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City of Ferndale

Pavement Management Program
Final Report

Submitted to:

City of Ferndale

834 Main Street
Ferndale, California 95536

January 2012

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Executive Summary

The City of Ferndale maintains approximately 9.3 centerline miles of paved streets. A pavement management system (PMS) is used to maintain this pavement network. Based on the results of a survey completed in Fall 2009, the current (2012) average pavement condition index (PCI) is 58, which is in the "fair" condition category. A breakdown of the percentages of the County's network that fall into each condition category is found in Figure 1 below.

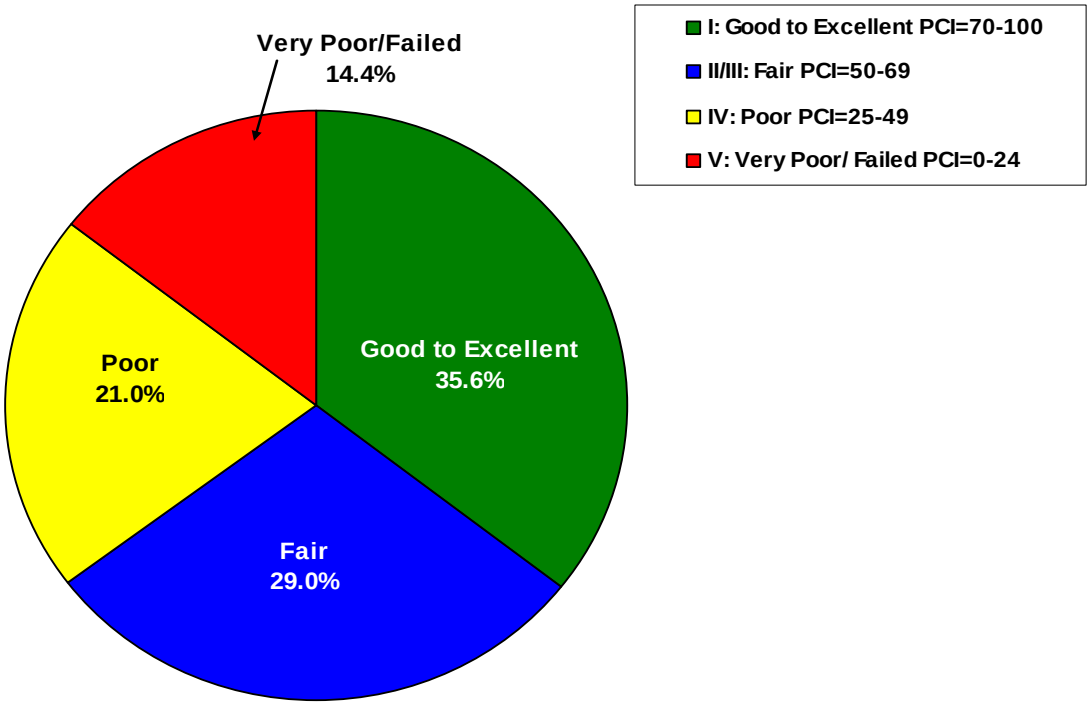

Figure 1. Pavement Condition Summary for City of Ferndale (2012)

This report is intended to assist HCAOG in making cost-effective decisions in managing and programming funding needs for the pavement network.

The pavement needs analysis shows that more than $4.3M is required over the next ten years to repair all the streets and improve the average PCI to 86 ("good to excellent" condition category). This will also eliminate the maintenance backlog.

Three funding scenarios were analyzed:

1. Maintain Current PCI at 58 – In order to maintain the current PCI at 57, an annual budget of $230k will be needed; however, the maintenance backlog will increase from $1.4M to $3.8M.

2. Improve PCI to 70 – An annual budget of $380k will be needed to improve the PCI to 70. The maintenance backlog will continue to increase from $1.2M to approximately $ 2.4M.

3. Unconstrained Needs Budget – Under this budget scenario, the City's network condition will improve to 86 by 2021

Introduction

In 2009, the Humboldt County Association of Governments (HCAOG) selected Nichols Consulting Engineers (NCE) to implement a regional Pavement Management Program (PMP). This was intended to assist HCAOG member entities and Native American Tribes in determining roadway maintenance, rehabilitation, and reconstruction needs. This will also help to prioritize the pavement needs to maximize the efficient use of limited resources available.

In addition to Humboldt County, the following agencies were participants in this study:

- City of Eureka
- City of Arcata
- City of Blue Lake
- City of Ferndale
- City of Fortuna
- City of Rio Dell
- City of Trinidad
- Tribal Roads of Humboldt County

Background

A Pavement Management Program is designed to assist cities and counties in answering typical questions such as:

- What does the City's pavement network consist of? How many miles of streets are eligible for federal or state funds? How many are subjected to traffic from buses or heavy trucks?
- What is the existing condition of the pavement network? Is this an acceptable level for the City? If not, what is an acceptable level? How much additional funding is needed to achieve an acceptable level?
- Are there streets in specific areas that are much worse than others, and if so, how much worse?
- How will the condition of the pavement network respond over time under existing funding levels?
- What maintenance and rehabilitation strategies exist to improve current pavement conditions? What maintenance activities or treatments have occurred in the past on any given street?
- What impact would either additional funding or a decrease in funding, have on the condition of the overall pavement network?
- What is the backlog of maintenance and rehabilitative work that should be done? What are the future maintenance and rehabilitation needs? Are there different needs for different classes of streets i.e. arterials vs. residentials?
- Under different funding levels, what is the most cost-effective way to implement a multi-year capital improvement program? Maintenance work program?
- What are the street repair priorities, given different budgeting scenarios?

The City owns and maintains approximately 9.3 centerline miles of streets. The table below summarizes the pavement network by functional class.

Table 1. Breakdown of Street Network By Functional Class

Functional Class	Centerline Miles	Lane Miles	# of Sections
Residential/Local	7.0	14.0	54
Rural Major Collector	2.3	4.6	7
Totals	**9.3**	**18.6**	**61**

The cost to replace this street network is estimated at $8.2M, which represents a portion of the City's investment in transportation infrastructure. This cost includes the replacement of the pavement structure from the subgrade to the wearing surface as well as ancillary items.

A maintenance and rehabilitation strategy was developed after discussions with the City of Rio Dell in spring 2011, and the unit costs were based on the actual construction bids received on paving projects from 2007-2011 that were provided by the City of Rio Dell. Then, a budget needs analysis was performed. In addition, three budgetary scenarios were analyzed. This report presents the results of our analyses.

Purpose

This report links the PMP's recommended repair program costs to the City's projected budget alternatives to improve overall maintenance and rehabilitation strategies. This report assesses the adequacy of projected revenues to meet the maintenance needs recommended by the PMP. It also maximizes the return from expenditures by:

1. implementing a multi-year street rehabilitation and maintenance program;
2. developing a preventative maintenance program; and
3. selecting the most cost effective repairs.

This study examines the overall condition of the street network and highlights options for improving the current network level pavement condition index (PCI). These options are developed by conducting "what if" scenarios using HCAOG's pavement management system database. By varying the budget amounts available for pavement M&R, one can show how different funding strategies can impact the City's streets over the next ten years.

Existing Pavement Condition

The pavement condition index, or PCI, is a measurement of pavement grade or condition and ranges from 0 to 100. A newly constructed street would have a PCI of 100, while a failed street would have a PCI of 10 or less. **City's average 2012 PCI is 58, which is in the "fair" category.** A detailed PCI report which includes all the Streets in City of Ferndale is presented in Appendix A. A description of the various M&R strategies available for the City follow are listed in Appendix B. Figure 2 illustrates the different pavement condition categories below – these follow industry standards and are widely used throughout California and the United States.

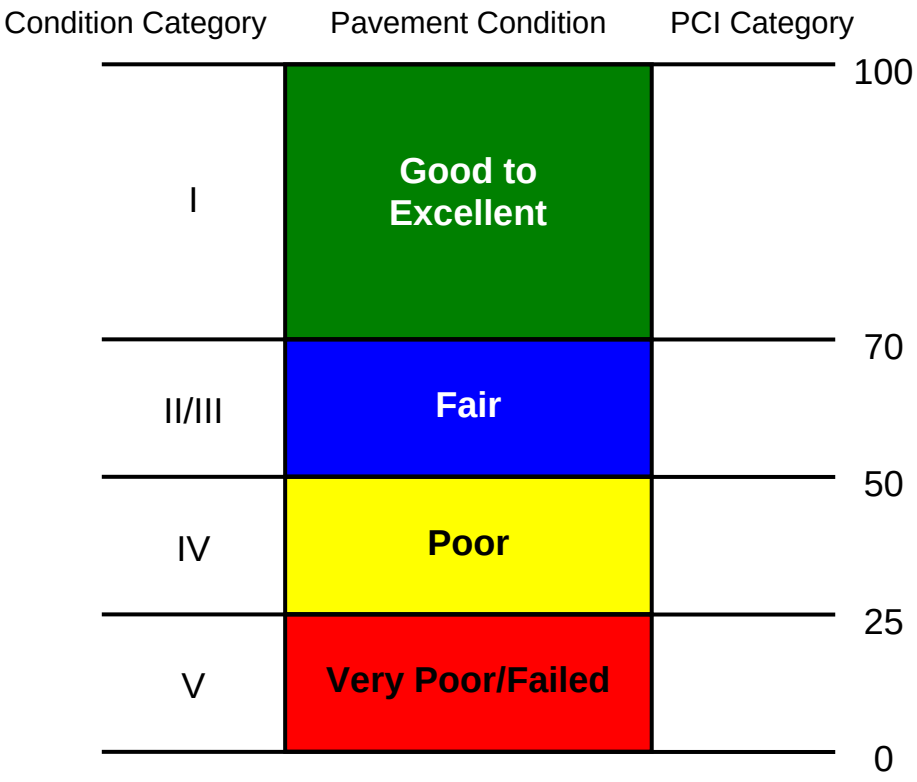

Figure 2. Pavement Condition Categories by PCI

A brief description of each condition category is summarized as follows:

- Category I: Pavements which have little or no distress. A pavement in this category may be described as “excellent” or “very good”. An example in this category is Fern Avenue beginning at Main Street toward end, which has a PCI of 82.

- Category II: Pavements which have a significant level of distress that are predominantly non-load related. A pavement in this category may be described as “fair”. An example in this category is Grant Avenue between Schley Avenue and Lincoln Avenue, which has a PCI of 63.

- Category III: Pavements which have a significant level of distress that are predominantly load related. A pavement in this category may be described as “fair”. An example is Craig Street between Ocean Avenue and Washington Street, which has a PCI of 60.

- Category IV: Pavements which have a major distress. A pavement in this category may be described as “poor”. An example is Francis Street starting at Ocean Avenue toward the bridge, which has a PCI of 41.

- Category V: Pavements which have an extensive amount of distress. A pavement in this category may be described as “very poor or failed”. An example is Fifth Street between Arlington Avenue and Van Ness Avenue, which has a PCI of 22.

The reason to separate streets with a PCI between 50 and 70 into either Category II or III is because the repair strategies are very different. A Category III repair will usually address structural failures and will cost more than a Category II repair.

Pavement management information from regional agencies was collected to gauge City's condition against the region. PCI data was collected for seven agencies: the Humboldt County, the City of Arcata, Eureka, Blue Lake, Fortuna, Rio Dell, and Trinidad. The tribal roads have not yet been included in this part of the study. The PCI comparisons are shown in Figure 3.

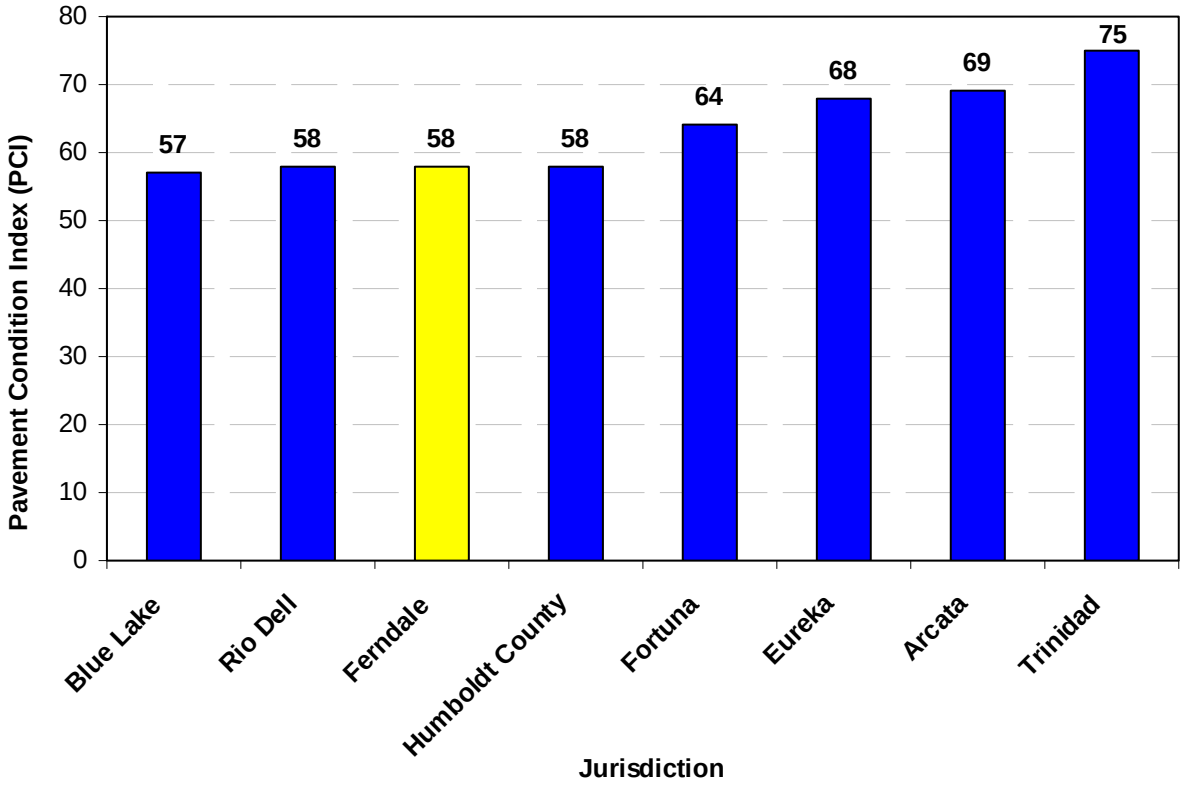

Figure 3. PCI Comparison with Seven Regional Jurisdictions

Approximately 35.6% of the City's pavement area is in the "good to excellent" condition category; about 50.0% of the pavement area falls in the "poor or fair" category and about 14.4% of the network falls in the "failed" category (see Figure 4 below). Detailed PCI results can be found in Appendix A.

