

## 2021 Pavement Management Program Update Report

**Prepared for:** 



## **INFRASTRUCTURE CONSULTING GROUP**

1825 Dahlia Dr. Cumming, GA 30040 Tel: 678.762.2187 <u>Email: info@infrastructureconsultinggroup.com</u> www.infrastructureconsultinggroup.com

August 26, 2021



## **TABLE OF CONTENTS**

1	INTR	ODUCTION1							
	1.1	Background 1							
	1.2	Pavement Management Overview							
	1.3	Project Objectives							
	1.4	Project Approach							
2	PAVI	EMENT MANAGEMENT SYSTEM OVERVIEW							
	2.1	Objective							
	2.2	StreetSaver PMS Overview							
	2.3	Updating the City's Inventory and StreetSaver PMS							
3	PAVI	EMENT CONDITION INSPECTION							
	3.1	Objective							
	3.2	PCI Procedure							
	3.3	Existing Pavement Conditions and Field Observations							
4	BUD	GET ANALYSIS							
5	SUM	MARY AND RECOMMENDATIONS							
	5.1	Summary							
	5.2	Recommendations							
	5. 5.	<ul> <li>2.1 Perform Regular Pavement Condition Inspections</li></ul>							
6	APPE	NDIX A-PCI MAP							
7	APPE	NDIX B-DECISION TREE							
8	APPE	NDIX C-BUDGET NEEDS							
9	APPE	APPENDIX D-SCENARIO-INCREASE PCI BY 5 POINTS							
10	APPE	NDIX E-SCENARIO-KEEP CURRENT FUNDING LEVEL (1.5M/YEAR)							
11	APPE	NDIX F-SCENARIO-MAINTAIN CURRENT PCI							

12 APPENDIX F-SECTIONS SELECTED FOR TREATMENT (CURRENT FUNDING)



## **1 INTRODUCTION**

#### 1.1 Background

Infrastructure Consulting Group. (ICG), at the request of the City of Lincoln (City), performed pavement condition survey on the roadway network of the City. The City is located in Placer County, California, part of the Sacramento metropolitan area. For this contract, ICG inspected the City's roadway network approximately 320 centerline miles of roadway. The majority of the City's pavement inventory is asphalt concrete (AC).

#### 1.2 Pavement Management Overview

Pavement management is a systematic approach to forecasting pavement M&R requirements and then optimizing and prioritizing available M&R funding. As shown in Figure 1, the primary objective of pavement management is to preserve pavements in good condition rather than wait for them to fail and then reconstruct them.



Figure 1: Pavement preservation.

When the appropriate preventive M&R treatments (e.g., crack sealing, seal coats, etc.) are applied at the correct times during the pavement service life, these relatively inexpensive preventive M&R treatments can significantly extend the service life of the pavement, as shown in Figure 2.



Figure 2: Increasing price and decreasing relative benefit of M&R as a function of pavement condition. (*Note: Illustrative prices only*)

As pavement management concepts have gained traction, computer-based pavement management systems (PMS) have been developed to assist agencies in optimally managing their pavements. PMS currently rely on a comprehensive pavement inventory, regular pavement condition assessments, pavement performance modeling, and sophisticated analysis tools that forecast future pavement condition and estimate future M&R needs.

## 1.3 **Project Objectives**

The primary objective of this project is to determine the state of streets pavement condition in the form of Pavement Condition Index (PCI) so that the City can objectively assess the condition of its roadway pavements, better optimize and prioritize the expenditure of its existing M&R funding, and effectively identify and justify its future roadway pavement M&R funding needs. The ICG's scope for this phase is to perform pavement inspection and report pavement condition for each section, perform budget analysis and provide a summary report of the findings.

## 1.4 Project Approach

In order to successfully accomplish the objectives of this project, ICG performed the following tasks:

- 1. Pavement Condition Index (PCI) inspection Performed a network-level PCI inspection of the City's roadway pavements
- 2. PMS database update Update the StreetSaver PMS database for the City's roadway pavement network
- 3. Generate and update the City's Geographical Information System (GIS) shapefile A color coded map showing each evaluated street's PCI value for the City's roadway pavement network.
- 4. Perform different budget scenarios and provide a summary report

These tasks and their outcomes are described in the following sections.



## 2 PAVEMENT MANAGEMENT SYSTEM OVERVIEW

## 2.1 **Objective**

The objective of this task was to update the PMS database and perform pavement condition inspections for the City streets. The intent is for the City to use the system to better manage its roadway pavement network. The City is currently using the StreetSaver software to manage its roadway pavement network.



## 2.2 StreetSaver PMS Overview

The StreetSaver PMS helps agencies determine when, where, and what level of pavement M&R is required and approximately how much it will cost. The system provides a suite of pavement management software tools that assist agencies in: (1) developing and organizing their pavement inventory; (2) assessing the current condition of their pavements; (3) predict future pavement condition using deterioration curves; (4) reporting on past and future pavement performance; (5) developing scenarios for M&R based on either budget or condition requirements; and (6) planning M&R projects. The primary StreetSaver modules include:

- Pavement Sections
- GIS Toolbox
- Table Maintenance
- Inspections
- Budgeting
- Asset Management
- System Administration
- Utilities

The combination of all the above modules gives StreetSaver the capability to help engineers manage streets within their network. StreetSaver based PMS helps engineers, roads superintendents, public works or roads commissioners to answer the following questions:

- What does my road network consist of?
- What is the condition of my road network
- Which streets do I need to repair next year or the following year?
- When should I time repairs?
- How much money will I need to perform these repairs?
- How can I prioritize streets for repairs?

## 2.3 Updating the City's Inventory and StreetSaver PMS

ICG reviewed the City's Street GIS shapefile and compared it to the existing inventory in the StreetSaver program. The streets that were missing in the StreetSaver database were added to ensure a complete match between the shapefile and the StreetSaver program. Few additional street sections were created in the City's GIS shapefile before they were added to the StreetSaver database. Each pavement section typically represents a single "block" of pavement (i.e., intersection to intersection). Pavement sections may be thought of as "homogenous" areas of pavement to which Major M&R (e.g., resurfacing and reconstruction) would be applied. The final StreetSaver database contained approximately 2,500 pavement sections. All



data attributes that were to be included for each pavement section in the StreetSaver database, such as surface type, from/to locations (when available) were extracted from the original shapefile that was provided by the City.

## **3 PAVEMENT CONDITION INSPECTION**

## 3.1 **Objective**

The objective of the pavement condition inspection was to assess the existing condition of the roadway pavements managed by the City. This was accomplished by performing a semi-automated network-level pavement condition inspection based on the PCI method. Both the pavement condition inspection procedure and general findings of the inspection are discussed in this chapter.

## 3.2 PCI Procedure

The pavement condition survey was performed following the PCI procedure described in the modified ASTM D 6433 (**MTC PCI Distress Identification Manuals (AC 4<sup>th</sup> Ed./PCC 3<sup>rd</sup> Ed. March 2016).**). The PCI procedure is an objective and repeatable method for determining existing pavement condition. A PCI value provides an indication of the structural integrity and operational condition of a pavement section. The PCI procedure consists of a routine visual inspection, during which pavement distress types, severity levels, and quantities are identified and recorded. These data are then inputted into the PCI algorithm to calculate a PCI value. PCI values range from 0 to 100, as shown in Figure 3.



## Figure 3: PCI Inputs and the City's Condition Assessment Scale

If properly designed and constructed, a new pavement begins its service life with a PCI of 100. Due to the effects of loading and aging, a pavement deteriorates over time. For each combination of distress type, severity level, and quantity observed, points are deducted from 100, and its PCI decreases. When multiple distresses are present, the deduct values are modified such that the impact of multiple distresses is somewhat lessened. Due to the complexity of the PCI algorithm, PCI values are typically computed using a pavement management software package, such as StreetSaver.



During a PCI inspection according to the modified ASTM D 6433, eight (8) distress types are identified and evaluated for asphalt pavements and seven (7) distress types for concrete pavements, as shown in Table 1 and Table 2.

Code	Distress
01	Alligator Cracking
02	Block Cracking
03	Distortions
04	Long. & Trans. Cracking
05	Patch & Util. Cut Patch
06	Rutting/Depression
07	Raveling
08	Weathering

#### Table 1: Asphalt Pavement Distress Types

1 401	2. Concrete i avenient Distress i ypes
Code	Distress
01	Corner Break
02	Divided Slab
03	Faulting
04	Linear Cracking
05	Patching and Utility Cuts
06	Scaling/Map Cracking/Crazing
07	Spalling

#### Table 2: Concrete Pavement Distress Types

#### 3.3 Existing Pavement Conditions and Field Observations

The City's roadway network consists of approximately 320 centerline miles. The collected pavement inspection data were used to calculate a PCI value for each pavement section. Table 3 shows the PCI condition assessment criteria used to analyze the pavement network.

Category	egory Condition Assessment					
Ι		Good	70 - 100			
II (Blue) III (Yellow)	Fair (Non-load)	50 - 70				
IV		25 - 50				
V	Very p	0-25				

## Table 3: City's Pavement Condition Categories

At the time of inspection that was conducted by ICG in March 2021, the City's pavements were found to be overall in "Good" condition, with an average PCI of 76. Note that most of poor to failed pavement condition were observed in residential neighborhood near downtown. The overall remaining life for the



entire network was **22 years**. The condition distribution of the City's pavements at the time of inspection is shown in Figure 8.



Figure 4: Overall Pavement Condition Distribution by area – (a) category classification, (b) functional classification

The causes of pavement deterioration may be divided into the following three general categories: (1) Load Related, (2) Climate/Durability Related, and (3) Other. Table 4 shows the primary causes of pavement deterioration observed throughout the City's pavement network.



Distress Category	Example Distresses	Percentage of Observed Distresses
Load Related	Asphalt pavement distresses such as rutting and alligator cracking.	41%
Climate/ Durability Related	Asphalt pavement distresses such as longitudinal and transverse cracking, weathering, and block cracking.	58%
Other	Asphalt pavement distresses such as patching	1%

#### Table 4: Categorization of Observed Pavement Distresses

The deterioration observed on the City's pavements was caused primarily by a mixture of climate- and load-related distresses. The pavement condition for all of the City's streets can be viewed in the using this link below: <u>https://arcg.is/1aH5fS</u>.

## 4 **BUDGET ANALYSIS**

The objectives of a pavement M&R budget include maintaining satisfactory overall pavement conditions and reducing the deferred maintenance overtime. Doing so will eventually ensure that all pavements in the City are in good condition and are therefore being managed as cost effectively as possible through preventive maintenance and less costly and less frequent rehabilitation projects. By not addressing the maintenance needs, the quality of the road network will inevitably decline. In order to correct these deficiencies, a cost-effective funding and maintenance strategy must be implemented.

The first step in developing a cost-effective M&R strategy is to determine the maintenance "needs" of the pavement network. Using the StreetSaver® budget needs module with an inflation rate of 3%, the maintenance needs over the next 10 years were estimated at approximately \$108.2 million for the entire network. If the City follows the strategy recommended by the program, the average network PCI will be in the range of 84 to 91 over 10 years. If, however, no maintenance is applied over the next 10 years, already distressed streets will continue to deteriorate, and the network PCI will drop to 57 by 2030. The results of the budget needs analysis are summarized in Table 5 below.

