/UTBWC	ML Thickness	No	Sealed/UTBWC	ML Thickness	No	Sealed/UTBWC	ML Thickness	No
No	No	ML Top LIFT/spacing	No	No	ML Top LIFT/spacing	No	No	ML Top LIFT/spacing
1.5	1.5	Design Life	1.5	1.5	Design Life	1.5	1.5	Design Life
20	7	SHdr Thickness	20	7	SHdr Thickness	20	7	SHdr Thickness

Segment 3

SSG	Length	SSG	Length	SSG	Length
ALT	Description	ALT	Description	ALT	Description
1	3" Mill & 3" Overlay	2	Inbound Concrete Overlay	3	Inbound Concrete Overlay
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: 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	\$ 2,873,664.85	\$ 2,873,664.85	0	Construction	\$ 4,833,896.84	\$ 4,833,896.84	0	Construction	\$ 6,052,440.97	\$ 6,052,440.97
1		\$ -	\$ -	1		\$ -	\$ -	1		\$ -	\$ -
2		\$ -	\$ -	2		\$ -	\$ -	2		\$ -	\$ -
3		\$ -	\$ -	3		\$ -	\$ -	3		\$ -	\$ -
4		\$ -	\$ -	4		\$ -	\$ -	4		\$ -	\$ -
5		\$ -	\$ -	5		\$ -	\$ -	5		\$ -	\$ -
6		\$ -	\$ -	6		\$ -	\$ -	6		\$ -	\$ -
7		\$ -	\$ -	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		\$ -	\$ -	17		\$ -	\$ -	17		\$ -	\$ -
18		\$ -	\$ -	18		\$ -	\$ -	18		\$ -	\$ -
19		\$ -	\$ -	19		\$ -	\$ -	19		\$ -	\$ -



# Appendix C: Copies of LCCA Exceptions

# Office Memorandum

**TO:** Curt Turgeon  
Pavement Engineer

**FROM:** Jim Bittmann, District 2,  
Materials Engineer

**DATE:** January 8th, 2019

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

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<b>SP #</b>	6004-26
<b>Highway #</b>	2
<b>Project Limits</b>	RP 42.206 to RP 56.463 East bound lanes
<b>Project Description</b>	The project will involve the reconstruction of a 14.257 mile stretch of two Eastbound Lanes on U.S. Highway 2. The segment will be reconstructed with 7 inch depth non-reinforced PCC.

## LCCA Results

<b>Alternative</b>	<b>Design Life</b>	<b>Total Present Cost</b>	<b>Requested Selection</b>	<b>% of Low Cost</b>
New 20-year Bituminous	20	\$13,582,774	No	100.00
New 35-year PCC	35	\$19,920,203	Yes	146.70
White Topping 20-year	20	\$18,600,224	No	136.95

## Reason for Request

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

Chapter 3 funding was provided to the District and this project was selected for an up scope to a 35-year fix.

This roadway was always planned to be a concrete pavement job however with the requirement to complete a LCCA a bituminous option proved to be less cost. However it is district management opinion that this project should remain a concrete job to ensure the quality and longevity of the Hwy 2 system.

The roadway was graded in 1924 and paved in 1931 with 9"-7"-9" x 20' wide concrete and overlaid with bituminous in 1968. The roadway was widen with a bituminous widening block and a bituminous overlay in 1968. A 2.5" bituminous overlay was done in 1984 and the last rehab consisted of 3.0" mill and 3.0" HMA overlay in 2002.

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**District Engineer**

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**Date**

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**Pavement Engineer**

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**Date**