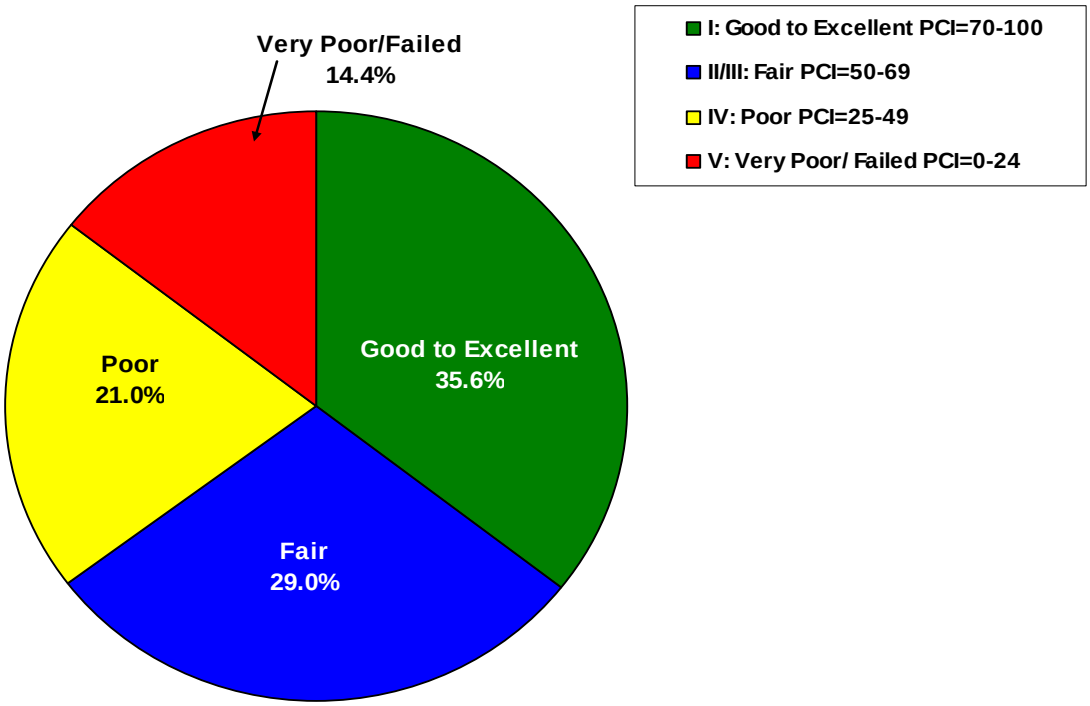

Figure 4. Pavement Condition Summary for City of Ferndale (2012)

Budget Needs

It is well documented that it costs less to maintain streets in good condition than streets in bad condition. Therefore, the StreetSaver program strives to develop a maintenance and rehabilitation (M&R) strategy that will improve the overall condition of the network to an optimal PCI somewhere around the 80's. The City's current **average network PCI is 58**, and a significant portion of the network suffers from load-related distresses. If these issues are not addressed, the quality of the street network will inevitably decline. In order to correct these deficiencies, a cost-effective funding and M&R strategy should be implemented.

The first step is to determine the maintenance "needs" of the pavement network. Using the budget needs module, the M&R needs over the next ten years were estimated at approximately $4.3M for the City. If the City follows the M&R strategy presented in Appendix B and prioritization strategy recommended in the program, the average network PCI will increase to 86. This is the level at which it is most cost-effective to maintain the pavements with preventive maintenance strategies. If, however, no maintenance or rehabilitation is applied over the next ten years, already distressed streets will continue to deteriorate, and the network PCI will drop to 34. The results of the budget needs analysis are summarized in Table 2 below.

Table 2. Summary of Results from Needs Analysis

Year	2012	2013	2014	2015	2016	2017
PCI with treatment	76	79	84	82	87	86
PCI without treatment	56	54	51	49	46	43
Rehabilitation ($ M)	1.5	0.5	0.9	0.1	0.7	0.1
Preventive Maintenance ($ M)	0.1	0.0	0.0	0.0	0.0	0.0
Budget Needs ($ M)	1.6	0.5	0.9	0.1	0.7	0.1

Year	2018	2019	2020	2021	Total
PCI with treatment	84	83	86	86	
PCI without treatment	41	38	36	34	
Rehabilitation ($ M)	0.1	0.0	0.1	0.0	3.9
Preventive Maintenance ($ M)	0.0	0.0	0.2	0.1	0.4
Budget Needs ($ M)	0.0	0.0	0.3	0.1	4.3

The results of the budget needs analysis represent the ideal funding strategy recommended by StreetSaver. Of the $4.3M in M&R needs shown, approximately $0.4M (9%) is earmarked for preventative maintenance or life-extending treatments, while the rest (91%) is allocated for more costly rehabilitation and reconstruction treatments.

Impacts of Projected Funding Levels

Using the StreetSaver budget scenario modules, both the overall PCI for the pavement network as well as the amount of unfunded maintenance backlog can be evaluated for a given funding level over a period of time. The unfunded backlog consists of pavement M&R that is needed, but cannot be addressed due to lack of funding. Shrinking budgets have forced many cities to defer much-needed street maintenance. By deferring M&R, not only does the frequency of citizens' complaints about the condition of the network increase, but also the cost to repair these streets increases as well.

Figure 5 demonstrates the old colloquial saying of "pay me now, or pay more later". History has shown that it costs less to maintain streets in good condition than to repair streets that have failed. By allowing pavements to deteriorate, streets that once cost only $1.30 to $1.40 per square yard to surface seal may soon cost $16.90 to $38.00 per square yard to overlay and upwards of $67.10 per square yard to reconstruct.

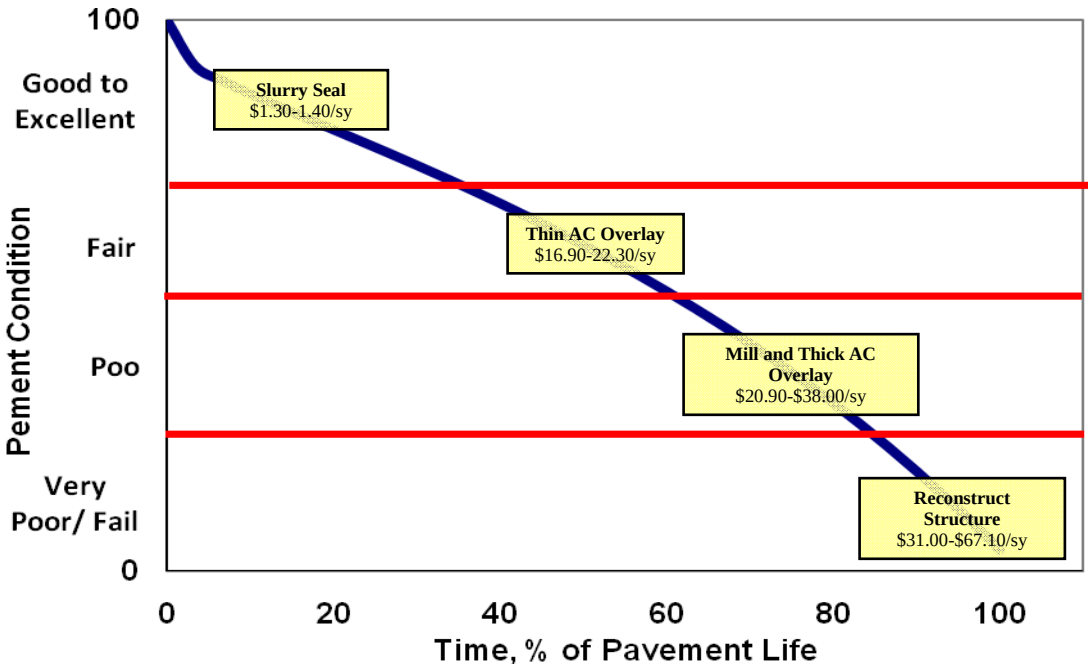

Figure 5. Cost to Maintain a Pavement Over Time

Budget Scenarios

Having determined the maintenance needs of the street network, the next step in developing a cost-effective M&R strategy is to conduct several what-if analyses. Using StreetSaver's budget scenario module, the impacts of various budget scenarios can be evaluated. The program forecasts the effects of the different scenarios on PCI and deferred maintenance (backlog). By examining the effects on these indicators, the advantages and disadvantages of different funding levels and maintenance strategies become clear. The following scenarios were performed for this report at the request of the HCAOG based on current and projected funding programs to ensure that the PMP is a useful document regardless of funding modifications.

Scenario 1. Maintain Current PCI at 58 ($230k per year) – $230k per year will be needed in order to maintain the current PCI of the network at 58. The deferred maintenance backlog will increase by approximately $2.4M, from $1.4M to $3.8M.

Scenario 2. Improve PCI to 70 ($380k per year) – In order to improve the PCI to 70, a budget of $380k in the next ten years will be needed. In the meantime, the deferred maintenance backlog will continue to increase from $1.2M to $2.4M by 2021.

Scenario 3. Unconstrained Needs Budget ($4.3M over ten years) – In this scenario, this level of funding will eliminate the deferred maintenance backlog and target PCI will be 86 by 2021.

Scenario 1. Maintain Current PCI at 58 ($230k per year)

In order to maintain the current condition of the network at PCI of 58, $230k per year will be needed. The deferred maintenance backlog will continue to increase from $1.4M to $3.8M. Approximately 66.7% of the network will be in the good or excellent condition category, while 33.3% will still remain in the "failed" category. Although the network PCI remains at 58, it can be seen that the deferred maintenance backlog will still increase. This is because the available budget is only enough to keep good streets in good condition but is not sufficient to also repair those streets that fall into categories IV and V. Candidate streets for maintenance and rehabilitation are listed in Appendix D.

Table 3. Summary of Results for Scenario 1

Year	2012	2013	2014	2015	2016	2017
Budget ($ k)	230	230	230	230	230	230
Rehabilitation ($ k)	203	205	212	188	205	213
Preventive Maintenance ($ k)	4	12	11	41	14	0
Deferred Maintenance ($ M)	1.4	1.7	2.5	2.5	3.1	2.4
PCI	58	58	58	59	59	58
Year	**2018**	**2019**	**2020**	**2021**	**Total**	
Budget ($ k)	230	230	230	230	2,300	
Rehabilitation ($ k)	189	203	163	185	1,965	
Preventive Maintenance ($ k)	14	13	20	19	148	
Deferred Maintenance ($ M)	2.4	2.3	3.6	3.8		
PCI	58	58	58	58		

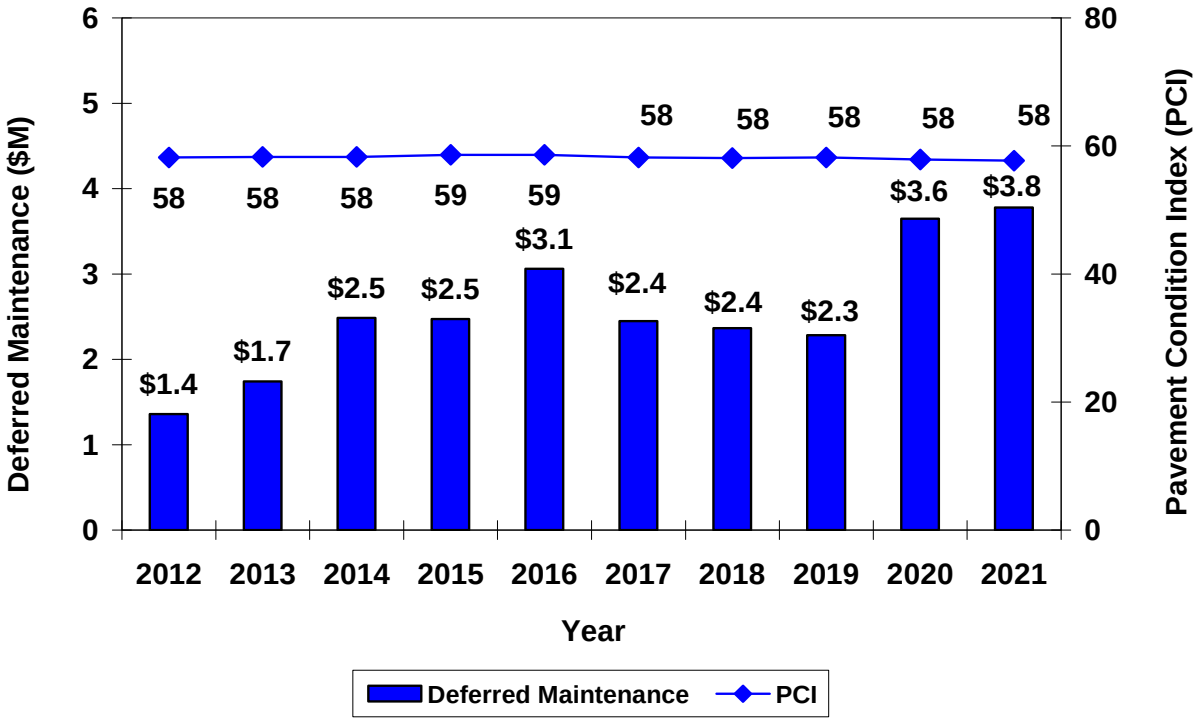

Figure 6. PCI vs. Deferred Maintenance for Scenario 1: Maintain Current PCI

Scenario 2. Improve PCI to 70 ($380k per year)

In order to improve the condition of the network PCI to 70, $380k per year will be needed. The deferred maintenance backlog will continue to increase from $1.2M to $2.4M. Approximately 80.7% of the network will be in the good or excellent condition category, while 19.3% will still remain in the “failed” category. Candidate streets for maintenance and rehabilitation are listed in Appendix D.