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PCI Treated	91	89	87	86	85	85	84	86	86	85	-
PCI Untreated	76	73	71	69	67	65	63	61	59	57	-
Needs (\$Millions)	66.5	5.4	3.0	1.4	2.2	3.1	0.3	17.0	7.1	2.2	108.2

Table 5 Summary Results from 10 Years Needs Analysis

Out of \$108.2 Million maintenance needs shown, approximately 38% goes into preventive maintenance, while the other 62% goes into rehabilitation and reconstruction. A such high amount is earmarked into preventive maintenance due to the fact that 75.3% of the pavement area is in very good condition; and this will require preventive maintenance to stay in very good condition.

The following 10-year M&R budget analyses were performed on the City's inspected pavement sections.

• Effect of \$1.5 Annual Budget (current funding): Based on the City's annual funding of \$1.5 million per year for the next 10 years, the overall PCI will drop to 62; however, the deferred maintenance is predicted to increase to \$104 million from current 66.5 million. Annual PCI and budget summary are presented in Table 6.



Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PCI Treated	76	74	72	71	69	68	66	65	63	62	-
PCI Untreated	76	73	71	69	67	65	63	61	59	57	-
Needs (\$Millions)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	18.0

#### Table 6 Summary Results from 10 Years Currently Budget Analysis

• Required Annual Budget to Maintain Current PCI: This scenario aims to ensure that the overall pavement network PCI does not drop below 76 over the next 10 years. The deferred maintenance will decrease from \$66.5 million to \$56.7 million by 2030. Annual PCI and budget summary are presented in Table 7.

## Table 7 Summary Results from 10 Years Maintain Current PCI Analysis

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PCI Treated	76	76	76	76	76	76	76	76	76	76	-
PCI Untreated	76	73	71	69	67	65	63	61	59	57	-
Needs (\$Millions)	0.8	7.7	9.7	10.2	7.3	7.7	7.8	7.0	5.9	5.9	70.0

• Required Annual Budget to Increase Current PCI by 5 points: This scenario aims to ensure that the overall pavement network PCI does not drop below 81 over the next 10 years. The deferred maintenance will decrease from \$66.5 million to \$32.4 million by 2030. Annual PCI and budget summary are presented in Table 8.

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
PCI Treated	81	81	81	81	81	81	81	81	81	81	-
PCI Untreated	76	73	71	69	67	65	63	61	59	57	-
Needs (\$Millions)	23.2	11.3	9.0	7.3	5.8	6.4	6.6	6.0	5.7	6.3	87.6

Table 8 Summary Results from 10 Years Increase PCI by 5 points Analyses

<u>Note:</u> The term "deferred maintenance" consists of pavement maintenance that is needed but cannot be performed due to lack of funding. The deferred maintenance for the City is currently \$66.5 million. Shrinking budgets have forced many cities and counties to defer much needed pavement maintenance. By deferring maintenance, the frequency of citizens' complaints about the condition of the network increases and the cost to repair these streets rises as well.

The annual PCI and budget comparisons are shown in Figure 10 and Figure 11. Overall, higher PCI is achieved from needs analysis. The needs analysis will eliminate all differed maintenance by year 2030.





**Figure 5: PCI Comparison** 



Figure 6: Annual Budget Comparison



## 5 SUMMARY AND RECOMMENDATIONS

## 5.1 Summary

The overall pavement condition of the City streets is 76 with a remaining life of 21 years. About 75% of the City's pavements were found to be in category I (very good). While some of the City's pavements exhibited minimal distress and appear to be performing well. Some of the roads are slurry sealed; and the application of slurry can make it hard to capture some of the existing distresses, especially if the inspection is conducted right after its application.

## 5.2 Recommendations

## 5.2.1 Perform Regular Pavement Condition Inspections

In an effort to capitalize on this PCI inspection effort and better track the condition of its pavements, it is recommended that the City continue to perform PCI surveys on a two to three year cycle. Doing so will enable the City to:

- 1. Better track the deterioration of its pavements,
- 2. Develop pavement deterioration trends to better predict future pavement conditions, and
- 3. Assess the effectiveness of its pavement preservation and Major M&R activities.

While many of the City's pavement sections are currently in very good condition, the future M&R needs will increase as the City's pavements deteriorate over time. It is necessary that this deterioration be proactively and systematically monitored.

## 5.2.2 Implement Preventive Maintenance Programs for all Pavements

Based on in-the-field observations, it is evident that the City would benefit from a preventive maintenance program. While Major M&R for some of the City's pavement sections is necessary, the City should consider preserving its vast inventory of relatively newer pavements through the application of preventive maintenance activities, such as crack sealing, localized patching, and surface seal applications. Doing so will extend the life of its pavement inventory and will reduce the rate of deterioration of its pavement network. Note that preventive maintenance does not correct issues related to pavement structure failure. It was observed that crack sealing is applied to sections with fatigue cracking. Sealing the areas with fatigue failure does not solve the problem. The appropriate corrective measures should be considered for sections that exhibit fatigue cracking.

It is therefore recommended that the City develop a proactive, ongoing routine maintenance inspection and repair cycle for its pavements. For example, the City's pavements may be divided into four zones, and City maintenance staff could inspect each zone annually to identify routine maintenance needs. Following the inspection, maintenance activities may then be scheduled and executed in a timely fashion.

It is recommended that a project level structural evaluation of the streets that are selected for major rehabilitation and/or reconstruction is conducted. The project level structural evaluation will involve using a Falling Weight Deflectometer (FWD) coupled with pavement layer thicknesses and types, traffic information and a design period to determine the most cost-effective alternative.