Table 4. Summary of Results for Scenario 2

Year	2012	2013	2014	2015	2016	2017
Budget ($ k)	380	380	380	380	380	380
Rehabilitation ($ k)	357	357	338	280	353	299
Preventive Maintenance ($ k)	1	10	35	46	0	0
Deferred Maintenance ($ M)	1.2	1.4	2.0	1.9	2.3	1.6
PCI	60	62	64	66	67	67
Year	**2018**	**2019**	**2020**	**2021**	**Total**	
Budget ($ k)	380	380	380	380	3,800	
Rehabilitation ($ k)	171	344	360	132	2,991	
Preventive Maintenance ($ k)	0	13	0	65	170	
Deferred Maintenance ($ M)	1.5	1.2	2.3	2.4	-	
PCI	67	69	70	70		

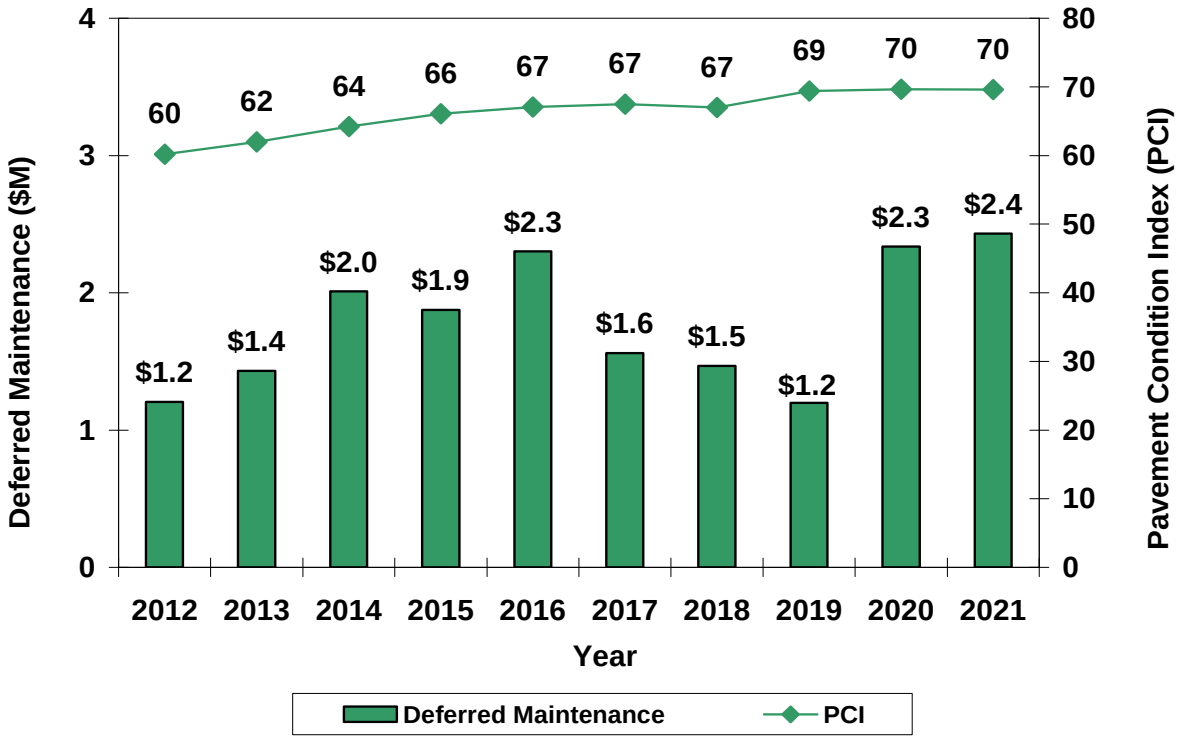

Figure 7. PCI vs. Deferred Maintenance for Scenario 2: Improve PCI to 70 ($380k per year)

Scenario 3. Unconstrained Needs Budget ($4.3M over ten years)

In this scenario, the funding level is approximately $4.3M over ten years. As a consequence, the City's network condition will increase from the current PCI of 58 to 86 by 2021. Also, the deferred maintenance backlog will be eliminated. Candidate streets for maintenance and rehabilitation are listed in Appendix D.

Table 5. Summary of Results for Scenario 3

Year	2012	2013	2014	2015	2016	2017
Budget ($ k)	1,563	533	879	92	684	115
Rehabilitation ($ k)	1,481	533	879	92	684	115
Preventive Maintenance ($ k)	82	0	0	0	0	0
Deferred Maintenance ($ M)	0.0	0.0	0.0	0.0	0.0	0.0
PCI	76	79	84	82	87	86
Year	**2018**	**2019**	**2020**	**2021**	**Total**	
Budget ($ k)	0	42	273	79	4,259	
Rehabilitation ($ k)	0	0	104	0	3,889	
Preventive Maintenance ($ k)	0	42	168	79	371	
Deferred Maintenance ($ M)	0.0	0.0	0.0	0.0		
PCI	84	83	86	86		

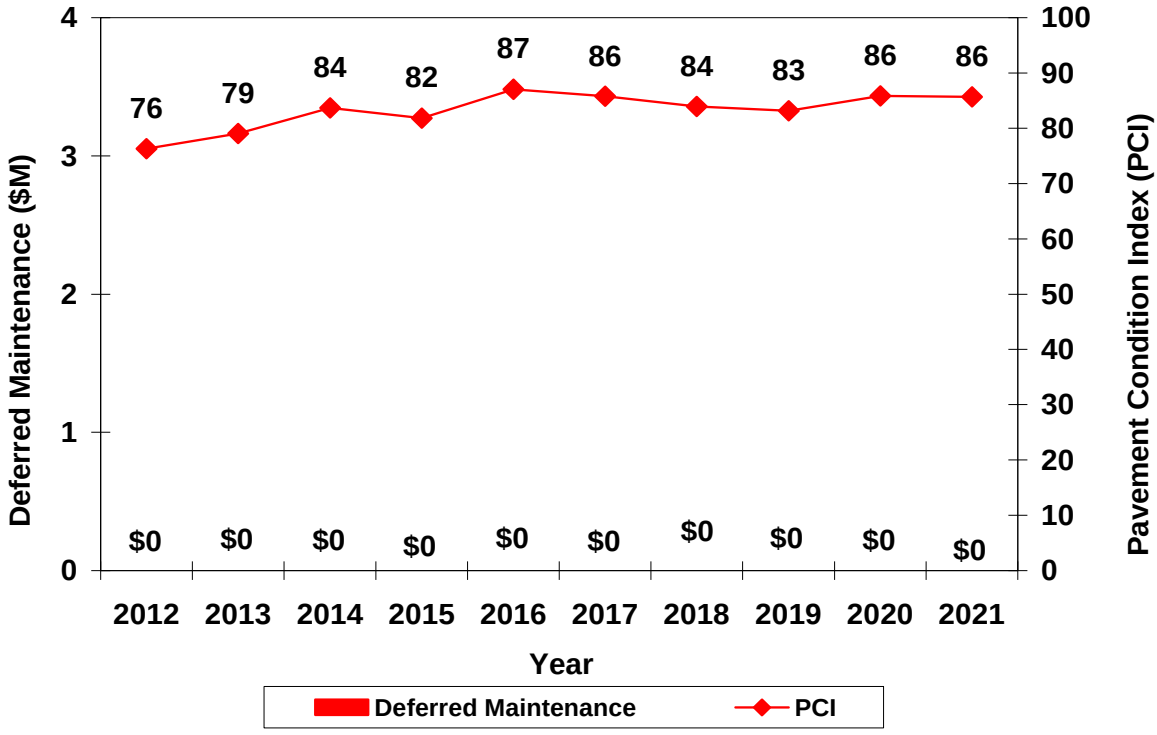

Figure 8. PCI vs. Deferred Maintenance for Scenario 3: Needs Budget ($4.3M over ten years)

Discussion

Figure 9 illustrates the change in PCI over time for the different budget scenarios. Note that Scenario 1 ($230k per year) will maintain the average network PCI at 58 over the next 10 years. Scenario 2 ($380k per year) will improve the network PCI to 70 over 10 years. Scenario 3 ($4.3M/10yrs) will see an increase in the PCI to 86 by 2021.

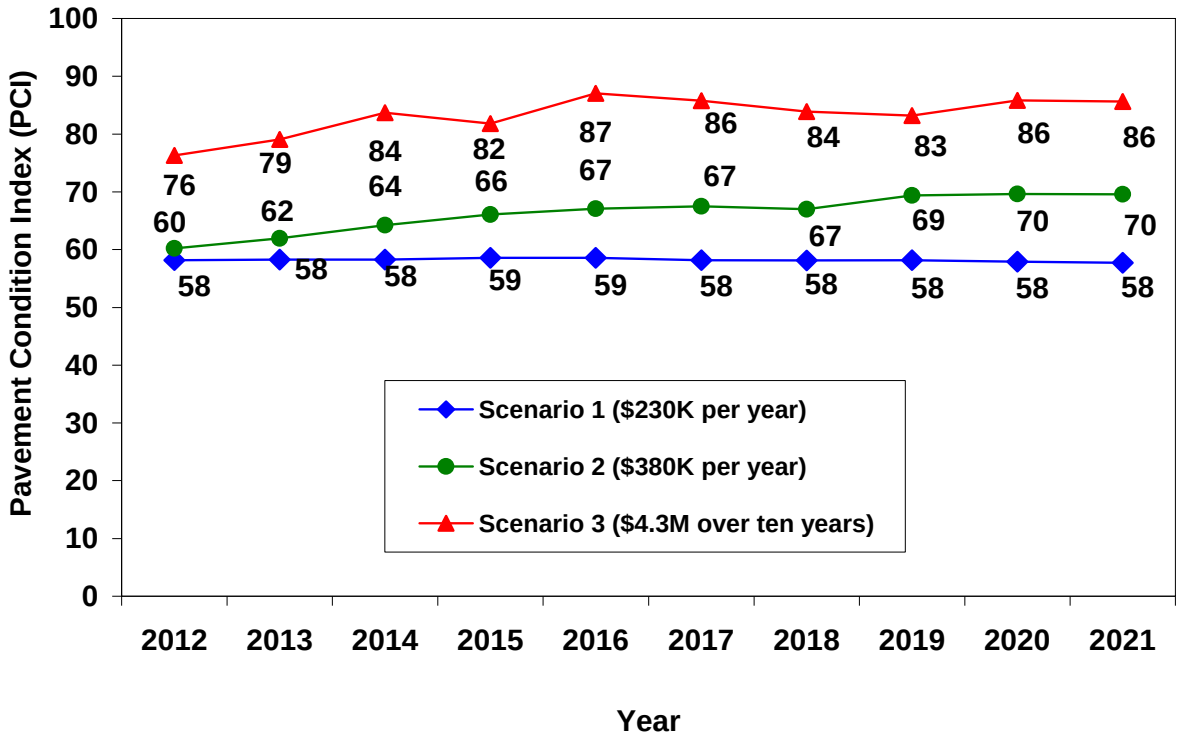

Figure 9. Pavement Condition Index by Scenario by Year

Figure 10 illustrates the change in deferred maintenance over time for the different budget scenarios. Note that Scenario 1 (Maintain PCI at 58) will still see an increase in the deferred maintenance even though the PCI remains about the same. This indicates that a constant PCI does not also mean that the unfunded backlog is stable. The reason is because funds are allocated to preserve all the good streets first (i.e. where the PCI > 70). Any streets with a PCI <70 will continue to deteriorate, and their deferred costs to repair will continue to increase, and the unfunded backlog will continue to grow.

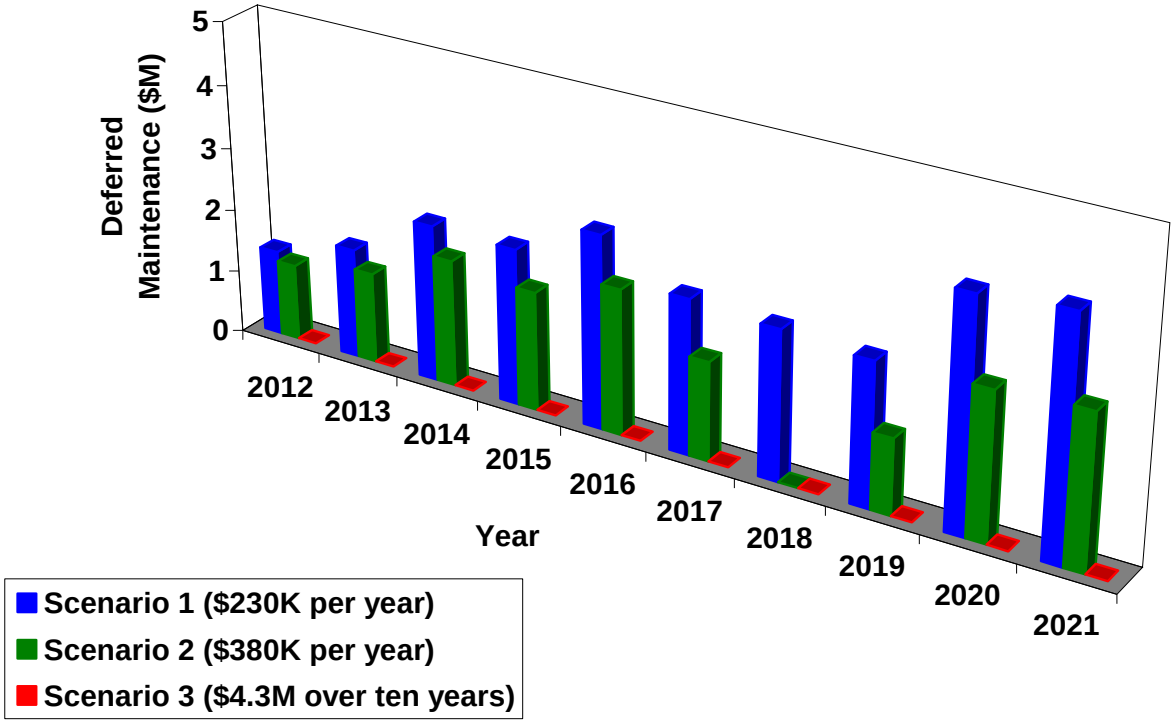

Figure 10. Deferred Maintenance Backlog by Scenario by Year

Conclusions

City of Ferndale currently has a paved street network of 9.3 centerline miles or 18.6 lane miles. Overall, the streetwork network that was surveyed is in “fair” condition with an average PCI of 58. Approximately 35.6% are in the “Good to Excellent” condition category; however, about 35.4% of the network also falls into the poor and failed categories, which require a budget of $4.3M over the next ten years to restore these pavements.

The level of funding has to be compared with results of this report to make a better policy in next ten years. Obviously, shrinking the budget will not provide sufficient money to meet the City’s needs both in the short and long terms. If more funding is not made available then the City’s streets will only deteriorate further and will only make it that much more difficult to show any signs of improvement.

Statewide, there are a large variety of local funding sources that cities and counties rely on. They include:

- General funds
- Local sales taxes
- Developer impact fees
- Various assessment districts – lighting, special assessment
- Community services districts
- Redevelopment agencies
- Traffic impact fees
- Traffic safety/circulation fees
- Utility taxes/fees
- Transportation mitigation fees
- Parking and various permit fees
- Tribal funds
- Traffic safety fines
- Fines and forfeitures
- Interest income
- Landfill mitigation
- Landscape funding plan
- Local Transportation Fund (LTF)
- Property taxes
- Storm drain fund
- Tolls
- Tobacco settlement funds

The City is strongly encouraged to consider additional sources of funding for the pavement network.

Glossary

Deferred Maintenance	This is maintenance work that is deferred to a future budget cycle, or postponed until funds are available. The failure to perform needed repair, maintenance, and renewal by normal maintenance management creates deferred maintenance, also called “Backlog”.
Functional Class	Defines the primary function of a particular pavement section. The four classes are: A (Arterial), C (Collector), R (Residential), and O (Other).
Network	All the streets in the City that includes arterial, collector, and residential streets.
PCI	Pavement Condition Index - measured on a scale of 0 (failed) to 100 (excellent), PCIs can be calculated from inspection units and applied maintenance treatments.
PMP	Pavement Management Program
PM%	Percentage of each year’s budget that has been set aside for preventive maintenance activities such as slurry seals.
Preventative Maintenance	These are treatments that are applied to pavements with a PCI greater than 70. They include treatments such as crack seals or slurry seals and are intended to preserve the pavement. However, it does not extend the structural service life of the pavement.
Rehabilitation	These are treatments that are applied for pavements with a PCI less than 70. Typically, they include overlays and reconstruction and are intended to extend the structural life of the pavement.
Replacement Cost	Cost to replace the entire pavement structure *e.g.* asphalt concrete and aggregate base.
Treatment	Repair activities that are applied to restore either the functional or structural deficiencies of the pavement.

Appendix A: Inventory & PCI Summary

City of Ferndale
Pavement Managemenet Program
Inventory and PCI Summary

Area	Street ID	Section ID	Street Name	Begin	End	Length	Width	FC	ST	PCI Date	PCI
Ferndale	F-3RDST	010	3RD STREET	A ST	SHAW AVE	300	44	R	A	10/19/2009	62
Ferndale	F-4THST	010	4TH STREET	PIXLEY	A ST	558	44	R	A	10/19/2009	78
Ferndale	F-5THST	010	5TH STREET	OCEAN AVE	SHAW AVE	645	37	R	A	10/19/2009	41
Ferndale	F-5THST	020	5TH STREET	SHAW AVE	ARLINGTON AVE	2,297	32	R	A	10/19/2009	100
Ferndale	F-5THST	030	5TH STREET	ARLINGTON AVE	VAN NESS AVE	1,350	25	R	A	10/19/2009	22
Ferndale	F-AST	010	A STREET	5TH ST	3RD ST	613	36	R	A	10/19/2009	51
Ferndale	F-ARLAVE	010	ARLINGTON AVE	W CITY LIMIT	5TH ST	924	14	R	A	10/19/2009	23
Ferndale	F-ARLAVE	020	ARLINGTON AVE	5TH ST	MAIN ST	1,745	35	R	A	10/19/2009	96
Ferndale	F-ARLAVE	030	ARLINGTON AVE	MAIN ST	E END	499	35	R	A	10/19/2009	77
Ferndale	F-BERDST	010	BERDING STREET	FRANCIS ST	CLEVELAND ST	553	27	R	A	10/19/2009	86
Ferndale	F-BERDST	020	BERDING STREET	CLEVELAND ST	EUGENE ST	232	47	R	A	10/19/2009	90
Ferndale	F-BERDST	030	BERDING STREET	EUGENE ST	HERBERT ST	2,233	41	R	A	10/19/2009	35
Ferndale	F-BLUFST	010	BLUFF STREET	CRAIG ST	E CITY LIMIT	2,404	20	RMaC	A	10/19/2009	95
Ferndale	F-BROWST	010	BROWN STREET	MAIN ST	BERDING ST	374	30	R	A	10/19/2009	72
Ferndale	F-BROWST	020	BROWN STREET	BERDING ST	CRAIG ST	311	35	R	A	10/19/2009	62
Ferndale	F-CLEVST	010	CLEVELAND STREET	BERDING ST	HARRISON ST	352	37	R	A	10/19/2009	72
Ferndale	F-CRAIST	010	CRAIG STREET	OCEAN AVE	WASHINGTON ST	680	47	R	A	10/19/2009	60
Ferndale	F-CREACT	010	CREAM COURT	W CDS	JACOBSEN WAY	609	35	R	A	10/19/2009	92
Ferndale	F-DEWAVE	010	DEWEY AVENUE	HERBERT ST	E CDS	363	21	R	A	10/19/2009	71
Ferndale	F-DEEAVE	010	DEWEY EXTENSION AVENUE	W CDS	JACOBSEN WAY	508	36	R	A	10/19/2009	92
Ferndale	F-EMERLN	010	EMERSON LANE	S CDS	WASHINGTON ST	447	19	R	A	10/19/2009	86
Ferndale	F-EUGEST	010	EUGENE STREET	FRANCIS ST	BERDING ST	383	43	R	A	10/19/2009	90
Ferndale	F-EUGEST	020	EUGENE STREET	BERDING ST	HARRISON ST	348	31	R	A	10/19/2009	100
Ferndale	F-EUGEST	030	EUGENE STREET	HARRISON ST	END OF PAVEMENT	362	12	R	A	10/19/2009	30
Ferndale	F-FERAVE	010	FERN AVENUE	N END	MAIN ST	842	38	R	A	10/20/2009	82
Ferndale	F-FERAVE	020	FERN AVENUE	MAIN ST	BERDING ST	365	33	R	A	10/19/2009	85
Ferndale	F-FRANST	010	FRANCIS STREET	S END	SW BRIDGE	221	24	R	A	10/19/2009	73
Ferndale	F-FRANST	020	FRANCIS STREET	NE BRIDGE	OCEAN AVE	774	48	R	A	10/19/2009	41
Ferndale	F-GRAAVE	010	GRANT AVENUE	SCHLEY AVE	LINCOLN AVE	809	32	R	A	10/19/2009	63
Ferndale	F-HARAVE	010	HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	234	35	R	A	10/19/2009	78
Ferndale	F-HERBST	010	HERBERT STREET	ROSE AVE	DEWEY AVE	640	23	R	A	10/19/2009	32
Ferndale	F-HERBST	020	HERBERT STREET	DEWEY AVE	FERN AVE	197	37	R	A	10/19/2009	100
Ferndale	F-HERBST	030	HERBERT STREET	FERN AVE	MAIN ST	660	37	R	A	10/19/2009	96
Ferndale	F-HOWAST	010	HOWARD STREET	MAIN ST	E END	644	46	R	A	10/19/2009	79
Ferndale	F-JACWAY	010	JACOBSEN WAY	S CDS	N CDS	710	32	R	A	10/19/2009	81
Ferndale	F-LEWAVE	010	LEWIS AVENUE	MAIN ST	BERDING ST	343	33	R	A	10/19/2009	75
Ferndale	F-LINAVE	010	LINCOLN AVENUE	CROWLEY AVE	GRANT AVE	403	16	R	A	10/19/2009	100

City of Ferndale
Pavement Managemenet Program
Inventory and PCI Summary

Area	Street ID	Section ID	Street Name	Begin	End	Length	Width	FC	ST	PCI Date	PCI
Ferndale	F-LINCST	010	LINCOLN STREET	MILTON AVE	TENNYSON AVE	620	42	R	A	10/19/2009	69
Ferndale	F-MADIST	010	MADISON STREET	ARLINGTON AVE	TENNYSON AVE	399	45	R	A	10/19/2009	43
Ferndale	F-MAINST	010	MAIN STREET	OCEAN AVE	LEWIS AVE	1,453	44	RMaC	A	10/19/2009	69
Ferndale	F-MAINST	020	MAIN STREET	LEWIS AVE	MARKET ST	4,349	38	RMaC	A	10/19/2009	66
Ferndale	F-MCKAVE	010	MCKINLEY AVENUE	GRANT ST	DEWEY AVE	1,475	36	R	A	10/19/2009	63
Ferndale	F-MILAVE	010	MILTON AVENUE	MAIN ST	LINCOLN ST	234	47	R	A	10/19/2009	58
Ferndale	F-MILAVE	020	MILTON AVENUE	LINCOLN ST	E END	176	35	R	A	10/19/2009	30
Ferndale	F-OCEAVE	010	OCEAN AVENUE	SHAW AVE	5TH ST	1,135	30	RMaC	A	10/19/2009	13
Ferndale	F-OCEAVE	020	OCEAN AVENUE	5TH ST	MAIN ST	465	59	RMaC	A	10/19/2009	92
Ferndale	F-OCEAVE	030	OCEAN AVENUE	MAIN ST	CRAIG ST	696	48	RMaC	A	10/19/2009	47
Ferndale	F-PIXLEY	010	PIXLEY	4TH ST	5TH ST	299	34	R	A	10/19/2009	41
Ferndale	F-ROSAVE	010	ROSE AVENUE	HERBERT ST	W CITY LIMIT	1,970	36	R	A	10/19/2009	27
Ferndale	F-SCHAVE	010	SCHLEY AVENUE	ROSE AVE	GRANT AVE	960	38	R	A	10/19/2009	65
Ferndale	F-SHAMCT	010	SHAMSI COURT	3RD ST	N CDS	309	36	R	A	10/19/2009	88
Ferndale	F-SHAAVE	010	SHAW AVENUE	OCEAN AVE	MAIN ST	2,011	32	R	A	10/19/2009	90
Ferndale	F-SHAAVE	020	SHAW AVENUE	MAIN ST	BERDING ST	373	30	R	A	10/19/2009	59
Ferndale	F-SHAWLN	010	SHAW LANE	W CDS	SHAW AVE	247	19	R	A	10/19/2009	92
Ferndale	F-TENAVE	010	TENNYSON AVENUE	MAIN ST	LINCOLN ST	488	47	R	A	10/19/2009	32
Ferndale	F-VNEAVE	010	VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	1,923	35	R	A	10/19/2009	50
Ferndale	F-VANAVE	010	VANSTON AVENUE	MAIN ST	W END	237	41	R	A	10/19/2009	80
Ferndale	F-WASHST	010	WASHINGTON STREET	MAIN ST	BERDING ST	373	31	R	A	10/19/2009	33
Ferndale	F-WASHST	020	WASHINGTON STREET	BERDING ST	SCHLEY AVE	1,202	31	R	A	10/19/2009	33
Ferndale	F-WATAVE	010	WATSON AVENUE	ROSE AVE	S CDS	296	34	R	A	10/19/2009	29
Ferndale	F-WILDRD	010	WILDCAT ROAD	S CITY LIMIT	OCEAN AVE	1,530	21	RMaC	A	10/19/2009	33

Appendix B: M&R Treatment Description

Brief Description of Maintenance and Rehabilitation Treatments

Crack Sealing

Crack Sealing is the placement of polymerized/rubberized asphalt materials into cracks that bond to the crack walls and move with the pavement. This technique is used to fill longitudinal and transverse cracks, including joint reflection cracks from underlying PCC slabs that are 1/8" to ½" wide. The primary purpose of crack sealing in Asphalt Concrete (AC) pavement is to prevent surface water infiltration into the substructure of pavement and to prevent the debris stay in the cracks. It is more cost effective to use this technique as preventative maintenance when the overall pavement condition is in good condition. Sealing cracks on a deteriorated pavement surface is not cost effective and will not provide any structural benefit to the road.