## 6 APPENDIX A-PCI MAP





## **Pavement Section PCI**

PCI

- Very Poor < 25</p>
- 50 <= Fair < 70
- ---- Not Inspected







## 7 APPENDIX B-DECISION TREE

Printed: 8/31/2021

ArterialACI-Very GoodCrack TreatmentSEAL CRACKS\$1.00\$1.00\$1.00Image: Section TreatmentNGROSURFACINOS5.00\$7.00 <t< th=""><th>Functional Class</th><th>Surface</th><th>Condition Category</th><th>Treatment Type</th><th>Treatment</th><th>Cost/Sq Yd, except Seal Cracks in LF:</th><th>Yrs Between Crack Seals</th><th>Yrs Between Surface Seals</th><th># of Surface Seals before Overlay</th></t<>	Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Image: Surface Treatment       MICRO SURFACING       \$5.00       Image: Surface Treatment       DO NOTHING       \$6.00       Image: Surface Treatment       DO NOTHING       \$6.00       Image: Surface Treatment       DO NOTHING       \$6.00       Image: Surface Treatment       Surfa	Arterial	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	3		
Image: second				Surface Treatment	MICROSURFACING	\$5.00		7	
III-Good, Non-Load Related       2" HMA OVERLAY       \$27.00         III-Good, Load Related       2" HMA OVERLAY       \$43.00         III-Good, Load Related       3" HMA OVERLAY       \$52.00         IV-Very Por       3" HMA OVERLAY       \$52.00         AC/AC       I-Very Good       Crack Treatment       MCROSURFACING       \$50.00       7         III-Good, Non-Load Related       Surface Treatment       MCROSURFACING       \$50.00       7       200.00         III-Good, Non-Load Related       Crack Treatment       MCROSURFACING       \$50.00       7       200.00				Restoration Treatment	DO NOTHING	\$0.00			2
Imile Good, Load Related       2" HMA OVERLAY       \$43.00         Imile Good, Load Related       3" HMA OVERLAY       \$62.00         Imile Good, Very Poor       4" HMA WITH 12" FDR       \$70.00         AC/AC       Imile Very Good       Crack Treatment       \$KCRAPK1KS" SAND       \$30         AC/AC       Imile Good, Non-Load Related       Crack Treatment       MCROSURFACING       \$5.00       7         Imile Good, Non-Load Related       2" HMA OVERLAY       \$27.00       7       2         Imile Good, Load Related       2" HMA OVERLAY       \$20.00       2 <td< td=""><td></td><td></td><td>II - Good, Non-Load Related</td><td></td><td>2" HMA OVERLAY</td><td>\$27.00</td><td></td><td></td><td></td></td<>			II - Good, Non-Load Related		2" HMA OVERLAY	\$27.00			
Image: Normal set of the set			III - Good, Load Related		2" HMA OVERLAY	\$43.00			
V - Very Poor4" HMA WITH 12" FDR\$70.00AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.003AC/ACI - Very GoodCrack TreatmentMICR CRACKS\$1.003Composition TreatmentDO NOTHING\$5.0072I - Good, Non-Load RelatedDO NOTHING\$27.0072I - Good, Non-Load RelatedC* HMA OVERLAY\$27.0072I - Good, Non-Load RelatedC* HMA OVERLAY\$43.0077V - PoorStatu Carck TreatmentSHAU OVERLAY\$2.007V - Very PoorCrack TreatmentSINGLE CHIP SEAL\$7.007V - Very PoorCrack TreatmentSINGLE CHIP SEAL\$0.746I - Good, Non-Load RelatedSurface TreatmentSINGLE CHIP SEAL\$1.527I - Good, Non-Load RelatedNILL AND THICK OVERLAY\$7.23C2I - Good, Non-Load RelatedNILL AND THICK OVERLAY\$5.9511I - Good, Non-Load RelatedNEATER SCARIFY & OVERLAY\$5.9511I - Good, Non-Load RelatedNICA CONSTRUCT SURJCE SURLAY\$5.9511I - Good, Non-Load RelatedNon Construct Surget & Statu\$1.0031I - Good, Non-Load RelatedDO NOTHING\$0.00331I - Good, Non-Load RelatedDO NOTHING\$0.00331I - Good, Non-Load RelatedDO NOTHING\$0.00331I - Good, Non-Load Related </td <td></td> <td></td> <td>IV - Poor</td> <td></td> <td>3" HMA OVERLAY</td> <td>\$62.00</td> <td></td> <td></td> <td></td>			IV - Poor		3" HMA OVERLAY	\$62.00			
AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.003IISurface TreatmentMICROSURFACING\$5.007IIRestoration TreatmentDO NOTHING\$0.00\$0.007IIGood, Non-Load RelatedIHMA OVERLAY\$27.00IIIGood, Load RelatedIIMA OVERLAY\$43.00IIIGood, Load RelatedIHMA OVERLAY\$62.00IIIGood, Load RelatedIHMA OVERLAY\$62.00IIIForIIIIIIForIIIIIIIIGood, Load RelatedIIIIIIIForIIIIIIIIGood, Non-Load RelatedIIIIIIIIIIGood, Load RelatedIIIIIIIIIIGood, Load RelatedIIIIIIIIIIIGood, Non-Load RelatedIII			V - Very Poor		4" HMA WITH 12" FDR	\$70.00			
Image: Surface Treatment       MICROSURFACING       \$5.00       7         Image: Surface Treatment       DO NOTHING       \$0.00       \$0.00       2         Image: Surface Treatment       DO NOTHING       \$0.00       \$0.00       2         Image: Surface Treatment       DO NOTHING       \$0.00       \$0.00       2         Image: Surface Treatment       Image: Surface Treatment       Image: Surface Treatment       Surface Treatmen		AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	3		
IndexRestoration TreatmentDo NOTHING\$0.002IndexIndexIndexIndexStandowStando				Surface Treatment	MICROSURFACING	\$5.00		7	
III - Good, Non-Load Related       2" HMA OVERLAY       \$27.00         III - Good, Load Related       2" HMA OVERLAY       \$43.00         III - Good, Load Related       2" HMA OVERLAY       \$43.00         III - Good, Load Related       3" HMA OVERLAY       \$62.00         III - Good, Non-Load Related       3" HMA OVERLAY       \$62.00         III - Good, Non-Load Related       Crack Treatment       Skal CRACKS       \$0.60       3         III - Good, Non-Load Related       Surface Treatment       SINGLE CHIP SEAL       \$0.72       6       2         III - Good, Non-Load Related       DOUBLE CHIP SEAL       \$1.52       2				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			2
III - Good, Load Related       2" HMA OVERLAY       \$43.00         IV - Poor       G       3" HMA OVERLAY       \$62.00         V - Very Poor       4" HMA WITH 12" FDR       \$70.00         AC/PCC       I - Very Good       Crack Treatment       SEAL CRACKS       \$0.60       3         AC/PCC       I - Very Good       Crack Treatment       SINGLE CHIP SEAL       \$0.74       6       6         Image: Surface Treatment       SINGLE CHIP SEAL       \$0.74       \$6       <			II - Good, Non-Load Related		2" HMA OVERLAY	\$27.00			
Image: second			III - Good, Load Related		2" HMA OVERLAY	\$43.00			
V - Very Poor4" HMA WITH 12" FDR\$70.00AC/PCCI - Very GoodCrack TreatmentSEAL CRACKS\$0.603SUrface TreatmentSINGLE CHIP SEAL\$0.746II - Good, Non-Load RelatedMILL AND THICK OVERLAY\$7.232II - Good, Load RelatedDOUBLE CHIP SEAL\$1.521II - Good, Load RelatedHEATER SCARIFY & OVERLAY\$5.951V - PoorHEATER SCARIFY & OVERLAY\$6.141PCCI - Very PoorRECONSTRUCT SURFACE (AC)\$14.00PCCI - Very GoodCrack TreatmentDO NOTHING\$0.003II - Good, Non-Load RelatedDO NOTHING\$0.0099100II - Good, Non-Load RelatedDO NOTHING\$1.11100100II - Good, Non-Load RelatedDO NOTHING\$1.51100II - Good, Load RelatedDO NOTHING\$1.51100II - Good, Non-Load RelatedDO NOTHING\$1.51100II - Good, Vory PoorTHICK AC OVERLAY(2.5 INCHES)\$1.92 <t< td=""><td></td><td></td><td>IV - Poor</td><td></td><td>3" HMA OVERLAY</td><td>\$62.00</td><td></td><td></td><td></td></t<>			IV - Poor		3" HMA OVERLAY	\$62.00			
AC/PCCI-Very GoodCrack TreatmentSEAL CRACKS\$0.603ISurface TreatmentSINGLE CHIP SEAL\$0.746IIGood, Non-Load RelatedRestoration TreatmentMILL AND THICK OVERLAY\$7.232III-Good, Load RelatedIII-Good, Load RelatedDOUBLE CHIP SEAL\$1.5211IIII-Good, Load RelatedIII-Good, Non-Load RelatedHEATER SCARIFY & OVERLAY\$5.9511IV-PorIII-Good, Coad RelatedRECONSTRUCT SURFACE (AC)\$14.00111IV-Very PoorCrack TreatmentDO NOTHING\$0.003111IV-Very GoodCrack TreatmentDO NOTHING\$0.003100100100III-Good, Non-Load RelatedDO NOTHING\$0.00100			V - Very Poor		4" HMA WITH 12" FDR	\$70.00			
Image: series of the series		AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	\$0.60	3		
Image: section				Surface Treatment	SINGLE CHIP SEAL	\$0.74		6	
In Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.52Im Good, Load RelatedHEATER SCARIFY & OVERLAY\$5.95Im Good, Load RelatedHEATER SCARIFY & OVERLAY\$6.14Im Good, V- PoorHEATER SCARIFY & OVERLAY\$6.14Im Good, V- Very PoorRECONSTRUCT SURFACE (AC)\$14.00Im CompositionCrack TreatmentDO NOTHING\$0.00Im Good, Non-Load RelatedSurface TreatmentDO NOTHING\$0.00Im Good, Non-Load RelatedDO NOTHING\$0.0099Im Good, Load RelatedDO NOTHING\$1.11100Im Good, Load RelatedDO NOTHING\$1.51100Im Good, Load RelatedDO NOTHING\$1.51100Im Good, Load RelatedDO NOTHING\$1.51100Im Good, Load RelatedIm Good, Load RelatedDO NOTHING\$1.51Im Good, Load RelatedIm Good, Load RelatedDO NOTHING\$1.51Im Good, Load RelatedIm Good, Load Re				<b>Restoration Treatment</b>	MILL AND THICK OVERLAY	\$7.23			2
Image: Section of the section of th			II - Good, Non-Load Related		DOUBLE CHIP SEAL	\$1.52			
Image: Note of the state of			III - Good, Load Related		HEATER SCARIFY & OVERLAY	\$5.95			
Image: series of the series			IV - Poor		HEATER SCARIFY & OVERLAY	\$6.14			
PCCI - Very GoodCrack TreatmentDO NOTHING\$0.003Image: Construct Struct			V - Very Poor		RECONSTRUCT SURFACE (AC)	\$14.00			
Image: Surface Treatment       DO NOTHING       \$0.00       99         Image: Surface Treatment       DO NOTHING       \$0.00       100         Image: Surface Treatment       DO NOTHING       \$0.00       100         Image: Surface Treatment       DO NOTHING       \$1.11       100         Image: Surface Treatment       DO NOTHING       \$1.51       100         Image: Surface Treatment       DO NOTHING       \$1.92       100         Image: Surface Treatment       Surface Treatment       Surface Treatment       Surface Treatment         Image: Surface Treatment       DO NOTHING       Surface Treatment       Surface Treatment       Surface Treatment         Image: Surface Treatment       Image: Surface Treatment       DO NOTHING       Surface Treatment       Surface Treatment         Image: Surface Treatment       Image: Surface Treatment       Image: Surface Treatment       Surface Treatment       Surface Treatment         Image: Surface Treatment <td></td> <td>PCC</td> <td>I - Very Good</td> <td>Crack Treatment</td> <td>DO NOTHING</td> <td>\$0.00</td> <td>3</td> <td></td> <td></td>		PCC	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	3		
Image: sector				Surface Treatment	DO NOTHING	\$0.00		99	
II - Good, Non-Load Related       DO NOTHING       \$1.11         III - Good, Load Related       DO NOTHING       \$1.51         IV - Poor       THICK AC OVERLAY(2.5 INCHES)       \$1.92         V - Very Poor       RECONSTRUCT STRUCTURE (AC)       \$14.00				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
III - Good, Load Related       DO NOTHING       \$1.51         IV - Poor       THICK AC OVERLAY(2.5 INCHES)       \$1.92         V - Very Poor       RECONSTRUCT STRUCTURE (AC)       \$14.00			II - Good, Non-Load Related		DO NOTHING	\$1.11			
IV - Poor         THICK AC OVERLAY(2.5 INCHES)         \$1.92           V - Very Poor         RECONSTRUCT STRUCTURE (AC)         \$14.00			III - Good, Load Related		DO NOTHING	\$1.51			
V - Very Poor RECONSTRUCT STRUCTURE (AC) \$14.00			IV - Poor		THICK AC OVERLAY(2.5 INCHES)	\$1.92			
			V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$14.00			

Functional Class and Surface combination not used

Printed: 8/31/2021

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Arterial	ST	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
			Surface Treatment	DO NOTHING	\$0.00		99	
			<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$1.11			
		III - Good, Load Related		SINGLE CHIP SEAL	\$1.51			
		IV - Poor		SINGLE CHIP SEAL	\$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.67			