Fog seal

A Fog seal involves the spraying of a light coat of a bituminous material (typically 0.03 to 0.05 gallon per square yard) on the surface of an existing pavement using a distributor. It is used to reduce raveling while also improving waterproofing. Fog seals are especially good for treating pavements that carry light traffic such as parking lots.

Slurry seals

A slurry Seal consists of a graded aggregate, asphalt emulsion, mineral filler, water, and additives. It is a hard wearing surface for pavement preservation. Slurry Seals are used primarily on aged and raveled pavements, filling minor cracks, restoring skid resistance and adding aesthetic appeal. It may be used on low volume streets and parking lots. Larger cracks need to be individually treated before the application of a slurry seal. The surface is smoother than a chip seal treatment and is more "surface friendly". In general, slurry seal can be categorized into three types which depend on the maximum aggregate size in the mix. Type I slurry seals usually contain maximum aggregate size of 1/8"; Type II slurry seals usually contain maximum aggregate size of ¼"; and Type III slurry seals usually contain maximum aggregate size of 3/8".

Scrub seals

A scrub seals are a polymer modified asphalt layer applied to an asphalt pavement surface and scrubbed into the cracks and voids with a broom. A layer of sand or small aggregate is then applied over the asphalt and then scrubbed over again, forcing the mix into the cracks and voids to form a seal. It is used to fill and seal small cracks and voids, as well as to enrich hardened/oxidized asphalt. Many contractors are still unfamiliar with the scrub seal method, so tests may be needed to determine what emulsion or polymer-modified emulsion would work with the brooms.

Chip seal

Chip seals are the application of asphalt and aggregate chips rolled onto the pavement. In the United States, chip seals are typically used on rural roads carrying lower traffic volumes. It is used to seal the surface of a pavement with non-load associated cracks, and to improve surface friction. During the treatment, the roadway can be opened to low-speed traffic just after the application of the aggregate. However, it requires constant attention and frequent adjustment of aggregate application rates to minimize chip loss, loose aggregates, and bleeding. Windshields can be damaged by the loose aggregate

before the excess is removed and dust can be created during the brooming of the loose aggregate. Double chip seals are common for more high volume roads.

Cape Seals

A cape is the application of a chip seal followed by a slurry seal or microsurfacing within a few days of the initial treatment. Cape Seals are used where a chip seal is too rough and when a smooth finish is required e.g. in the residential streets. In instances where cracking is a problem, a polymer or asphalt rubber modified chip seal can alleviate cracking and the slurry provides the smooth surface. It can increase the life of a chip seal by enhancing binding of the chips and by protecting the surface.

Microsurfacing

Microsurfacing consists of graded aggregates, asphalt emulsion, mineral filler, water and other additives. Compare to slurry seal, microsurfacing uses better quality aggregates and a fast setting emulsion of higher stiffness allowing thicker layers to be placed. Thus, it is usually used in the more specialized slurry jobs of rut filling, restoring surface profiles, and for roads that sustain heavy traffic. It also has quicker cure time, but the cost is higher than a slurry or chip seal treatment.

Ultrathin Bonded Wearing Surface

An ultrathin bonded wearing surface is a specially formulated thin asphalt mix overlay. Ultra-thin bonded wearing surface is placed with a specially built machine that places a thick layer of oil and asphalt in a single pass. The heavy oil application seals small cracks in the existing pavement and helps to ensure the adhesion of the asphalt to the underlying pavement. The ultrathin mat, usually ranges from ½ to 3/4 inches thick. The treatment is primarily used to provide a durable, friction resistant surface on existing pavement, without the expense of milling the existing asphalt. But the cost for this application is high, and it needs special construction equipment.

Hot-Mix Asphalt (HMA) Overlay

This technique involves adding an HMA layer to an existing HMA or PCC pavement. It is used to correct or improve the structural capacity or functional requirements such as skid resistance and ride quality. The use of an HMA overlay is usually more economic when the existing pavement is still in good to fair condition. An overlay may be combined with other M&R methods such as cold milling, cold recycling, hot recycling, and heater scarification. The thickness of the new surface will be dependent on the type, severity and extent of the pavement surface distresses, the ride quality and the required structural improvement necessary to accommodate the design traffic.

Rubberized Hot-Mix Asphalt (RHMA)

Rubberized hot-mix asphalt concrete (RHMA) is a road paving material made by blending ground-up recycled tires with asphalt to produce a binder which is then mixed with conventional aggregate materials. This mix is then placed and compacted into a road surface. There are two primary types of binders for RHMA, asphalt-rubber and terminal blend. Asphalt-Rubber is a blend of paving grade asphalt cement, ground recycled tire rubber and other additives, as needed, for use as binder in pavement construction. The rubber shall be blended and interacted in the hot asphalt cement sufficiently to cause swelling of the rubber particles prior to use. The asphalt-rubber binder is field blended (at the hot mix plant) and requires specialized mobile mixing

equipment to produce. Typical crumb rubber modifier (CRM) content for asphalt-rubber ranges from 18-22 percent. The crumb rubber modifier used in asphalt-rubber is in the 10-16 mesh range. Terminal blends. are binder materials that use finely ground (less than 30 mesh) crumb rubber modifier and are typically blended at the asphalt refinery. Historically, terminal blend binders contained 10 percent or less crumb rubber modifier. However, in recent years the crumb rubber modifier content has been increased to 15-20 percent in some projects. The major advantages of using the RHMA are better resistance to reflective cracking and more environmental friendly which help to use recycled tires.

Reconstruction

Reconstruction, which might be considered as the ultimate or extreme rehabilitation treatment, consists of the removal of the pavement structure which can go down to the subgrade, reworking and recompacting the subgrade, and completely replacing the pavement layers with new, or recycled materials, or a combination thereof.

Cold In-Place Recycling

Cold in-place recycling involves cold milling of the pavement surface, addition of emulsified asphalt, Portland cement or other modifiers to improve the properties of the original asphalt concrete mix followed by screeding and compaction of the reprocessed material in one continuous operation. The use of cold in-place recycling can restore old pavement to the desired profile, eliminate existing wheel ruts, restore the crown and cross slope, and eliminate pothole, irregularities and rough areas. It can also eliminate transverse, reflective, and longitudinal cracks. The major advantages for the cold in-place recycling are the potential of cost savings, minimum traffic disruption, ability to retain original profile, reduction of environmental concerns, and a growing concern for depleting petroleum reserves. However, cold in-place recycled pavements require a new wearing surface to be placed as a seal and to restrict moisture intrusion.

Full Depth Reclamation

This rehabilitation technique is often used for pavements exhibiting extensive distress. It involves pulverization of the pavement surface layers and a portion of the granular base for depths of up to 7.8 inches or more. The resulting mixture of asphalt concrete materials and granular or treated (i.3., soil cement) base can then be compacted and used as a granular base or sub-base for the new pavement. It can also be stabilized using bituminous materials, Portland cement, lime and calcium chloride. New granular base material can be added to improve the structural capacity of the pavement followed by the placement of a new riding surface. Advantages of this technique include the reuse of the existing pavement materials and the elimination of potential reflection cracking from and old asphalt concrete layer through the new pavement surface layer.

Perpetual Pavement

Perpetual pavement is defined as an asphalt pavement designed and built to last longer than 50 years without requiring major structural rehabilitation or reconstruction, and needing only periodic surface renewal in response to distresses confined to the top of the pavement. The basic concept is that HMA pavements over a minimum strength are not likely to exhibit structural damage even when subjected to very high traffic flows over long periods of time. Rather, deterioration seems to initiate in the pavement surface as either top-down cracking or rutting. If surface-initiated cracking and rutting can be

detected and remedied before they impact the structural integrity of the pavement, the pavement design life could be greatly increased.

Warm Mix Asphalt

Warm mix asphalt is the same as conventional asphalt except it has lower mixing temperature (30 to 100ºF lower than hot-mix asphalt). This is achieved by various mechanical and chemical methods to reduce the shear resistance of the mix at the construction temperature while reportedly maintaining or improving pavement performance. The major advantage of warm mix asphalt includes lower fumes emissions, lower energy consumption, lower plant wear consumption, decreased binder aging, early site opening, cool weather paving, and compaction aid for stiff mixes. Currently available warm mix technologies include WAM Foam, Zeolite, Sasobit and Evotherm.

Foam Asphalt

Foamed asphalt is formed by combining hot asphalt binder with small amounts of cold water. When the cold water comes in contact with the hot asphalt binder it turns to steam, which becomes trapped in tiny asphalt binder bubbles. The result is a thin-film, high volume asphalt foam that bitumen has a very large surface area and extremely low viscosity making it ideal for mixing with aggregates. The advantages of using foam asphalt includes increases the shear strength and reduces the moisture susceptibility of granular materials, lower binder and transportation costs, saving in time, energy conservation, and wider temperature workability.

Reference:

- Ralph Haas, *Pavement Design and Management Guide*, , Transportation Association of Canada, 1997
- M. Y. Shahin, *Pavement Management for Airports, Roads, and Parking Lots*, Springer Science + Business Media, LLC, 2005
- Muthen, K.M. Foamed Asphalt Mixes-Mix Design Procedure." *Transportation Research Record* 898, pp. 290-296.
- Warm Mix Asphalt Technical Working Group, http://www.warmmixasphalt.com/AboutWma.aspx

Appendix C: M&R Decision Tree

Decision Tree

Printed: 01/04/2012

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	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.40		7	
			Restoration Treatment	2.5" AC OVERLAY	$22.50			2
		II - Good, Non-Load Related		2.5"AC OVERLAY W/ DIGOUTS	$25.10			
		III - Good, Load Related		2.5"AC OVERLAY W/ DIGOUTS	$27.50			
		IV - Poor		3"AC OVERLAY W/ DIGOUTS	$38.00			
		V - Very Poor		RECONSTRUCT SURFACE (8" AC)	$67.10			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.40		7	
			Restoration Treatment	2.5"AC OVERLAY W/ DIGOUTS	$22.50			2
		II - Good, Non-Load Related		2.5"AC OVERLAY W/ DIGOUTS	$25.10			
		III - Good, Load Related		2.5"AC OVERLAY W/ DIGOUTS	$27.50			
		IV - Poor		3"AC OVERLAY W/ DIGOUTS	$38.00			
		V - Very Poor		RECONSTRUCT SURFACE (8" AC)	$67.10			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	3		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		6	
			Restoration Treatment	MILL AND THICK OVERLAY	$7.23			2
		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 SURFACE (AC)	$14.00			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	3		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		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			

Functional Class and Surface combination not used

Decision Tree

Printed: 01/04/2012

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	
			Restoration Treatment	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

Decision Tree

Printed: 01/04/2012

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	AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.30		7	
			Restoration Treatment	2.5"AC OVERLAY W/ DIGOUTS	$20.90			2
		II - Good, Non-Load Related		2.5"AC OVERLAY W/ DIGOUTS	$22.80			
		III - Good, Load Related		2.5"AC OVERLAY W/ DIGOUTS	$24.20			
		IV - Poor		2.5"AC OVERLAY W/ DIGOUTS	$28.60			
		V - Very Poor		RECONSTRUCT SURFACE (6" AC)	$48.40			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.30		7	
			Restoration Treatment	2.5"AC OVERLAY W/ DIGOUTS	$20.90			2
		II - Good, Non-Load Related		2.5"AC OVERLAY W/ DIGOUTS	$22.80			
		III - Good, Load Related		2.5"AC OVERLAY W/ DIGOUTS	$24.20			
		IV - Poor		2.5"AC OVERLAY W/ DIGOUTS	$28.60			
		V - Very Poor		RECONSTRUCT SURFACE (6" AC)	$48.40			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		7	
			Restoration Treatment	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)	$11.38			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		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		THIN AC OVERLAY(1.5 INCHES)	$7.47			

Functional Class and Surface combination not used

Decision Tree

Printed: 01/04/2012

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	
			Restoration Treatment	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