Functional Class and Surface combination not used

Printed: 8/31/2021

Collector       AC       I-Very Good       Crack Treatment       SkiC RACKS       Stillo       A         Inclose       Surface Treatment       MICROSURFACING       Stillo       Image: Stil	Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Image: strate in the	Collector	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
Image: Section Treatment       DO NOTHING       \$5.00       Image: Section Treatment       Section				Surface Treatment	MICROSURFACING	\$5.00		7	
III-Good, Non-Load Related       CAPE SEAL       \$11.00       7         III-Good, Load Related       2" HMA OVERLAY       \$33.00       Important Control (Control (Contro) (Contro) (Contro) (Control (Control (Control (Control (Contro)				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			3
III - Good, Load Related       2" HMA OVERLAY       \$33.00         ICI - Vor Poor       3" HMA OVERLAY       \$56.00         ICI - Vory Poor       4" HMA WITH 12" FDR       \$67.00         AC/AC       - Vory Poor       4" HMA WITH 12" FDR       \$67.00         AC/AC       - Vory Good       Crack Treatment       BLC RACK NS"       \$0.00       4         AC/AC       - Vory Good       Crack Treatment       MCROSURFACING       \$0.00       4         AC/AC       - Vory Good       Crack Treatment       DO NOTHING       \$0.00       7         III - Good, Ioad Related       CAPE SEAL       \$11.00       7       3         IV - Poor       - Wory Poor       3" HMA OVERLAY       \$56.00       -         IV - Poor       - Work Treatment       SEAL CRACKS       \$0.00       4         IV - Poor       - Work Treatment       SINGLE CHIP SEAL       \$0.74       7         III - Good, Non-Load Related       OUQUEL CHIP SEAL       \$0.74       7       3         III - Good, Non-Load Related       DOUBLE CHIP SEAL       \$0.50       4       4         III - Good, Non-Load Related       DOUBLE CHIP SEAL       \$0.50       4       4         III - Good, Non-Load Related       DOUBLE CHIP SEAL <td></td> <td></td> <td>II - Good, Non-Load Related</td> <td></td> <td>CAPE SEAL</td> <td>\$11.00</td> <td></td> <td>7</td> <td></td>			II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
Image: Market in the state in the			III - Good, Load Related		2" HMA OVERLAY	\$39.00			
V - Very Poor4" HMA WITH 12" FDR\$67.00AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.004CompositionSecond Crack TreatmentMICROSURFACING\$5.007CompositionRestoration TreatmentDON OTHING\$0.003III - Good, Non-Load RelatedCAPE SEAL\$11.007III - Good, Load RelatedCAPE SEAL\$11.007V - PoorIII - Good, Load Related2" HMA OVERLAY\$39.00V - Very PoorGood3" HMA OVERLAY\$6.00V - Very PoorCrack TreatmentSINGLE CHIP SEAL\$6.00V - Very PoorCrack TreatmentSINGLE CHIP SEAL\$0.07CompositionRestoration TreatmentSINGLE CHIP SEAL\$1.50III - Good, Non-Load RelatedNor HEATER SCARIFY & OVERLAY\$5.04III - Good, Non-Load RelatedNECONSTRUCT STRUCTURE (AC)\$1.52III - Good, Non-Load RelatedMILL AND THIN OVERLAY\$5.95III - Good, Non-Load RelatedNONTHING\$0.009III - Good, Non-Load RelatedDO NOTHING\$0.009III - Good, Non-Load RelatedDO NOTHING\$1.51III - Good, Non-Load RelatedDO NOTHING\$1.51III - Good, Non-Load Rel			IV - Poor		3" HMA OVERLAY	\$56.00			
AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.004ISurface TreatmentMICROSURFACING\$5.007IGood, Non-Load RelatedCAPE SEAL\$11.007III - Good, Non-Load Related2" HMA OVERLAY\$39.007III - Good, Load Related2" HMA OVERLAY\$39.007III - Good, Load Related2" HMA OVERLAY\$5.007III - Good, Non-Load RelatedCrack TreatmentSEAL CRACKS\$0.604III - Good, Non-Load RelatedSurface TreatmentSINGLE CHIP SEAL\$0.747III - Good, Load RelatedDUBLE CHIP SEAL\$1.5277III - Good, Load RelatedMILL AND THIN OVERLAY\$5.5577III - Good, Load RelatedDO NOTHING\$1.5277III - Good, Load RelatedDO NOTHING\$0.0097III - Good, Non-Load RelatedDO NOTHING\$0.0097III - Good, Non-Load RelatedDO NOTHING\$0.0097III - Good, Non-Load RelatedDO NOTHING\$1.117III - Good, Non-Load RelatedDO NOTHING\$1.00100III - Good, Non-Load RelatedDO NOTHING\$1.017III - Good, Load RelatedDO NOTHING\$1.117III - Goo			V - Very Poor		4" HMA WITH 12" FDR	\$67.00			
Image: Surface Treatment       MICROSURFACING       \$5.00       7         Image: Surface Treatment       DO NOTHING       \$0.00       3         Image: Surface Treatment       DO NOTHING       \$0.00       3         Image: Surface Treatment       DO NOTHING       \$0.00       3         Image: Surface Treatment       Image: Surface Treatment       Surface Treatment <td></td> <td>AC/AC</td> <td>I - Very Good</td> <td>Crack Treatment</td> <td>SEAL CRACKS</td> <td>\$1.00</td> <td>4</td> <td></td> <td></td>		AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
Image: section				Surface Treatment	MICROSURFACING	\$5.00		7	
III - Good, Non-Load RelatedCAPE SEAL\$11.007III - Good, Load Related2" HMA OVERLAY\$39.00IV - Poor3" HMA OVERLAY\$56.00V - Very Poor4" HMA WITH 12" FDR\$67.00AC/PCCI - Very GoodCrack TreatmentSEAL CRACKS\$0.604AC/PCCI - Very GoodCrack TreatmentSINGLE CHIP SEAL\$0.777Surface TreatmentSINGLE CHIP SEAL\$0.7673III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.5233III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.5233V - Very PoorHEATER SCARIFY & OVERLAY\$5.9553III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.5233V - Very PoorHEATER SCARIFY & OVERLAY\$5.9553III - Good, Non-Load RelatedDO NOTHING\$0.0093PCCI - Very GoodCrack TreatmentDO NOTHING\$0.0099III - Good, Non-Load RelatedDO NOTHING\$0.0099100III - Good, Non-Load RelatedDO NOTHING\$0.0099100III - Good, Non-Load RelatedDO NOTHING\$0.00100III - Good, Non-Load RelatedDO NOTHING\$0.00100III - Good, Non-Load RelatedDO NOTHING\$1.51100III - Good, Load RelatedDO NOTHING\$1.51100III - Good, Load RelatedDO NOTHING\$1.51100III - Good, Load Relate				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			3
III - Good, Load Related       2" HMA OVERLAY       \$39.00         IV - Poor       3" HMA OVERLAY       \$56.00         V - Very Poor       4" HMA WITH 12" FDR       \$67.00         AC/PCC       I - Very Good       Crack Treatment       SEAL CRACKS       \$0.60       4         AC/PCC       I - Very Good       Crack Treatment       SINGLE CHIP SEAL       \$0.74       7         Image: Surface Treatment       SINGLE CHIP SEAL       \$0.74       7       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$0.74       7       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$0.74       7       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$0.74       7       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.52       5			II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
Image: Note of the image: Note of t			III - Good, Load Related		2" HMA OVERLAY	\$39.00			
Image: constraint of the second sec			IV - Poor		3" HMA OVERLAY	\$56.00			
AC/PCCi - Very GoodCrack TreatmentSEAL CRACKS\$0.604ISurface TreatmentSINGLE CHIP SEAL\$0.747IGood, Non-Load RelatedRestoration TreatmentMILL AND THIN OVERLAY\$5.043III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.52Image: Comparison of the comparison o			V - Very Poor		4" HMA WITH 12" FDR	\$67.00			
Image: series of the series		AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	\$0.60	4		
Image: section decision				Surface Treatment	SINGLE CHIP SEAL	\$0.74		7	
III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.52III - Good, Load RelatedHEATER SCARIFY & OVERLAY\$5.95IV - PoorHEATER SCARIFY & OVERLAY\$6.14V - Very PoorRECONSTRUCT STRUCTURE (AC)\$11.38PCCI - Very GoodCrack TreatmentDO NOTHING\$0.009PCCI - Very GoodSurface TreatmentDO NOTHING\$0.0099III - Good, Non-Load RelatedRestoration TreatmentDO NOTHING\$0.0090III - Good, Load RelatedDO NOTHING\$1.11100III - Good, Load RelatedDO NOTHING\$1.51100III - Good, Load RelatedIII - Good, Load RelatedDO NOTHING\$1.92III - Good, Load RelatedIII - Good, Load RelatedDO NOTHING\$1.92III - Good, Load RelatedIII - Good, Load RelatedDO NOTHING\$1.92III - Good, Load RelatedIII - Good, III - Good, Load RelatedIII - Good, Load RelatedIII - Good, Load RelatedIII - Good, Load RelatedIII - Good, III - Go				<b>Restoration Treatment</b>	MILL AND THIN OVERLAY	\$5.04			3
Image:			II - Good, Non-Load Related		DOUBLE CHIP SEAL	\$1.52			
Image: Note of the section of the s			III - Good, Load Related		HEATER SCARIFY & OVERLAY	\$5.95			
Image: series of the series			IV - Poor		HEATER SCARIFY & OVERLAY	\$6.14			
PCCI - Very GoodCrack TreatmentDO NOTHING\$0.009Image: Constant Const			V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$11.38			
Image: series of the series		PCC	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
Image: sector				Surface Treatment	DO NOTHING	\$0.00		99	
II - Good, Non-Load RelatedDO NOTHING\$1.11III - Good, Load RelatedDO NOTHING\$1.51IV - PoorTHICK AC OVERLAY(2.5 INCHES)\$1.92V - Very PoorTHIN AC OVERLAY(1.5 INCHES)\$7.47				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
III - Good, Load Related       DO NOTHING       \$1.51         IV - Poor       THICK AC OVERLAY(2.5 INCHES)       \$1.92         V - Very Poor       THIN AC OVERLAY(1.5 INCHES)       \$7.47			II - Good, Non-Load Related		DO NOTHING	\$1.11			
IV - Poor         THICK AC OVERLAY(2.5 INCHES)         \$1.92           V - Very Poor         THIN AC OVERLAY(1.5 INCHES)         \$7.47			III - Good, Load Related		DO NOTHING	\$1.51			
V - Very Poor THIN AC OVERLAY(1.5 INCHES) \$7.47			IV - Poor		THICK AC OVERLAY(2.5 INCHES)	\$1.92			
			V - Very Poor		THIN AC OVERLAY(1.5 INCHES)	\$7.47			

Functional Class and Surface combination not used

Printed: 8/31/2021

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Collector	ST	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
			Surface Treatment	DO NOTHING	\$0.00		99	
			<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$1.11			
		III - Good, Load Related		SINGLE CHIP SEAL	\$1.51			
		IV - Poor		SINGLE CHIP SEAL	\$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.47			

Functional Class and Surface combination not used

Printed: 8/31/2021

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
			Surface Treatment	SLURRY SEAL	\$4.00		7	
			Restoration Treatment	DO NOTHING	\$0.00			3
		II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
		III - Good, Load Related		2" HMA OVERLAY	\$33.00			
		IV - Poor		3" HMA OVERLAY	\$48.00			
		V - Very Poor		3" HMA OVERLAY	\$51.00			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
			Surface Treatment	SLURRY SEAL	\$4.00		7	
			Restoration Treatment	DO NOTHING	\$0.00			3
		II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
		III - Good, Load Related		2" HMA OVERLAY	\$33.00			
		IV - Poor		3" HMA OVERLAY	\$48.00			
		V - Very Poor		3" HMA OVERLAY	\$51.00			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	\$0.60	4		
			Surface Treatment	SINGLE CHIP SEAL	\$0.74		8	
			<b>Restoration Treatment</b>	MILL AND THIN OVERLAY	\$5.04			3
		II - Good, Non-Load Related		DOUBLE CHIP SEAL	\$1.52			
		III - Good, Load Related		HEATER SCARIFY & OVERLAY	\$5.95			
		IV - Poor		HEATER SCARIFY & OVERLAY	\$6.14			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$8.25			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	4		
			Surface Treatment	DO NOTHING	\$0.00		99	
			<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
		II - Good, Non-Load Related		DO NOTHING	\$1.11			
		III - Good, Load Related		DO NOTHING	\$0.00			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	\$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.27			

Functional Class and Surface combination not used

Printed: 8/31/2021

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Residential/Local	ST	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
			Surface Treatment	DO NOTHING	\$0.00		99	
			<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$1.11			
		III - Good, Load Related		SINGLE CHIP SEAL	\$1.51			
		IV - Poor		SINGLE CHIP SEAL	\$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.27			

Functional Class and Surface combination not used

Printed: 8/31/2021

Other     AC     I-Very Good     Crack Treatment     Skl. CRACKS     \$100     4       Image: Strace Treatment     Surdare Treatment     SURRY SEAL     Skl. OB     7       Image: Strace Treatment     DO NOTHNO     Solo     7       Image: Strace Treatment     DO NOTHNO     Solo     7       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment       Image: Strace Treatment     Surdare Treatment     Surdare Treatment     Surdare Treatment     Surdare Tre	Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
IndexSurface TreatmentSUURRY SEALS4.009.00Image: Surface TreatmentDO NOTHINGS0.003.003.00Image: Surface TreatmentCAPE SEALS1.007.00Image: Surface TreatmentSt.MA OVERLAYS3.007.00Image: Surface TreatmentSt.MA OVERLAYS1.007.00Image: Surface TreatmentSt.MA OVERLAYS1.007.00Image: Surface TreatmentSt.URRY SEALS1.004.00Image: Surface TreatmentSt.URRY SEALS1.004.00Image: Surface TreatmentSt.URRY SEALS1.004.00Image: Surface TreatmentSt.URRY SEALS1.004.00Image: Surface TreatmentSt.URRY SEALS1.007.00Image: Surface TreatmentSt.URCRY SEALS1.007.00Image: Surface TreatmentSt.URCRY SURFACHS5.007.00Image: Surface TreatmentSt.URCRY SEALS1.007.00Image: Surface TreatmentSt.URC SURFACHS5.007.00Image: Surface TreatmentSt.URCRY SURFACHS5.007.00Image: Surface TreatmentSt.URCRY SURFACHS5.007.00Image: Surface TreatmentSt.URCRY SURFACHS5.007.00Image: Surfac	Other	AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
Image: section TreatmentDO NOTHING\$0.00\$3.00\$3.30Image: section TreatmentCAPE SEAL\$1.10\$7.40Image: section TreatmentCAPE SEAL\$1.00\$7.40Image: section TreatmentStatus Averance\$3.50\$7.40Image: section TreatmentSEAL CRACKS\$1.00\$1.00Image: section TreatmentSEAL CRACKS\$1.00\$4.00Image: section TreatmentSEAL CRACKS\$1.00\$7.00Image: section TreatmentSEAL CRACKS\$1.00\$7.00Image: section TreatmentSEAL CRACKS\$1.00\$7.00Image: section TreatmentSEAL CRACKS\$1.00\$6.00Image: section TreatmentSEAL CRACKS\$1.60\$4.00Image: section TreatmentSEAL CRACKS\$1.60\$4.00Image: section TreatmentSEAL CRACKS\$1.60\$4.00Image: section TreatmentSINGLE CHIP SEAL\$1.74\$5.60Image: section TreatmentSINGLE CHIP SEAL\$1.74\$5.61Image: section TreatmentSINGLE CHIP SEAL\$1.60\$4.00Image: section TreatmentSINGLE CHIP SEAL\$1.60\$4.00Image: section TreatmentSINGLE CHIP SEAL\$1.60\$4.00Image: secti				Surface Treatment	SLURRY SEAL	\$4.00		7	
In - Good, Non-Load Related         CAPE SEAL         \$11.00         7           Im - Good, Load Related         PMA OVERLAY         \$33.00         PMA				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			3
III - Good, Load Related       2" HMA OVERLAY       \$33.00         III - Good, Load Related       3" HMA OVERLAY       \$48.00         III - Very Poor       3" HMA OVERLAY       \$48.00         AC/AC       I- Very Good       Crack Treatment       \$HAL CRACKS       \$1.00       4         AC/AC       I- Very Good       Crack Treatment       SLURRY SEAL       \$4.00       7         III - Good, Non-Load Related       CAPE SEAL       \$1.00       7       3         III - Good, Load Related       CAPE SEAL       \$1.00       7       3         III - Good, Load Related       CAPE SEAL       \$1.00       7       3         III - Good, Load Related       CAPE SEAL       \$1.00       7       3         III - Good, Load Related       CAPE SEAL       \$1.00       7       3         III - Good, Load Related       CAPE SEAL       \$1.00       7       3       3         III - Good, Load Related       Sufface Treatment       \$1.00 VERLAY       \$3.00       3			II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
Image:			III - Good, Load Related		2" HMA OVERLAY	\$33.00			
V - Very PoorS" HMA OVERLAY\$\$1.00AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.004CompositionSurface TreatmentSURRY SEAL\$4.007CompositionRestoration TreatmentDONOTHING\$0.003II - Good, Non-Load RelatedCAPE SEAL\$11.007III - Good, Load RelatedCamposition TreatmentCAPE SEAL\$11.00V - PoorS" HMA OVERLAY\$33.001V - Very PoorStat Crack TreatmentSINGLE CHIP SEAL\$1.60AC/PCCI - Very GoodCrack TreatmentSINGLE CHIP SEAL\$1.60AC/PCCI - Very GoodCrack TreatmentSINGLE CHIP SEAL\$1.748Surface TreatmentSINGLE CHIP SEAL\$1.5233III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.5233III - Good, Non-Load RelatedMILL AND THIN OVERLAY\$5.0433III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.5233III - Good, Non-Load RelatedMELTER SCARIFY & OVERLAY\$5.9533III - Good, Non-Load RelatedDO NOTHING\$0.0093III - Good, Non-Load RelatedDO NOTHING\$1.5111III - Good, Non-Load Related			IV - Poor		3" HMA OVERLAY	\$48.00			
AC/ACI - Very GoodCrack TreatmentSEAL CRACKS\$1.004ISurface TreatmentSLURRY SEAL\$4.007IGood, Non-Load RelatedDO NOTHING\$0.007III - Good, Non-Load RelatedCAPE SEAL\$11.007III - Good, Load Related2" HMA OVERLAY\$33.007IV - Poor3" HMA OVERLAY\$33.007V- Very Poor3" HMA OVERLAY\$1.604AC/PCCI - Very GoodCrack TreatmentSINGLE CHIP SEAL\$1.604AC/PCCI - Very GoodCrack TreatmentSINGLE CHIP SEAL\$1.604III - Good, Non-Load RelatedDO UBLE CHIP SEAL\$1.6143III - Good, Non-Load RelatedDO UBLE CHIP SEAL\$1.6143III - Good, Load RelatedDO UBLE CHIP SEAL\$1.5233III - Good, Load RelatedDO UBLE CHIP SEAL\$1.5233III - Good, Load RelatedDO NOTHING VERLAY\$5.5533III - Good, Load RelatedDO NOTHING\$0.0093III - Good, Non-Load RelatedDO NOTHING\$0.0093III - Good, Non-Load RelatedDO NOTHING\$0.00993III - Good, Non-Load RelatedDO NOTHING\$1.1133III - Good, Load RelatedDO NOTHING\$1.5133III - Good, Load RelatedDO NOTHING\$1.5133III - Good, Load RelatedDO NOTHING\$1.51 <td< td=""><td></td><td></td><td>V - Very Poor</td><td></td><td>3" HMA OVERLAY</td><td>\$51.00</td><td></td><td></td><td></td></td<>			V - Very Poor		3" HMA OVERLAY	\$51.00			
Image: Surface Treatment       SLURRY SEAL       \$4.00       7         Image: Surface Treatment       DO NOTHING       \$0.00       3         Image: Surface Treatment       DO NOTHING       \$0.00       3         Image: Surface Treatment       CAPE SEAL       \$11.00       7         Image: Surface Treatment       CAPE SEAL       \$11.00       7         Image: Surface Treatment       Surface Treatment       Surface Treatment       \$10.00       \$10.00         Image: Surface Treatment       Su		AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.00	4		
Image: section				Surface Treatment	SLURRY SEAL	\$4.00		7	
In - Good, Non-Load RelatedCAPE SEAL\$11.007Im - Good, Load Related2" HMA OVERLAY\$33.00Im - Good, Load Related2" HMA OVERLAY\$48.00Im - Poor3" HMA OVERLAY\$48.00Im - Very Poor3" HMA OVERLAY\$51.00Im - Restoration3" HMA OVERLAY\$51.00Im - Restoration TreatmentSINGLE CHIP SEAL\$1.67Im - Restoration TreatmentSINGLE CHIP SEAL\$1.74Im - Restoration TreatmentMILL AND THIN OVERLAY\$5.04Im - Restoration TreatmentMILL AND THIN OVERLAY\$5.04Im - Restoration TreatmentMILL AND THIN OVERLAY\$5.04Im - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.52Im - Restoration TreatmentMILC AND THIN OVERLAY\$5.95Im - Good, Non-Load RelatedCrack TreatmentDOUBLE CHIP SEALIm - Restoration TreatmentDOUBLE CHIP SEAL\$1.52Im - Restoration TreatmentDO NOTHING\$0.00Im - Restoration TreatmentDO NOTHING\$0.00Im - Restoration TreatmentDO NOTHING\$0.00Im - Good, Non-Load RelatedDO NOTHING\$0.00Im - Good, Non-Load RelatedDO NOTHING\$0.00Im - Good, Non-Load RelatedDO NOTHING\$1.51Im - Good, Load RelatedDO NOTHING\$1.51Im - Good, Load Related </td <td></td> <td></td> <td></td> <td><b>Restoration Treatment</b></td> <td>DO NOTHING</td> <td>\$0.00</td> <td></td> <td></td> <td>3</td>				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			3
III - Good, Load Related       2" HMA OVERLAY       \$33.00         IV - Poor       3" HMA OVERLAY       \$48.00         V - Very Poor       3" HMA OVERLAY       \$48.00         AC/PCC       I - Very Good       Crack Treatment       SEAL CRACKS       \$1.60       4         AC/PCC       I - Very Good       Crack Treatment       SINGLE CHIP SEAL       \$1.74       8         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.74       8       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.74       8       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.74       8       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.74       8       3         Image: Surface Treatment       SINGLE CHIP SEAL       \$1.52       5       <			II - Good, Non-Load Related		CAPE SEAL	\$11.00		7	
Image: Note of the image: Note of t			III - Good, Load Related		2" HMA OVERLAY	\$33.00			
Image: constraint of the second sec			IV - Poor		3" HMA OVERLAY	\$48.00			
AC/PCCI - Very GoodCrack TreatmentSEAL CRACKS\$1.604IGrack TreatmentSUNGLE CHIP SEAL\$1.748IGood, Non-Load RelatedRestoration TreatmentMILL AND THIN OVERLAY\$5.043III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.521III - Good, Load RelatedHEATER SCARIFY & OVERLAY\$5.951IV - PoorRetoration TreatmentMEATER SCARIFY & OVERLAY\$6.14V - PoorKetoration TreatmentDO NOTHING\$0.009IV - Very PoorCrack TreatmentDO NOTHING\$0.009IV - Very GoodCrack TreatmentDO NOTHING\$0.0099III - Good, Non-Load RelatedDO NOTHING\$0.0099III - Good, Load RelatedDO NOTHING\$1.11100III - Good, Load RelatedDO NOTHING\$1.51100III - Good, Load RelatedDO NOTHING\$1.92100IIII - Good, Load RelatedDO NOTHING\$1.92100 <t< td=""><td></td><td></td><td>V - Very Poor</td><td></td><td>3" HMA OVERLAY</td><td>\$51.00</td><td></td><td></td><td></td></t<>			V - Very Poor		3" HMA OVERLAY	\$51.00			
Image: series of the series		AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	\$1.60	4		
Image: section decision				Surface Treatment	SINGLE CHIP SEAL	\$1.74		8	
III - Good, Non-Load RelatedDOUBLE CHIP SEAL\$1.52III - Good, Load RelatedHEATER SCARIFY & OVERLAY\$5.95IV - PoorHEATER SCARIFY & OVERLAY\$6.14V - Very PoorRECONSTRUCT STRUCTURE (AC)\$8.75PCCI - Very GoodCrack TreatmentDO NOTHING\$0.009PCCI - Very GoodSurface TreatmentDO NOTHING\$0.009III - Good, Non-Load RelatedRestoration TreatmentDO NOTHING\$0.0090III - Good, Load RelatedDO NOTHING\$1.11100III - Good, Load RelatedDO NOTHING\$1.51100III - Good, Load RelatedDO NOTHING\$1.92100III - Good, Load RelatedIII- Good, Load RelatedDO NOTHING\$1.92III - Good, Load RelatedIII- Good, Load RelatedIII- Good, Load RelatedIII- Good, IIIIII - Good, Load RelatedIII - Good, Load RelatedIII- Good, III11.92III - Good, Load RelatedIIII - Good, IIIIII- Good, IIIIIII - Good, IIIIII - Good, Load RelatedIIII - Good, IIIIIIII - Good, IIIIIIII - Good, IIIIIIII - Good, III - Good, III - Good, IIII - Good, IIIIIIII - Good, IIIIIIII - Good, IIIIIII - Good, III - Good, III - Good, IIIIIIII - Good, IIIIIIIII - Good, IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII				<b>Restoration Treatment</b>	MILL AND THIN OVERLAY	\$5.04			3
Image:			II - Good, Non-Load Related		DOUBLE CHIP SEAL	\$1.52			
Image: Note of the image: Note of t			III - Good, Load Related		HEATER SCARIFY & OVERLAY	\$5.95			
Image: state s			IV - Poor		HEATER SCARIFY & OVERLAY	\$6.14			
PCCI - Very GoodCrack TreatmentDO NOTHING\$0.009Image: Constant Const			V - Very Poor		RECONSTRUCT STRUCTURE (AC)	\$8.75			
Image: series of the series		PCC	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
Image: sector				Surface Treatment	DO NOTHING	\$0.00		99	
II - Good, Non-Load Related       DO NOTHING       \$1.11         III - Good, Load Related       DO NOTHING       \$1.51         IV - Poor       THICK AC OVERLAY(2.5 INCHES)       \$1.92         V - Very Poor       THICK AC OVERLAY(2.5 INCHES)       \$7.27				<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
III - Good, Load Related       DO NOTHING       \$1.51         IV - Poor       THICK AC OVERLAY(2.5 INCHES)       \$1.92         V - Very Poor       THICK AC OVERLAY(2.5 INCHES)       \$7.27			II - Good, Non-Load Related		DO NOTHING	\$1.11			
IV - Poor         THICK AC OVERLAY(2.5 INCHES)         \$1.92           V - Very Poor         THICK AC OVERLAY(2.5 INCHES)         \$7.27			III - Good, Load Related		DO NOTHING	\$1.51			
V - Very Poor THICK AC OVERLAY(2.5 INCHES) \$7.27			IV - Poor		THICK AC OVERLAY(2.5 INCHES)	\$1.92			
			V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.27			