Decision Tree

Printed: 01/04/2012

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	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.30		8	
			Restoration Treatment	2" AC OVERLAY W/ DIGOUTS	$16.90			2
		II - Good, Non-Load Related		2" AC OVERLAY W/ DIGOUTS	$19.40			
		III - Good, Load Related		2" AC OVERLAY W/ DIGOUTS	$19.40			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$22.30			
		V - Very Poor		RECONSTRUCT SURFACE (4" AC)	$31.00			
	AC/AC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	SLURRY SEAL	$1.30		8	
			Restoration Treatment	2" AC OVERLAY W/ DIGOUTS	$16.90			2
		II - Good, Non-Load Related		2" AC OVERLAY W/ DIGOUTS	$19.40			
		III - Good, Load Related		2" AC OVERLAY W/ DIGOUTS	$19.40			
		IV - Poor		2" AC OVERLAY W/ DIGOUTS	$22.30			
		V - Very Poor		RECONSTRUCT SURFACE (4" AC)	$31.00			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$0.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$0.74		8	
			Restoration Treatment	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	
			Restoration Treatment	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

Decision Tree

Printed: 01/04/2012

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	
			Restoration Treatment	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

Decision Tree

Printed: 01/04/2012

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	AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$1.74		8	
			Restoration Treatment	MILL AND THIN OVERLAY	$5.04			3
		II - Good, Non-Load Related		SINGLE CHIP SEAL	$1.11			
		III - Good, Load Related		THIN AC OVERLAY(1.5 INCHES)	$3.99			
		IV - Poor		THICK AC OVERLAY(2.5 INCHES)	$5.97			
		V - Very Poor		RECONSTRUCT STRUCTURE (AC)	$8.75			
	AC/AC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$1.74		8	
			Restoration Treatment	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)	$8.75			
	AC/PCC	I - Very Good	Crack Treatment	SEAL CRACKS	$1.60	4		
			Surface Treatment	SINGLE CHIP SEAL	$1.74		8	
			Restoration Treatment	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)	$8.75			
	PCC	I - Very Good	Crack Treatment	DO NOTHING	$0.00	9		
			Surface Treatment	DO NOTHING	$0.00		99	
			Restoration Treatment	DO NOTHING	$0.00			100
		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			

Functional Class and Surface combination not used

Decision Tree

Printed: 01/04/2012

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	
			Restoration Treatment	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

Appendix D: Candidate Streets for M&R

Scenario 1. Maintain Current PCI at 58 ($230k per year)

Scenarios - Sections Selected for Treatment

Interest: 5.00% Inflation: 5.00% Printed: 01/05/2012

Scenario: Ferndale - Maintain PCI at 58

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$230,000	7%	2013	$230,000	7%	2014	$230,000	7%
2015	$230,000	7%	2016	$230,000	7%	2017	$230,000	7%
2018	$230,000	7%	2019	$230,000	7%	2020	$230,000	7%
2021	$230,000	7%						

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	100	$161,962	16,075	2.5"AC OVERLAY W/ DIGOUTS
					Treatment Total			$161,962		
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	100	$24,186	12,930	2" AC OVERLAY W/ DIGOUTS
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	100	$16,432	13,244	2" AC OVERLAY W/ DIGOUTS
					Treatment Total			$40,618		
4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	82	$3,547	65,409	SLURRY SEAL
					Treatment Total			$3,547		
					Year 2012 Total			$206,127		
Year: 2013										
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	100	$29,478	12,806	2" AC OVERLAY W/ DIGOUTS
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	100	$175,106	14,545	2" AC OVERLAY W/ DIGOUTS
					Treatment Total			$204,584		
BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	93	$7,293	63,545	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	91	$4,161	70,457	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	91	$712	44,612	SLURRY SEAL
					Treatment Total			$12,166		

** - Treatment from Project Selection

Scenarios Criteria: Area ID = F - Ferndale

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
						Year 2013 Total		$216,750		
Year: 2014										
A STREET	5TH ST	3RD ST	F-AST	010	R	AC	100	$60,285	13,931	2" AC OVERLAY W/ DIGOUTS
FRANCIS STREET	S END	SW BRIDGE	F-FRANST	010	R	AC	100	$12,605	12,377	2" AC OVERLAY W/ DIGOUTS
LINCOLN STREET	MILTON AVE	TENNYSON AVE	F-LINCST	010	R	AC	100	$61,885	13,392	2" AC OVERLAY W/ DIGOUTS
MILTON AVENUE	MAIN ST	LINCOLN ST	F-MILAVE	010	R	AC	100	$30,044	13,371	2" AC OVERLAY W/ DIGOUTS
SHAW AVENUE	MAIN ST	BERDING ST	F-SHAAVE	020	R	AC	100	$30,569	13,257	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$195,388		
EUGENE STREET	HARRISON ST	END OF PAVEMENT	F-EUGEST	030	R	AC	100	$16,497	9,949	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$16,497		
FERN AVENUE	MAIN ST	BERDING ST	F-FERAVE	020	R	AC	85	$1,919	57,031	SLURRY SEAL
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	79	$1,305	59,670	SLURRY SEAL
HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	80	$4,718	59,615	SLURRY SEAL
LINCOLN AVENUE	CROWLEY AVE	GRANT AVE	F-LINAVE	010	R	AC	91	$1,027	41,801	SLURRY SEAL
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	81	$1,548	59,482	SLURRY SEAL
						Treatment Total		$10,517		
						Year 2014 Total		$222,402		
Year: 2015										
ARLINGTON AVE	MAIN ST	E END	F-ARLAVE	030	R	AC	100	$43,581	11,123	2" AC OVERLAY W/ DIGOUTS
CRAIG STREET	OCEAN AVE	WASHINGTON ST	F-CRAIST	010	R	AC	100	$91,673	12,730	2" AC OVERLAY W/ DIGOUTS
LEWIS AVENUE	MAIN ST	BERDING ST	F-LEWAVE	010	R	AC	100	$28,245	11,684	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$163,499		
MILTON AVENUE	LINCOLN ST	E END	F-MILAVE	020	R	AC	100	$24,563	9,475	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$24,563		
BERDING STREET	FRANCIS ST	CLEVELAND ST	F-BERDST	010	R	AC	84	$2,497	54,855	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
BERDING STREET	CLEVELAND ST	EUGENE ST	F-BERDST	020	R	AC	87	$1,824	50,802	SLURRY SEAL
CREAM COURT	W CDS	JACOBSEN WAY	F-CREACT	010	R	AC	89	$3,565	48,406	SLURRY SEAL
DEWEY EXTENSION AVENUE	W CDS	JACOBSEN WAY	F-DEEAVE	010	R	AC	89	$3,058	48,406	SLURRY SEAL
EMERSON LANE	S CDS	WASHINGTON ST	F-EMERLN	010	R	AC	84	$1,421	54,855	SLURRY SEAL
EUGENE STREET	FRANCIS ST	BERDING ST	F-EUGEST	010	R	AC	87	$2,754	50,802	SLURRY SEAL
FERN AVENUE	N END	MAIN ST	F-FERAVE	010	R	AC	81	$5,351	56,570	SLURRY SEAL
HERBERT STREET	FERN AVE	MAIN ST	F-HERBST	030	R	AC	90	$4,084	44,797	SLURRY SEAL
JACOBSEN WAY	S CDS	N CDS	F-JACWAY	010	R	AC	80	$3,800	56,823	SLURRY SEAL
SHAW AVENUE	OCEAN AVE	MAIN ST	F-SHAAVE	010	R	AC	87	$10,761	50,802	SLURRY SEAL
SHAMSI COURT	3RD ST	N CDS	F-SHAMCT	010	R	AC	86	$1,861	53,083	SLURRY SEAL
						Treatment Total		$40,976		
						Year 2015 Total		$229,038		

Year: 2016

3RD STREET	A ST	SHAW AVE	F-3RDST	010	R	AC	100	$39,756	12,114	2" AC OVERLAY W/ DIGOUTS
BROWN STREET	BERDING ST	CRAIG ST	F-BROWST	020	R	AC	100	$32,783	12,114	2" AC OVERLAY W/ DIGOUTS
GRANT AVENUE	SCHLEY AVE	LINCOLN AVE	F-GRAAVE	010	R	AC	100	$77,969	12,002	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$150,508		
ARLINGTON AVE	W CITY LIMIT	5TH ST	F-ARLAVE	010	R	AC	100	$54,160	9,024	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$54,160		
ARLINGTON AVE	5TH ST	MAIN ST	F-ARLAVE	020	R	AC	89	$10,724	46,022	SLURRY SEAL
EUGENE STREET	BERDING ST	HARRISON ST	F-EUGEST	020	R	AC	89	$1,895	45,702	SLURRY SEAL
HERBERT STREET	DEWEY AVE	FERN AVE	F-HERBST	020	R	AC	89	$1,280	45,702	SLURRY SEAL
						Treatment Total		$13,899		
						Year 2016 Total		$218,567		

Year: 2017

MCKINLEY AVENUE	GRANT ST	DEWEY AVE	F-MCKAVE	010	R	AC	100	$167,921	11,627	2" AC OVERLAY W/ DIGOUTS

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
						Treatment Total		$167,921		
PIXLEY	4TH ST	5TH ST	F-PIXLEY	010	R	AC	100	$44,691	8,594	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$44,691		
						Year 2017 Total		$212,612		
Year: 2018										
SCHLEY AVENUE	ROSE AVE	GRANT AVE	F-SCHAVE	010	R	AC	100	$121,131	11,056	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$121,131		
HERBERT STREET	ROSE AVE	DEWEY AVE	F-HERBST	010	R	AC	100	$67,946	8,185	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$67,946		
5TH STREET	SHAW AVE	ARLINGTON AVE	F-5THST	020	R	AC	86	$14,229	45,741	SLURRY SEAL
						Treatment Total		$14,229		
						Year 2018 Total		$203,306		
Year: 2019										
5TH STREET	OCEAN AVE	SHAW AVE	F-5THST	010	R	AC	100	$115,666	7,795	RECONSTRUCT SURFACE (4" AC)
MADISON STREET	ARLINGTON AVE	TENNYSON AVE	F-MADIST	010	R	AC	100	$87,023	7,795	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$202,689		
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	87	$12,995	55,644	SLURRY SEAL
						Treatment Total		$12,995		
						Year 2019 Total		$215,684		
Year: 2020										
4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	100	$78,192	8,322	2" AC OVERLAY W/ DIGOUTS
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	100	$26,083	8,260	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$104,275		

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
WASHINGTON STREET	MAIN ST	BERDING ST	F-WASHST	010	R	AC	100	$58,845	7,424	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$58,845		
BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	87	$10,261	52,156	SLURRY SEAL
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	88	$2,395	39,646	SLURRY SEAL
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	88	$1,627	39,646	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	85	$5,855	51,511	SLURRY SEAL
						Treatment Total		$20,138		
						Year 2020 Total		$183,258		

Year: 2021

HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	100	$99,062	8,012	2" AC OVERLAY W/ DIGOUTS
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	100	$32,494	7,803	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$131,556		
WATSON AVENUE	ROSE AVE	S CDS	F-WATAVE	010	R	AC	100	$53,777	7,071	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$53,777		
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	88	$2,919	37,758	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	85	$1,052	40,163	SLURRY SEAL
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	88	$15,082	37,758	SLURRY SEAL
						Treatment Total		$19,053		
						Year 2021 Total		$204,386		
						Grand Total		$2,112,130		

Scenario 2. Improve PCI to 70 ($380k per year)

Scenarios - Sections Selected for Treatment

Interest: 5.00% Inflation: 5.00% Printed: 01/05/2012

Scenario: Ferndale - Increase PCI to 70

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$380,000	5%	2013	$380,000	5%	2014	$380,000	5%
2015	$380,000	2%	2016	$380,000	1%	2017	$380,000	2%
2018	$380,000	1%	2019	$380,000	4%	2020	$380,000	5%
2021	$380,000	5%						

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	100	$161,962	16,075	2.5"AC OVERLAY W/ DIGOUTS
					Treatment Total			$161,962		
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	100	$16,432	13,244	2" AC OVERLAY W/ DIGOUTS
FRANCIS STREET	S END	SW BRIDGE	F-FRANST	010	R	AC	100	$11,434	12,608	2" AC OVERLAY W/ DIGOUTS
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	100	$166,767	15,078	2" AC OVERLAY W/ DIGOUTS
					Treatment Total			$194,633		
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	82	$1,183	65,409	SLURRY SEAL
					Treatment Total			$1,183		
					Year 2012 Total			$357,778		
Year: 2013										
A STREET	5TH ST	3RD ST	F-AST	010	R	AC	100	$57,414	14,455	2" AC OVERLAY W/ DIGOUTS
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	100	$25,395	12,806	2" AC OVERLAY W/ DIGOUTS
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	100	$29,478	12,806	2" AC OVERLAY W/ DIGOUTS
LEWIS AVENUE	MAIN ST	BERDING ST	F-LEWAVE	010	R	AC	100	$25,619	11,884	2" AC OVERLAY W/ DIGOUTS
LINCOLN STREET	MILTON AVE	TENNYSON AVE	F-LINCST	010	R	AC	100	$58,938	13,630	2" AC OVERLAY W/ DIGOUTS