Functional Class and Surface combination not used

Printed: 8/31/2021

Functional Class	Surface	Condition Category	Treatment Type	Treatment	Cost/Sq Yd, except Seal Cracks in LF:	Yrs Between Crack Seals	Yrs Between Surface Seals	# of Surface Seals before Overlay
Other	ST	I - Very Good	Crack Treatment	DO NOTHING	\$0.00	9		
			Surface Treatment	DO NOTHING	\$0.00		99	
			<b>Restoration Treatment</b>	DO NOTHING	\$0.00			100
		II - Good, Non-Load Related		SINGLE CHIP SEAL	\$1.11			
		III - Good, Load Related		SINGLE CHIP SEAL	\$1.51			
		IV - Poor		SINGLE CHIP SEAL	\$1.92			
		V - Very Poor		THICK AC OVERLAY(2.5 INCHES)	\$7.27			

Functional Class and Surface combination not used



## 8 APPENDIX C-BUDGET NEEDS

# Needs - Projected PCI/Cost Summary

Printed: 8/31/2021 Inflation Rate = 3.00 %

Year	PCI Treated	PCI Untreated	PM Cost	Rehab Cost	Cost
2021	91	75	\$8,175,807	\$58,350,916	\$66,526,723
2022	89	73	\$2,188,296	\$3,178,477	\$5,366,773
2023	87	71	\$990,615	\$1,987,041	\$2,977,656
2024	86	69	\$1,350,261	\$0	\$1,350,261
2025	85	67	\$2,177,059	\$0	\$2,177,059
2026	85	65	\$3,138,779	\$0	\$3,138,779
2027	84	63	\$152,074	\$123,036	\$275,110
2028	86	61	\$13,767,887	\$3,282,618	\$17,050,505
2029	86	59	\$6,749,895	\$356,421	\$7,106,316
2030	85	57	\$1,934,232	\$247,453	\$2,181,685
		0/ <b>DM</b>	DM Takal Oaat	Dahah Tatal Orat	Tatal Orat
		% PN	PINI TOTAL COST	Renad Total Cost	Total Cost
		37.56%	\$40.624.905	\$67.525.962	\$108.150.867

## Needs - Preventive Maintenance Treatment/Cost Summary

Inflation Rate = 3.00 % Printed: 8/31/2021

Treatment	Year		Area Treated		Cost	
MICROSURFACING	2021		676,046.78	sq. yd.	\$3,380,276	
	2022		147,328.89	sq. yd.	\$758,755	
	2023		85,346.78	sq. yd.	\$452,730	
	2024		25,660.22	sq. yd.	\$140,202	
	2025		5,335.56	sq. yd.	\$30,028	
	2028		1,188,479.11	sq. yd.	\$7,308,501	
	2029		182,539.78	sq. yd.	\$1,156,199	
	2030		115,768.67	sq. yd.	\$755,273	
		Total	2,426,505.78		\$13,981,964	
SEAL CRACKS	2024		7,209.09	sq. yd.	\$7,906	
	2025		46,861.28	sq. yd.	\$53,161	
	2026		12,325.38	sq. yd.	\$14,417	
	2027		30,138.08	sq. yd.	\$36,213	
	2028		8,108.97	sq. yd.	\$10,066	
	2029		10,853.39	sq. yd.	\$13,884	
	2030		13,854.13	sq. yd.	\$18,274	
		Total	129,350.31		\$153,921	
SLURRY SEAL	2021		1,198,822.56	sq. yd.	\$4,795,531	
	2022		346,955.67	sq. yd.	\$1,429,541	
	2023		126,742.78	sq. yd.	\$537,885	
	2024		275,016.56	sq. yd.	\$1,202,153	
	2025		465,062	sq. yd.	\$2,093,870	
	2026		673,734.67	sq. yd.	\$3,124,362	
	2027		24,256.67	sq. yd.	\$115,861	
	2028		1,310,901.44	sq. yd.	\$6,449,320	
	2029		1,101,141.44	sq. yd.	\$5,579,812	
	2030		222,381.33	sq. yd.	\$1,160,685	
		Total	5,745,015.11		\$26,489,020	
	Total Qua	ntity	8,300,871.2		\$40,624,905	

## Needs - Rehabilitation Treatment/Cost Summary

Inflation Rate = 3.00 % Printed: 8/31/2021

Treatment	Year	Area Treated	Cost
2" HMA OVERLAY	2021	567,218.44 sq.yd.	\$18,822,694
	2022	64,311.22 sq.yd.	\$2,303,317
	2023	33,746.33 sq.yd.	\$1,009,330
	Total	665,276 sq.yd.	\$22,135,341
3" HMA OVERLAY	2021	657,095.22 sq.yd.	\$33,295,194
	2027	1,840 sq.yd.	\$123,036
	2028	10,348 sq.yd.	\$700,461
	Total	669,283.22 sq.yd.	\$34,118,691
4" HMA WITH 12" FDR	2021	51,290.44 sq.yd.	\$3,465,071
	Total	51,290.44 sq.yd.	\$3,465,071
CAPE SEAL	2021	251,629.44 sq.yd.	\$2,767,957
	2022	77,241.11 sq.yd.	\$875,160
	2023	83,779.11 sq.yd.	\$977,711
	2028	190,863.56 sq.yd.	\$2,582,157
	2029	25,578.11 sq.yd.	\$356,421
	2030	17,240.89 sq.yd.	\$247,453
	Total	646,332.22 sq.yd.	\$7,806,859

Total Cost

\$67,525,962



## 9 APPENDIX D-SCENARIO-INCREASE PCI BY 5 POINTS

## Target-Driven Scenarios - Cost Summary

Interest: 0%

Inflation: 3%

Printed: 8/31/2021

Objective: Minimum Network Average PCI         Target: Overall 81           Year         Rehabilitation         Preventive Maintenance         Total Cost         Deferrer           2021         II \$2,372,88         Non-\$7,886,861         \$23,204,437         \$39,089,371           III \$2,77,710         Project         \$0         \$23,204,437         \$39,089,371           III \$2,77,710         Project         \$0         \$11,278,593         \$39,089,371           III \$2,77,710         Project         \$0         \$11,278,593         \$35,192,927           III \$2,637,1912         Project         \$20,049,260         \$11,278,593         \$35,192,927           III \$24,077,823         Project         \$990,615         \$8,850,792         \$31,016,837           IIII \$24,097,791         Project         \$10,928,937         \$7,285,003         \$27,362,214	Scenario: Increa	ase PCI by 5 poin	its				
Year         Rehabilitation         Preventive Maintenance         Total Cost         Deferred           2021         III \$7,77,77,70         Non- Yolgett         \$7,868,861         \$23,204,437         \$39,083,37           Year         Year         \$406,573         Project         \$30         \$33,083,37           Year         Year         \$406,573         Project         \$30         \$33,083,37           Year         Year         \$30,083,37         Project         \$30         \$33,083,37           Year         \$30,07223         Project         \$30         \$33,19,262         \$11,278,593         \$335,192,327           Year         \$32,2049,260         \$11,278,593         \$335,192,327         \$335,192,327         \$335,192,327           Yeiget         \$30         \$37,516         \$70eet         \$30         \$331,016,031           Yeiget         \$30         \$337,516         \$70eet         \$30         \$331,016,031           Yeiget         \$30         \$90,615         \$8,950,792         \$331,016,031         \$325,192,033           Yeiget         \$30         \$7,850,037         \$7,285,003         \$27,382,214         \$331,016,031           Yeiget         \$30         \$30,316,571         \$300,053,072	Objective: Minir	num Network Av	erage PCI				Target: Overall 81
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Year	R	ehabilitation	Preventive	Maintenance	Total Cost	Deferred
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2021	II	\$2,975,268	Non-	\$7,886,861	\$23,204,437	\$39,068,376
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			\$7,774,710	Project			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		IV	\$4,161,025	Project	\$0		
$ \frac{1}{Project} = \frac{1}{90} $		V	\$406,573				
$\begin{array}{ c c c c c c } \hline Project & $0 \\ \hline 2022 & & \\ \hline II & $572,211 \\ \hline III & $2,531,387 \\ \hline V & $3,617,912 \\ \hline \hline Total & $59,229,333 \\ \hline \hline Project & $30 \\ \hline \hline \hline \hline Total & $59,229,333 \\ \hline \hline Project & $50 \\ \hline \hline \hline \hline \hline Total & $59,229,333 \\ \hline \hline \hline \hline Project & $50 \\ \hline $		Total	\$15,317,576				
$2022 \qquad \begin{array}{c c c c c c c } & & & & & & & & & & & & & & & & & & &$		Project	\$0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2022	II	\$672,211	Non-	\$2,049,260	\$11,278,593	\$35,192,327
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			\$2,531,387	Project			
$\frac{\left  \frac{\sqrt{3}}{101} \frac{\sqrt{3}}{3} \frac{3}{9} \frac{2}{2} \frac{3}{3} \frac{3}{9} \frac{3}{9} \frac{3}{2} \frac{3}{9} \frac{3}{3} \frac{3}{9} \frac{3}{9}$		IV	\$2,407,823	Project	\$0		
$\frac{101}{101} \frac{10,229,333}{1000}$ 2023 $\frac{11}{1000} \frac{10,229,333}{10000} \frac{11}{10000} \frac{10,229,333}{1000000}$ $\frac{11}{1000000000000000000000000000000000$		V	\$3,617,912				
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		Total	\$9,229,333				
$2023 \qquad \qquad \begin{array}{c} \begin{array}{c} \begin{array}{c} 1 & \$865,978 \\ \hline 111 & \$375,518 \\ \hline 1V & \$1,859,907 \\ \hline V & \$1,859,907 \\ \hline V & \$1,859,907 \\ \hline V & \$1,859,907 \\ \hline \hline Project & \$0 \end{array} \end{array} \xrightarrow{Project} \$0 \end{array} \xrightarrow{Project} \$0 \end{array} \xrightarrow{990,615} \underbrace{\$8,950,792 \\ \hline Project & \$0 \end{array} \xrightarrow{97,285,003 \\ \hline 111 & \$19,880 \\ \hline \hline V & \$1,132,829 \\ \hline V & \$4,682,966 \\ \hline \hline Total & \$5,935,675 \\ \hline \hline Project & \$0 \end{array} \xrightarrow{9roject} \$0 \end{array} \xrightarrow{9roject} \underbrace{\$7,285,003 \\ \hline \hline Project & \$0 \end{array} \xrightarrow{9roject} \$0 \end{array} \xrightarrow{$5,767,879 \\ \hline 2025 & \begin{array}{c} 11 & \$0 \\ \hline 111 & \$11,32,828 \\ \hline \hline V & \$1,132,828 \\ \hline \hline V & \$1,132,828 \\ \hline \hline V & \$1,132,888 \\ \hline \hline V & \$1,132,888 \\ \hline \hline \hline Project & \$0 \end{array} \xrightarrow{9roject} \$0 \end{array} \xrightarrow{$5,767,879 \\ \hline 2026 & \begin{array}{c} 11 & \$0 \\ \hline 111 & \$0 \\ \hline \hline V & \$1,132,888 \\ \hline V & \$2,463,184 \\ \hline \hline Total & \$3,596,077 \\ \hline \hline Project & \$0 \end{array} \xrightarrow{9roject} \$0 \end{array} \xrightarrow{$5,767,879 \\ \hline 2026 & \begin{array}{c} 11 & \$0 \\ \hline 111 & \$0 \\ \hline \hline V & \$1,145,308 \\ \hline \hline V & \$1,496,386 \\ \hline \hline \hline Total & \$3,596,077 \\ \hline \hline Project & \$0 \end{array} \xrightarrow{9roject & \$0 \\ \hline 2026 & \begin{array}{c} 11 & \$0 \\ \hline \hline \hline V & \$1,496,386 \\ \hline \hline \hline \hline \hline V & \$1,132,888 \\ \hline \hline \hline \hline \hline Project & \$0 \end{array} 9roject & \$0 \\ \hline $		Project	\$0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2023	II	\$865,978	Non-	\$990,615	\$8,950,792	\$31,016,939
$\begin{array}{c c c c c c c c c c c c c c c c c c c $			\$375,518	Project			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		IV	\$1,859,907	Project	\$0		
$\frac{10 \text{ total} $7,960,177}{Project $0}$ $2024 \qquad \frac{11 $0}{111 $119,880} \\ \frac{111 $$119,880}{1 $V $$1,132,829} \\ \frac{111 $$119,880}{V $$1,132,829} \\ \frac{1}{V $$1,132,829} \\ \frac{1}{V $$4,682,966} \\ \hline Total $$5,935,675 \\ \hline Project $$0 \\ \hline \hline \hline \\ 2025 \qquad \frac{11 $$0}{111 $$0} \\ \frac{111 $$0}{V $$1,132,888} \\ \frac{1}{V $$1,132,888} \\ \frac{1}{V $$2,463,184} \\ \hline \hline \\ \hline \\ \hline $		V	\$4,858,774				
II         S0           2024         III         \$119,880         Project         \$7,285,003         \$27,362,214           III         \$119,880         Project         \$0         \$7,285,003         \$27,362,214           III         \$119,880         Project         \$0         \$7,285,003         \$27,362,214           III         \$119,880         Project         \$0         \$1,349,328         \$7,285,003         \$27,362,214           III         \$1132,829         V         \$4,682,966         \$0         \$0         \$0           2025         III         \$0         Non-         \$2,171,807         \$5,767,879         \$225,796,510           III         \$0         Project         \$0         \$0         \$0         \$0         \$0           2026         III         \$0         Non-         \$3,136,571         \$6,388,262         \$24,547,384           III         \$0         Project         \$0         \$0         \$0         \$0           2026         III         \$0         Non-         \$3,136,571         \$6,388,262         \$24,547,384           IV         \$1,445,305         V         \$1,806,386         \$0         \$0         \$0		Total	\$7,960,177				
2024       II       \$0       Non- \$1,349,328       \$7,285,003       \$27,362,214         III       \$119,880       Project       \$0       \$Project       \$0         2025       II       \$0       Non- \$2,171,807       \$5,767,879       \$25,796,510         2025       III       \$0       Project       \$0       \$25,796,510         2025       III       \$0       Project       \$0       \$27,962,510         2026       III       \$0       Project       \$0         Project       \$0       Project       \$0         2026       III       \$0       Project       \$0         Project       \$0       Project       \$0         Project       \$0       Project       \$0         Project       \$0       Project       \$0		Project	\$0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	2024	II	\$0	Non-	\$1,349,328	\$7,285,003	\$27,362,214
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		111	\$119,880	Project	<b>*</b> 0		
$\frac{V = $4,682,966}{Total = $5,935,675}$ $\frac{V = $4,682,966}{Project = $50}$ $2025 \qquad \begin{array}{c c c c c c c c c } \hline Project = $50 \end{array} \\ \hline & & & & & & & & & & & & & & & & & &$		IV	\$1,132,829	Project	\$0		
$\frac{1}{1} \frac{1}{1} \frac{1}$		V	\$4,682,966				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $		Total	\$5,935,675				
2025       II       \$0       Non-\$2,171,807       \$5,767,879       \$25,796,510         III       \$0       Project       \$0       Project       \$0         V       \$2,463,184       Project       \$0       Project       \$0         Project       \$0       Project       \$0       \$25,796,510         2026       II       \$0       Project       \$0         III       \$0       Project       \$0       \$6,388,262       \$24,547,384         V       \$1,445,305       Project       \$0       \$25,796,510       \$6,388,262       \$24,547,384         III       \$0       Project       \$0       \$0       \$25,796,510       \$6,388,262       \$24,547,384         Project       \$0       Y       \$1,806,386       \$0       \$0       \$0       \$0         Project       \$0       Y       \$1,806,386       \$0       \$0       \$0       \$0		Project	\$0				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	2025		\$0	Non-	\$2,171,807	\$5,767,879	\$25,796,510
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			\$0	Project			
V         \$2,463,184           Total         \$3,596,072           Project         \$0           2026         II         \$0           III         \$0           IV         \$1,445,305           V         \$1,806,386           Total         \$3,251,691           Project         \$0		IV	\$1,132,888	Project	\$0		
Total \$3,596,072         Project       \$0         2026       II       \$0         III       \$0         IV       \$1,445,305         V       \$1,806,386         Total       \$3,251,691         Project       \$0		V	\$2,463,184				
Project         \$0           2026         II         \$0           III         \$0           IV         \$1,445,305           V         \$1,806,386           Total         \$3,251,691           Project         \$0		Total	\$3,596,072				
2026		Project	\$0				
III     \$0     Project       IV     \$1,445,305     Project       V     \$1,806,386       Total     \$3,251,691       Project     \$0	2026	II	\$0	Non-	\$3,136,571	\$6,388,262	\$24,547,384
IV         \$1,445,305         Project         \$0           V         \$1,806,386         \$0         \$0           Total         \$3,251,691         \$0			\$0	Project			
V         \$1,806,386           Total         \$3,251,691           Project         \$0		IV	\$1,445,305	Project	\$0		
Total         \$3,251,691           Project         \$0		V	\$1,806,386				
Project \$0		Total	\$3,251,691				
		Project	\$0				

Year		Re	ehabilitation	Preventive	Maintenance	Total Cost		Deferred
2027			\$0	Non-	\$137,755	\$6,623,752		\$21,007,933
		III	\$0	Project				
		IV	\$2,311,935	Project	\$0			
		V	\$4,174,062					
		Total	\$6,485,997					
	-	Project	\$0					
2028		11	\$0	Non-	\$6,018,798	\$6,018,798		\$29,419,450
			\$0	Project				
		IV	\$0	Project	\$0			
		V	\$0					
		Total	\$0					
	-	Project	\$0					
2029		II	\$0	Non-	\$5,697,775	\$5,697,775		\$31,993,942
		- 111	\$0	Project				
		IV	\$0	Project	\$0			
		V	\$0					
		Total	\$0					
	-	Project	\$0					
2030		II	\$0	Non-	\$6,133,542	\$6,382,274		\$32,412,182
		- 111	\$248,732	Project				
		IV	\$0	Project	\$0			
		V	\$0					
		Total	\$248,732					
	_	Project	\$0					
	Eurotional Cla		D	Chabilitation	Drov Moint		Summary	
	Artorial	199	ĸ					
	Collector			\$3,000,008 \$3,000,820	<b>ቅ4,∠04,478</b> \$7 10∕1 261			
	Residential/Local	l		\$40,848,795	\$24,093,573			
		-	Fotal:	\$52,025,253	\$35,572,312	Grand Total:	\$87,597,565	
			iotal.	фоz,0zo,zoo	\$35,572,312	Granu Totai.	φ07,397,303	

## Scenarios - Network Condition Summary

City of Lincoln, CA

Interest: 0% Inflation: 3%

Printed: 8/31/2021

Scenario: Increase PCI by 5 Points

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2021	\$23,204,437	\$7,886,861	2025	\$5,767,879	\$2,171,807	2029	\$5,697,775	\$5,697,775
2022	\$11,278,593	\$2,049,260	2026	\$6,388,262	\$3,136,571	2030	\$6,382,274	\$6,133,542
2023	\$8,950,792	\$990,615	2027	\$6,623,752	\$137,755			
2024	\$7,285,003	\$1,349,328	2028	\$6,018,798	\$6,018,798			
Projected	d Network Av	erage PCI	bv Year					

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles	
2021	76	81	125.29	252.01	
2022	73	81	38.36	77.63	
2023	71	81	23.02	46.04	
2024	69	81	42.35	84.97	
2025	67	81	130.98	263.39	
2026	65	81	75.05	151.16	
2027	63	81	47.96	95.93	
2028	61	81	88.29	178.28	
2029	59	81	101.69	204.30	
2030	57	81	101.59	205.16	

## Percent Network Area by Functional Class and Condition Category

#### Condition in base year 2021, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	5.4%	12.3%	57.5%	0.0%	75.2%
11 / 111	2.8%	2.7%	6.9%	0.0%	12.3%
IV	0.4%	1.2%	4.8%	0.0%	6.4%
V	0.2%	0.7%	5.2%	0.0%	6.1%
Total	8.7%	16.9%	74.4%	0.0%	100.0%