** - Treatment from Project Selection

Scenarios Criteria: Area ID = F - Ferndale

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
					Treatment Total			$196,844		
5TH STREET	ARLINGTON AVE	VAN NESS AVE	F-5THST	030	R	AC	100	$122,063	10,447	RECONSTRUCT SURFACE (4" AC)
EUGENE STREET	HARRISON ST	END OF PAVEMENT	F-EUGEST	030	R	AC	100	$15,711	10,447	RECONSTRUCT SURFACE (4" AC)
MILTON AVENUE	LINCOLN ST	E END	F-MILAVE	020	R	AC	100	$22,279	10,447	RECONSTRUCT SURFACE (4" AC)
					Treatment Total			$160,053		
4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	80	$3,724	62,609	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	91	$4,161	70,457	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	91	$712	44,612	SLURRY SEAL
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	82	$1,474	62,073	SLURRY SEAL
					Treatment Total			$10,071		
					Year 2013 Total			$366,968		

Year: 2014

ARLINGTON AVE	MAIN ST	E END	F-ARLAVE	030	R	AC	100	$41,506	11,189	2" AC OVERLAY W/ DIGOUTS
MILTON AVENUE	MAIN ST	LINCOLN ST	F-MILAVE	010	R	AC	100	$30,044	13,371	2" AC OVERLAY W/ DIGOUTS
SHAW AVENUE	MAIN ST	BERDING ST	F-SHAAVE	020	R	AC	100	$30,569	13,257	2" AC OVERLAY W/ DIGOUTS
					Treatment Total			$102,119		
ARLINGTON AVE	W CITY LIMIT	5TH ST	F-ARLAVE	010	R	AC	100	$49,125	9,949	RECONSTRUCT SURFACE (4" AC)
HERBERT STREET	ROSE AVE	DEWEY AVE	F-HERBST	010	R	AC	100	$55,900	9,949	RECONSTRUCT SURFACE (4" AC)
TENNYSON AVENUE	MAIN ST	LINCOLN ST	F-TENAVE	010	R	AC	100	$87,100	9,949	RECONSTRUCT SURFACE (4" AC)
WASHINGTON STREET	MAIN ST	BERDING ST	F-WASHST	010	R	AC	100	$43,911	9,949	RECONSTRUCT SURFACE (4" AC)
					Treatment Total			$236,036		
BERDING STREET	FRANCIS ST	CLEVELAND ST	F-BERDST	010	R	AC	86	$2,378	56,041	SLURRY SEAL
BERDING STREET	CLEVELAND ST	EUGENE ST	F-BERDST	020	R	AC	89	$1,737	50,446	SLURRY SEAL
BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	92	$7,657	65,264	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
EMERSON LANE	S CDS	WASHINGTON ST	F-EMERLN	010	R	AC	86	$1,353	56,041	SLURRY SEAL
EUGENE STREET	FRANCIS ST	BERDING ST	F-EUGEST	010	R	AC	89	$2,623	50,446	SLURRY SEAL
EUGENE STREET	BERDING ST	HARRISON ST	F-EUGEST	020	R	AC	91	$1,718	41,801	SLURRY SEAL
FERN AVENUE	N END	MAIN ST	F-FERAVE	010	R	AC	82	$5,096	58,898	SLURRY SEAL
FERN AVENUE	MAIN ST	BERDING ST	F-FERAVE	020	R	AC	85	$1,919	57,031	SLURRY SEAL
HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	80	$4,718	59,615	SLURRY SEAL
JACOBSEN WAY	S CDS	N CDS	F-JACWAY	010	R	AC	82	$3,619	59,383	SLURRY SEAL
SHAMSI COURT	3RD ST	N CDS	F-SHAMCT	010	R	AC	87	$1,772	53,485	SLURRY SEAL
						Treatment Total		$34,590		
						Year 2014 Total		$372,745		

Year: 2015

CRAIG STREET	OCEAN AVE	WASHINGTON ST	F-CRAIST	010	R	AC	100	$91,673	12,730	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$91,673		
WASHINGTON STREET	BERDING ST	SCHLEY AVE	F-WASHST	020	R	AC	100	$148,578	9,475	RECONSTRUCT SURFACE (4" AC)
WATSON AVENUE	ROSE AVE	S CDS	F-WATAVE	010	R	AC	100	$40,129	9,475	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$188,707		
5TH STREET	SHAW AVE	ARLINGTON AVE	F-5THST	020	R	AC	90	$12,291	44,387	SLURRY SEAL
ARLINGTON AVE	5TH ST	MAIN ST	F-ARLAVE	020	R	AC	90	$10,213	44,797	SLURRY SEAL
CREAM COURT	W CDS	JACOBSEN WAY	F-CREACT	010	R	AC	89	$3,565	48,406	SLURRY SEAL
DEWEY EXTENSION AVENUE	W CDS	JACOBSEN WAY	F-DEEAVE	010	R	AC	89	$3,058	48,406	SLURRY SEAL
HERBERT STREET	DEWEY AVE	FERN AVE	F-HERBST	020	R	AC	90	$1,219	44,387	SLURRY SEAL
HERBERT STREET	FERN AVE	MAIN ST	F-HERBST	030	R	AC	90	$4,084	44,797	SLURRY SEAL
LINCOLN AVENUE	CROWLEY AVE	GRANT AVE	F-LINAVE	010	R	AC	90	$1,079	44,387	SLURRY SEAL
SHAW AVENUE	OCEAN AVE	MAIN ST	F-SHAAVE	010	R	AC	87	$10,761	50,802	SLURRY SEAL
						Treatment Total		$46,270		
						Year 2015 Total		$326,650		

Year: 2016

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
3RD STREET	A ST	SHAW AVE	F-3RDST	010	R	AC	100	$39,756	12,114	2" AC OVERLAY W/ DIGOUTS
BROWN STREET	BERDING ST	CRAIG ST	F-BROWST	020	R	AC	100	$32,783	12,114	2" AC OVERLAY W/ DIGOUTS
GRANT AVENUE	SCHLEY AVE	LINCOLN AVE	F-GRAAVE	010	R	AC	100	$77,969	12,002	2" AC OVERLAY W/ DIGOUTS
MCKINLEY AVENUE	GRANT ST	DEWEY AVE	F-MCKAVE	010	R	AC	100	$159,925	12,002	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$310,433		
PIXLEY	4TH ST	5TH ST	F-PIXLEY	010	R	AC	100	$42,563	9,024	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$42,563		
						Year 2016 Total		$352,996		
Year: 2017										
SCHLEY AVENUE	ROSE AVE	GRANT AVE	F-SCHAVE	010	R	AC	100	$115,363	11,411	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$115,363		
5TH STREET	OCEAN AVE	SHAW AVE	F-5THST	010	R	AC	100	$104,913	8,594	RECONSTRUCT SURFACE (4" AC)
MADISON STREET	ARLINGTON AVE	TENNYSON AVE	F-MADIST	010	R	AC	100	$78,932	8,594	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$183,845		
						Year 2017 Total		$299,208		
Year: 2018										
FRANCIS STREET	NE BRIDGE	OCEAN AVE	F-FRANST	020	R	AC	100	$171,490	8,185	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$171,490		
						Year 2018 Total		$171,490		
Year: 2019										
ROSE AVENUE	HERBERT ST	W CITY LIMIT	F-ROSAVE	010	R	AC	100	$343,727	7,795	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$343,727		
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	87	$12,995	55,644	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
						Treatment Total		$12,995		
						Year 2019 Total		$356,722		
Year: 2020										
4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	100	$78,192	8,288	2" AC OVERLAY W/ DIGOUTS
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	100	$26,083	8,322	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$104,275		
WILDCAT ROAD	S CITY LIMIT	OCEAN AVE	F-WILDRD	010	RMaC	AC	100	$255,287	6,003	RECONSTRUCT SURFACE (6" AC)
						Treatment Total		$255,287		
						Year 2020 Total		$359,562		
Year: 2021										
HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	100	$99,062	8,012	2" AC OVERLAY W/ DIGOUTS
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	100	$32,494	7,838	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$131,556		
5TH STREET	ARLINGTON AVE	VAN NESS AVE	F-5THST	030	R	AC	87	$7,563	38,301	SLURRY SEAL
A STREET	5TH ST	3RD ST	F-AST	010	R	AC	88	$4,946	37,758	SLURRY SEAL
BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	85	$10,774	49,431	SLURRY SEAL
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	88	$2,515	37,758	SLURRY SEAL
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	88	$2,919	37,758	SLURRY SEAL
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	87	$1,709	39,561	SLURRY SEAL
EUGENE STREET	HARRISON ST	END OF PAVEMENT	F-EUGEST	030	R	AC	87	$974	38,301	SLURRY SEAL
FRANCIS STREET	S END	SW BRIDGE	F-FRANST	010	R	AC	87	$1,189	39,561	SLURRY SEAL
LEWIS AVENUE	MAIN ST	BERDING ST	F-LEWAVE	010	R	AC	88	$2,537	37,758	SLURRY SEAL
LINCOLN STREET	MILTON AVE	TENNYSON AVE	F-LINCST	010	R	AC	88	$5,836	37,758	SLURRY SEAL
MILTON AVENUE	LINCOLN ST	E END	F-MILAVE	020	R	AC	87	$1,381	38,301	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	83	$6,148	47,928	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	85	$1,052	40,163	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	87	$15,082	39,561	SLURRY SEAL
							Treatment Total	$64,625		
							Year 2021 Total	$196,181		
							Grand Total	$3,160,300		

Scenario 3. Unconstrained Needs ($4.3M over ten years)

Scenarios - Sections Selected for Treatment

Interest: 5.00% Inflation: 5.00% Printed: 01/06/2012

Scenario: Ferndale - Needs (Unconstrained)

Year	Budget	PM Amt	Year	Budget	PM Amt	Year	Budget	PM Amt
2012	$1,563,326	$82,119	2013	$533,321	$0	2014	$879,192	$0
2015	$91,673	$0	2016	$683,632	$0	2017	$115,363	$0
2018	$0	$0	2019	$41,797	$41,797	2020	$272,590	$168,315
2021	$78,515	$78,515						

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
Year: 2012										
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	100	$161,962	16,075	2.5"AC OVERLAY W/ DIGOUTS
					Treatment Total			$161,962		
A STREET	5TH ST	3RD ST	F-AST	010	R	AC	100	$54,680	14,971	2" AC OVERLAY W/ DIGOUTS
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	100	$24,186	12,930	2" AC OVERLAY W/ DIGOUTS
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	100	$28,074	12,930	2" AC OVERLAY W/ DIGOUTS
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	100	$16,432	13,244	2" AC OVERLAY W/ DIGOUTS
FRANCIS STREET	S END	SW BRIDGE	F-FRANST	010	R	AC	100	$11,434	12,608	2" AC OVERLAY W/ DIGOUTS
LINCOLN STREET	MILTON AVE	TENNYSON AVE	F-LINCST	010	R	AC	100	$56,131	13,836	2" AC OVERLAY W/ DIGOUTS
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	100	$166,767	15,078	2" AC OVERLAY W/ DIGOUTS
					Treatment Total			$357,704		
OCEAN AVENUE	SHAW AVE	5TH ST	F-OCEAVE	010	RMaC	AC	100	$183,114	8,869	RECONSTRUCT SURFACE (6" AC)
WILDCAT ROAD	S CITY LIMIT	OCEAN AVE	F-WILDRD	010	RMaC	AC	100	$172,788	8,869	RECONSTRUCT SURFACE (6" AC)
					Treatment Total			$355,902		
5TH STREET	ARLINGTON AVE	VAN NESS AVE	F-5THST	030	R	AC	100	$116,250	10,969	RECONSTRUCT SURFACE (4" AC)
ARLINGTON AVE	W CITY LIMIT	5TH ST	F-ARLAVE	010	R	AC	100	$44,558	10,969	RECONSTRUCT SURFACE (4" AC)