#### Condition in year 2021 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	8.5%	13.1%	61.4%	0.0%	83.0%
11 / 111	0.1%	1.8%	4.2%	0.0%	6.1%
IV	0.0%	1.2%	3.7%	0.0%	5.0%
V	0.2%	0.7%	5.1%	0.0%	6.0%
Total	8.7%	16.9%	74.4%	0.0%	100.0%

#### Condition in year 2030 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
1	8.5%	11.4%	70.6%	0.0%	90.5%
11 / 111	0.0%	1.4%	1.3%	0.0%	2.8%
IV	0.0%	1.4%	1.7%	0.0%	3.0%
V	0.2%	2.7%	0.8%	0.0%	3.7%
Total	8.7%	16.9%	74.4%	0.0%	100.0%



## 10 APPENDIX E-SCENARIO-KEEP CURRENT FUNDING LEVEL (1.5M/YEAR)

## Scenarios - Cost Summary

Interest: 0.00% Inflation: 3.00%

Printed: 8/31/2021

Scenario: City Current Budget-1.5M/year\_VM

					F	Preventative				
Year	PM	Budget	Re	habilitation	N	Naintenance	Surplus PM	Deferred		Stop Gap
2021	38%	\$1,500,000	 	\$886,028 \$43,296	Non- Project	\$570,471	\$0	\$60,772,754	Funded	\$0 \$422.042
			IV	\$0	Project	\$0			Unmet	\$422,943
			V	\$0						
		т	otal	\$929,324						
		Pro	oject	\$0						
2022	38%	\$1,500,000	, 	\$839,499	Non-	\$569,719	\$281	\$67,327,077	Funded	\$0
2022			Ш	\$90,044	Project				Unmet	\$18 219
			IV	\$0	Project	\$0			Chinici	φ10,210
			V	\$0						
		Т	otal	\$929,543						
		Pro	oject	\$0						
2023	38%	\$1,500,000	II	\$929,023	Non-	\$570,294	\$0	\$71,567,146	Funded	\$0
			III	\$0	Project				Unmet	\$13,884
			IV	\$0	Project	\$0				
			V	\$0						
		Т	Total	\$929,023						
		Pro	oject	\$0						
2024	38%	\$1,500,000	П	\$926,493	Non-	\$573,421	\$0	\$77,529,739	Funded	\$0
			III	\$0	Project	<b>^</b>			Unmet	\$17,908
			IV	\$0 \$0	Project	\$0				
		_		\$0						
		T _	otal	\$926,493						
		Pro	oject	\$0			<b>•</b>			
2025	38%	\$1,500,000	11	\$688,992	Non- Project	\$569,399	\$601	\$84,066,338	Funded	\$0
				\$240,929 ¢0	Project	02			Unmet	\$19,390
			V	30 \$0	FIUJECI	φU				
		-		¢000.001						
		l Dro	vicat	\$929,921						
0000	200/	¢1 500 000		Φοεο 200	Non	¢575 556	02	¢01 655 107	Fundad	¢0
2026	30%	φ1,500,000		\$303,322 \$560 980	Project	φ070,000	φυ	\$91,000,197	Funded	<b>پ</b> ور مورد مور
			IV	\$000,000 \$0	Project	\$0			Unmet	\$640,834
			V	\$0 \$0	110,000	ψŪ				
		т	Total	\$924 302						
		Pro	piect	\$0						
2027	38%	\$1,500,000		\$15.324	Non-	\$576,747	\$0	\$97,810,223	Funded	\$0
2021	0070	<i><b>↓</b></i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	III	\$907,735	Project	<i>QOOOOOOOOOOOOO</i>	ψ <b>υ</b>	<i>\\</i>	Unmot	¢20.405
			IV	\$0	Project	\$0			Unnet	4 <u>3</u> 9,495
			V	\$0						
		Т	otal	\$923,059						
		Pro	oject	\$0						
2028	38%	\$1,500,000	.	\$13,709	Non-	\$570,291	\$0	\$104,570,396	Funded	\$0
2020			III	\$915,869	Project				Unmet	\$38,220
			IV	\$0	Project	\$0				÷=0, <b></b> 0
			V	\$0						
		Т	otal	\$929,578						
		Pro	oject	\$0						

Year	PM	Budget	Re	habilitation	l M	Preventative Maintenance	Surplus PM	Deferred		Stop Gap
2029	38%	\$1,500,000	 	\$15,651 \$914,194	Non- Project	\$570,159	\$0	\$113,560,628	Funded Unmet	\$0 \$49.500
			IV V	\$0 \$0	Project	\$0				+
		T Pro	otal ject	\$929,845 \$0						
2030	38%	\$1,500,000	II III IV V	\$13,077 \$812,957 \$73,652 \$29,989	Non- Project Project	\$570,012 \$0	\$0	\$123,106,496	Funded Unmet	\$0 \$66,521
		T Pro	otal ject	\$929,675 \$0						
	Summa	ary								
	Functional Class Rehal		Rehabi	litation	Prev. Maint.	Funde Stop Ga	ed U Ip Stop	Inmet o Gap		
	Arterial			\$4,5	547,889	\$1,217,333	9	60 \$6	6,522	
	Collector	Collector Residential/Local		\$1,2	248,900	\$0	9	60 \$28	5,883	
	Residenti			\$3,4	183,974	\$4,498,736	9	60 \$97	4,508	
	Grand To	otal:		\$9,2	280,763	\$5,716,069	Ş	60 \$1,32	6,913	

City of Lincoln, CA

Interest: 0%

Inflation: 3% Printed: 8/31/2021

Scenario: City Current Budget-1.5M/year\_VM

Year	Budget	PM	Year	Budget	PM	Year	Budget	PM
2021	\$1,500,000	38%	2025	\$1,500,000	38%	2029	\$1,500,000	38%
2022	\$1,500,000	38%	2026	\$1,500,000	38%	2030	\$1,500,000	38%
2023	\$1,500,000	38%	2027	\$1,500,000	38%			
2024	\$1,500,000	38%	2028	\$1,500,000	38%			

#### Projected Network Average PCI by Year

Year	Never Treated	With Selected Treatment	Treated Centerline Miles	Treated Lane Miles	
2021	76	76	10.71	21.93	
2022	73	74	9.76	19.53	
2023	71	72	8.05	16.09	
2024	69	71	9.22	18.43	
2025	67	69	17.74	36.00	
2026	65	68	22.35	44.70	
2027	63	66	21.24	42.49	
2028	61	65	14.62	29.75	
2029	59	63	18.09	36.37	
2030	57	62	20.03	40.06	

## Percent Network Area by Functional Class and Condition Category

#### Condition in base year 2021, prior to applying treatments.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	5.4%	12.3%	57.5%	0.0%	75.2%
11 / 111	2.8%	2.7%	6.9%	0.0%	12.3%
IV	0.4%	1.2%	4.8%	0.0%	6.4%
V	0.2%	0.7%	5.2%	0.0%	6.1%
Total	8.7%	16.9%	74.4%	0.0%	100.0%

#### Condition in year 2021 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
I	6.0%	12.3%	57.5%	0.0%	75.8%
11 / 111	2.2%	2.7%	6.8%	0.0%	11.7%
IV	0.4%	1.2%	4.8%	0.0%	6.4%
V	0.2%	0.7%	5.2%	0.0%	6.1%
Total	8.7%	16.9%	74.4%	0.0%	100.0%

#### Condition in year 2030 after schedulable treatments applied.

Condition	Arterial	Collector	Res/Loc	Other	Total
1	6.7%	4.2%	44.6%	0.0%	55.5%
11 / 111	0.0%	6.8%	14.7%	0.0%	21.5%
IV	1.4%	3.2%	5.1%	0.0%	9.7%
V	0.6%	2.7%	9.9%	0.0%	13.3%
Total	8.7%	16.9%	74.4%	0.0%	100.0%



## 12 APPENDIX F-SCENARIO-MAINTAIN CURRENT PCI

## Target-Driven Scenarios - Cost Summary

Interest: 0%

Inflation: 3%

Printed: 8/31/2021

Scenario: Keep	Current PCI					
Objective: Minir	num Network Ave	erage PCI				Target: Overall 76
Year	Re	ehabilitation	Preventive	Maintenance	Total Cost	Deferred
2021		\$0	Non-	\$818,631	\$818,631	\$61,453,935
	111	\$0	Project			
	IV	\$0	Project	\$0		
	V	\$0				
	Total	\$0				
	Project	\$0				
2022	II	\$288,670	Non-	\$7,384,207	\$7,672,877	\$61,855,410
		\$0	Project			
	IV	\$0	Project	\$0		
	V	\$0				
	Total	\$288,670				
	Project	\$0				
2023	II	\$3,190,571	Non-	\$2,994,394	\$9,730,715	\$57,700,011
	111	\$2,983,586	Project			
	IV	\$562,164	Project	\$0		
	V	\$0				
	Total	\$6,736,321				
	Project	\$0				
2024		\$601,875	Non-	\$1,342,355	\$10,204,483	\$51,919,364
	III	\$3,182,750	Project	<b>*</b> 0		
	IV	\$4,058,842	Project	\$0		
	V	\$1,018,661				
	Total	\$8,862,128				
	Project	\$0				
2025	II	\$0	Non-	\$2,135,527	\$7,276,425	\$49,653,384
	111	\$0	Project			
	IV	\$1,132,888	Project	\$0		
	V	\$4,008,010				
	Total	\$5,140,898				
	Project	\$0				
2026		\$0	Non-	\$3,171,075	\$7,702,375	\$49,535,410
		\$0	Project	<b></b>		
	IV	\$4,531,300	Project	\$0		
	V	\$0				
	Total	\$4,531,300				
	Project	\$0				

Year		Rehabilitation		n Preventive Maintenance		Total Cost		Deferred
2027		II	\$0	Non-	\$133,409	\$7,839,094		\$46,589,853
			\$0	Project				
		IV	\$4,526,871	Project	\$0			
		V	\$3,178,814					
		Total	\$7,705,685					
	_	Project	\$0					
2028		II	\$0	Non-	\$1,025,363	\$6,976,466		\$44,239,643
			\$0	Project				
		IV	\$1,177,405	Project	\$0			
		V	\$4,773,698					
		Total	\$5,951,103					
	_	Project	\$0					
2029		II	\$0	Non-	\$5,891,824	\$5,891,824		\$53,176,232
			\$0	Project				
		IV	\$0	Project	\$0			
		V	\$0					
		Total	\$0					
		Project	\$0					
2030		II	\$0	Non-	\$5,897,200	\$5,897,200		\$56,728,268
			\$0	Project				
		IV	\$0	Project	\$0			
		V	\$0					
		Total	\$0					
	_	Project	\$0					
					<b>D M</b> · · ·		Summary	]
	Functional Clas	SS	R		Prev. Maint.		<i>c c c c c c c c c c</i>	
	Arterial			\$9,730,540 \$1,727,242	\$3,859,645			
	Residential/Local			\$27,758,222	\$22,003,597			
				\$39 216 105	\$30 793 985	Grand Total:	\$70.010.090	
				↓00, <b>2</b> 10,100	<i>400,100,000</i>		,	