** - Treatment from Project Selection

Scenarios Criteria: Area ID = F - Ferndale

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
EUGENE STREET	HARRISON ST	END OF PAVEMENT	F-EUGEST	030	R	AC	100	$14,963	10,969	RECONSTRUCT SURFACE (4" AC)
HERBERT STREET	ROSE AVE	DEWEY AVE	F-HERBST	010	R	AC	100	$50,703	10,969	RECONSTRUCT SURFACE (4" AC)
MILTON AVENUE	LINCOLN ST	E END	F-MILAVE	020	R	AC	100	$21,218	10,969	RECONSTRUCT SURFACE (4" AC)
ROSE AVENUE	HERBERT ST	W CITY LIMIT	F-ROSAVE	010	R	AC	100	$244,280	10,969	RECONSTRUCT SURFACE (4" AC)
TENNYSON AVENUE	MAIN ST	LINCOLN ST	F-TENAVE	010	R	AC	100	$79,002	10,969	RECONSTRUCT SURFACE (4" AC)
WATSON AVENUE	ROSE AVE	S CDS	F-WATAVE	010	R	AC	100	$34,665	10,969	RECONSTRUCT SURFACE (4" AC)
					Treatment Total			$605,639		
4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	82	$3,547	65,409	SLURRY SEAL
5TH STREET	SHAW AVE	ARLINGTON AVE	F-5THST	020	R	AC	94	$10,618	31,693	SLURRY SEAL
ARLINGTON AVE	5TH ST	MAIN ST	F-ARLAVE	020	R	AC	94	$8,822	32,582	SLURRY SEAL
BERDING STREET	FRANCIS ST	CLEVELAND ST	F-BERDST	010	R	AC	88	$2,157	56,454	SLURRY SEAL
BERDING STREET	CLEVELAND ST	EUGENE ST	F-BERDST	020	R	AC	91	$1,576	46,188	SLURRY SEAL
BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	94	$6,945	58,880	SLURRY SEAL
CREAM COURT	W CDS	JACOBSEN WAY	F-CREACT	010	R	AC	92	$3,079	40,543	SLURRY SEAL
DEWEY EXTENSION AVENUE	W CDS	JACOBSEN WAY	F-DEEAVE	010	R	AC	92	$2,642	40,543	SLURRY SEAL
EMERSON LANE	S CDS	WASHINGTON ST	F-EMERLN	010	R	AC	88	$1,227	56,454	SLURRY SEAL
EUGENE STREET	FRANCIS ST	BERDING ST	F-EUGEST	010	R	AC	91	$2,379	46,188	SLURRY SEAL
EUGENE STREET	BERDING ST	HARRISON ST	F-EUGEST	020	R	AC	94	$1,559	31,693	SLURRY SEAL
FERN AVENUE	N END	MAIN ST	F-FERAVE	010	R	AC	85	$4,622	62,678	SLURRY SEAL
FERN AVENUE	MAIN ST	BERDING ST	F-FERAVE	020	R	AC	88	$1,740	58,336	SLURRY SEAL
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	82	$1,183	65,409	SLURRY SEAL
HERBERT STREET	DEWEY AVE	FERN AVE	F-HERBST	020	R	AC	94	$1,053	31,693	SLURRY SEAL
HERBERT STREET	FERN AVE	MAIN ST	F-HERBST	030	R	AC	94	$3,528	32,582	SLURRY SEAL
HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	83	$4,280	64,909	SLURRY SEAL
JACOBSEN WAY	S CDS	N CDS	F-JACWAY	010	R	AC	84	$3,282	63,697	SLURRY SEAL
LINCOLN AVENUE	CROWLEY AVE	GRANT AVE	F-LINAVE	010	R	AC	94	$932	31,693	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	92	$3,963	69,555	SLURRY SEAL
SHAW AVENUE	OCEAN AVE	MAIN ST	F-SHAAVE	010	R	AC	91	$9,296	46,188	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
SHAMSI COURT	3RD ST	N CDS	F-SHAMCT	010	R	AC	90	$1,607	51,727	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	92	$678	40,543	SLURRY SEAL
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	83	$1,404	64,395	SLURRY SEAL
						Treatment Total		$82,119		
						Year 2012 Total		$1,563,326		
Year: 2013										
LEWIS AVENUE	MAIN ST	BERDING ST	F-LEWAVE	010	R	AC	100	$25,619	11,884	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$25,619		
BERDING STREET	EUGENE ST	HERBERT ST	F-BERDST	030	R	AC	100	$331,117	10,447	RECONSTRUCT SURFACE (4" AC)
WASHINGTON STREET	MAIN ST	BERDING ST	F-WASHST	010	R	AC	100	$41,820	10,447	RECONSTRUCT SURFACE (4" AC)
WASHINGTON STREET	BERDING ST	SCHLEY AVE	F-WASHST	020	R	AC	100	$134,765	10,447	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$507,702		
						Year 2013 Total		$533,321		
Year: 2014										
MAIN STREET	LEWIS AVE	MARKET ST	F-MAINST	020	RMaC	AC	100	$578,996	12,713	2.5"AC OVERLAY W/ DIGOUTS
						Treatment Total		$578,996		
ARLINGTON AVE	MAIN ST	E END	F-ARLAVE	030	R	AC	100	$41,506	11,189	2" AC OVERLAY W/ DIGOUTS
MILTON AVENUE	MAIN ST	LINCOLN ST	F-MILAVE	010	R	AC	100	$30,044	13,371	2" AC OVERLAY W/ DIGOUTS
SHAW AVENUE	MAIN ST	BERDING ST	F-SHAAVE	020	R	AC	100	$30,569	13,257	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$102,119		
OCEAN AVENUE	MAIN ST	CRAIG ST	F-OCEAVE	030	RMaC	AC	100	$198,077	8,045	RECONSTRUCT SURFACE (6" AC)
						Treatment Total		$198,077		
						Year 2014 Total		$879,192		
Year: 2015										

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
CRAIG STREET	OCEAN AVE	WASHINGTON ST	F-CRAIST	010	R	AC	100	$91,673	12,730	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$91,673		
						Year 2015 Total		$91,673		

Year: 2016

3RD STREET	A ST	SHAW AVE	F-3RDST	010	R	AC	100	$39,756	12,114	2" AC OVERLAY W/ DIGOUTS
BROWN STREET	BERDING ST	CRAIG ST	F-BROWST	020	R	AC	100	$32,783	12,114	2" AC OVERLAY W/ DIGOUTS
GRANT AVENUE	SCHLEY AVE	LINCOLN AVE	F-GRAAVE	010	R	AC	100	$77,969	12,002	2" AC OVERLAY W/ DIGOUTS
MCKINLEY AVENUE	GRANT ST	DEWEY AVE	F-MCKAVE	010	R	AC	100	$159,925	12,002	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$310,433		
5TH STREET	OCEAN AVE	SHAW AVE	F-5THST	010	R	AC	100	$99,917	9,024	RECONSTRUCT SURFACE (4" AC)
FRANCIS STREET	NE BRIDGE	OCEAN AVE	F-FRANST	020	R	AC	100	$155,546	9,024	RECONSTRUCT SURFACE (4" AC)
MADISON STREET	ARLINGTON AVE	TENNYSON AVE	F-MADIST	010	R	AC	100	$75,173	9,024	RECONSTRUCT SURFACE (4" AC)
PIXLEY	4TH ST	5TH ST	F-PIXLEY	010	R	AC	100	$42,563	9,024	RECONSTRUCT SURFACE (4" AC)
						Treatment Total		$373,199		
						Year 2016 Total		$683,632		

Year: 2017

SCHLEY AVENUE	ROSE AVE	GRANT AVE	F-SCHAVE	010	R	AC	100	$115,363	11,411	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$115,363		
						Year 2017 Total		$115,363		

Year: 2019

BLUFF STREET	CRAIG ST	E CITY LIMIT	F-BLUFST	010	RMaC	AC	88	$9,773	54,750	SLURRY SEAL
MAIN STREET	OCEAN AVE	LEWIS AVE	F-MAINST	010	RMaC	AC	87	$12,995	55,644	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
OCEAN AVENUE	SHAW AVE	5TH ST	F-OCEAVE	010	RMaC	AC	90	$6,921	53,759	SLURRY SEAL
OCEAN AVENUE	5TH ST	MAIN ST	F-OCEAVE	020	RMaC	AC	86	$5,577	54,560	SLURRY SEAL
WILDCAT ROAD	S CITY LIMIT	OCEAN AVE	F-WILDRD	010	RMaC	AC	90	$6,531	53,759	SLURRY SEAL
						Treatment Total		$41,797		
						Year 2019 Total		$41,797		

Year: 2020

4TH STREET	PIXLEY	A ST	F-4THST	010	R	AC	100	$78,192	8,322	2" AC OVERLAY W/ DIGOUTS
HARRISON AVENUE	CLEVELAND ST	CLEVELAND ST	F-HARAVE	010	R	AC	100	$26,083	8,322	2" AC OVERLAY W/ DIGOUTS
						Treatment Total		$104,275		
5TH STREET	SHAW AVE	ARLINGTON AVE	F-5THST	020	R	AC	87	$15,687	40,942	SLURRY SEAL
5TH STREET	ARLINGTON AVE	VAN NESS AVE	F-5THST	030	R	AC	87	$7,203	40,216	SLURRY SEAL
ARLINGTON AVE	W CITY LIMIT	5TH ST	F-ARLAVE	010	R	AC	87	$2,761	40,216	SLURRY SEAL
ARLINGTON AVE	5TH ST	MAIN ST	F-ARLAVE	020	R	AC	87	$13,035	40,990	SLURRY SEAL
A STREET	5TH ST	3RD ST	F-AST	010	R	AC	88	$4,710	39,646	SLURRY SEAL
BERDING STREET	FRANCIS ST	CLEVELAND ST	F-BERDST	010	R	AC	84	$3,187	43,397	SLURRY SEAL
BERDING STREET	CLEVELAND ST	EUGENE ST	F-BERDST	020	R	AC	86	$2,328	42,104	SLURRY SEAL
BROWN STREET	MAIN ST	BERDING ST	F-BROWST	010	R	AC	88	$2,395	39,646	SLURRY SEAL
CLEVELAND STREET	BERDING ST	HARRISON ST	F-CLEVST	010	R	AC	88	$2,780	39,646	SLURRY SEAL
CREAM COURT	W CDS	JACOBSEN WAY	F-CREACT	010	R	AC	86	$4,549	41,550	SLURRY SEAL
DEWEY EXTENSION AVENUE	W CDS	JACOBSEN WAY	F-DEEAVE	010	R	AC	86	$3,903	41,550	SLURRY SEAL
DEWEY AVENUE	HERBERT ST	E CDS	F-DEWAVE	010	R	AC	88	$1,627	39,646	SLURRY SEAL
EMERSON LANE	S CDS	WASHINGTON ST	F-EMERLN	010	R	AC	84	$1,813	43,397	SLURRY SEAL
EUGENE STREET	FRANCIS ST	BERDING ST	F-EUGEST	010	R	AC	86	$3,515	42,104	SLURRY SEAL
EUGENE STREET	BERDING ST	HARRISON ST	F-EUGEST	020	R	AC	87	$2,303	40,942	SLURRY SEAL
EUGENE STREET	HARRISON ST	END OF PAVEMENT	F-EUGEST	030	R	AC	87	$928	40,216	SLURRY SEAL
FERN AVENUE	N END	MAIN ST	F-FERAVE	010	R	AC	81	$6,829	44,323	SLURRY SEAL
FERN AVENUE	MAIN ST	BERDING ST	F-FERAVE	020	R	AC	83	$2,571	43,742	SLURRY SEAL
FRANCIS STREET	S END	SW BRIDGE	F-FRANST	010	R	AC	88	$1,132	39,646	SLURRY SEAL

Road Name	Begin Location	End Location	Street ID	Section ID	FC	Surface	PCI	Cost	Rating	Treatment
HERBERT STREET	ROSE AVE	DEWEY AVE	F-HERBST	010	R	AC	87	$3,142	40,216	SLURRY SEAL
HERBERT STREET	DEWEY AVE	FERN AVE	F-HERBST	020	R	AC	87	$1,556	40,942	SLURRY SEAL
HERBERT STREET	FERN AVE	MAIN ST	F-HERBST	030	R	AC	87	$5,212	40,990	SLURRY SEAL
HOWARD STREET	MAIN ST	E END	F-HOWAST	010	R	AC	79	$6,323	44,525	SLURRY SEAL
JACOBSEN WAY	S CDS	N CDS	F-JACWAY	010	R	AC	80	$4,849	44,454	SLURRY SEAL
LINCOLN AVENUE	CROWLEY AVE	GRANT AVE	F-LINAVE	010	R	AC	87	$1,377	40,942	SLURRY SEAL
LINCOLN STREET	MILTON AVE	TENNYSON AVE	F-LINCST	010	R	AC	88	$5,558	39,646	SLURRY SEAL
MILTON AVENUE	LINCOLN ST	E END	F-MILAVE	020	R	AC	87	$1,315	40,216	SLURRY SEAL
ROSE AVENUE	HERBERT ST	W CITY LIMIT	F-ROSAVE	010	R	AC	87	$15,136	40,216	SLURRY SEAL
SHAW AVENUE	OCEAN AVE	MAIN ST	F-SHAAVE	010	R	AC	86	$13,734	42,104	SLURRY SEAL
SHAMSI COURT	3RD ST	N CDS	F-SHAMCT	010	R	AC	85	$2,374	42,773	SLURRY SEAL
SHAW LANE	W CDS	SHAW AVE	F-SHAWLN	010	R	AC	86	$1,002	41,550	SLURRY SEAL
TENNYSON AVENUE	MAIN ST	LINCOLN ST	F-TENAVE	010	R	AC	87	$4,895	40,216	SLURRY SEAL
VANSTON AVENUE	MAIN ST	W END	F-VANAVE	010	R	AC	80	$2,074	44,474	SLURRY SEAL
VAN NESS AVENUE	CALIFORNIA ST	MAIN ST	F-VNEAVE	010	R	AC	88	$14,364	39,646	SLURRY SEAL
WATSON AVENUE	ROSE AVE	S CDS	F-WATAVE	010	R	AC	87	$2,148	40,216	SLURRY SEAL
						Treatment Total		$168,315		
						Year 2020 Total		$272,590		

Year: 2021

BERDING STREET	EUGENE ST	HERBERT ST	F-BERDST	030	R	AC	87	$20,516	38,301	SLURRY SEAL
LEWIS AVENUE	MAIN ST	BERDING ST	F-LEWAVE	010	R	AC	88	$2,537	37,758	SLURRY SEAL
MAIN STREET	LEWIS AVE	MARKET ST	F-MAINST	020	RMaC	AC	87	$37,033	50,470	SLURRY SEAL
OCEAN AVENUE	MAIN ST	CRAIG ST	F-OCEAVE	030	RMaC	AC	90	$7,487	48,761	SLURRY SEAL
WASHINGTON STREET	MAIN ST	BERDING ST	F-WASHST	010	R	AC	87	$2,592	38,301	SLURRY SEAL
WASHINGTON STREET	BERDING ST	SCHLEY AVE	F-WASHST	020	R	AC	87	$8,350	38,301	SLURRY SEAL
						Treatment Total		$78,515		
						Year 2021 Total		$78,515		
						Grand Total		$4,259,409		