
PROJECT REPORT

**Pavement Condition Index Survey &
Evaluation of the City of Veneta's Street Network**

Prepared For:
City of Veneta
88184 8th Street
Veneta, OR 97487

February 21, 2015

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PROJECT INFORMATION AND ACKNOWLEDGEMENTS

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Client	City of Veneta Public Works Department 88184 Eighth Street Veneta, OR 97487
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EXPIRES: 06/30/2015

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EXECUTIVE SUMMARY

Pavement Services, Inc. (PSI) produced this Pavement Management Report to establish a pavement management system and a baseline condition for the City of Veneta, OR street network. This report provides surface condition descriptions, reviews current treatment programs and costs, projects future treatment needs based on several funding scenarios, and provides a formulated multiyear maintenance and repair (M&R) project list.

The street network replacement cost is valued at approximately \$26 Million and represents a significant asset for the City to manage. This estimate is for the replacement of the roadway only and does not include any assets such as curbs, ADA ramps, or sidewalks. This asset is typically described in lane miles and/or centerline miles. Currently, the Veneta Public Works Department manages 21.5 centerline miles of asphalt concrete and gravel streets within the city limits. This report includes a breakdown of the street transportation system in terms of pavement type, level of improvement, and functional classification. Comparative statistical data are based on area (square feet).

In order to establish the baseline pavement condition, PSI staff collected the street condition data by conducting a walking inspection based on the procedure outlined in ASTM International D6433-11: *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys*. The Pavement Condition Index (PCI) rating was then generated using PAVER pavement management software (PMS). The PCI is a numerical indicator that rates the condition of the pavement. The scale ranges from zero to 100, where zero is the worst possible condition and 100 is the best possible condition. The PAVER analysis helps establish efficient treatment requirements and identify financial implications of various budget strategies. This PMS also provides street inventory and condition trends using the street condition information and street maintenance and rehabilitation (M&R) history.

The overall area weighted average condition of the Veneta street system is rated as 83 or "Good". The PCI scale used was Good, Average, Fair, Poor, and Very Poor; where Good is from 100 to 81, Average is 80 to 66, Fair is 65 to 51, Poor is 50 to 36, and Very Poor is 35 to 0. The pavement condition distribution in Veneta is 73.5% Good, 11.6% Average, 8.6% Fair, 2.5% Poor, and 3.8% Very Poor. Figure 1 presents a map with the baseline street condition resulting from the 2014 PCI survey.

Depending on design life and preventive maintenance, the typical pavement condition trend is for a slight deterioration right after construction and then the deterioration levels off. The leveling off period is where the deterioration condition slows relative to time. The period of slower deterioration is when the majority of the desired condition, use, and life of the pavement occurs. At the end of the "leveling off" period, there is a transition point referred to as the critical PCI. After the critical PCI is reached, the pavement condition typically deteriorates more quickly into a poor condition state. An example of typical pavement deterioration is presented in Figure 2.

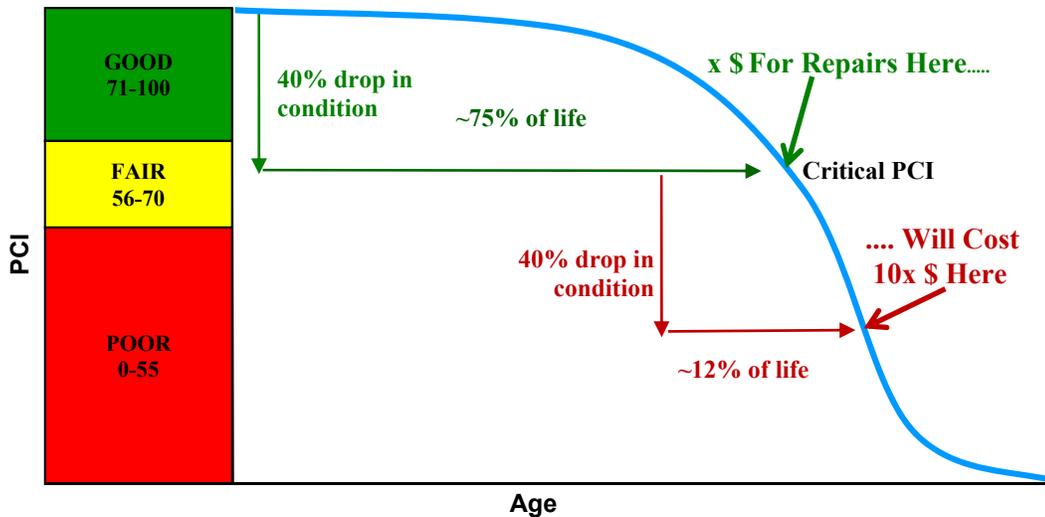


Figure 2 – Typical Pavement Deterioration Curve

Ideally, if preventive maintenance is performed before the critical PCI is reached, the life and use of the pavement can be extended in the leveling off period. Also, any major restoration work, such as overlay, that is done before a pavement deteriorates below the critical PCI usually costs substantially less than would be required if the rehabilitation work is delayed, due to the better condition of the pavement.

We understand that the City has no formal method of managing their pavement and is interested in determining the fiscal requirements necessary to eliminate the current level of unfunded maintenance and repair work as well as establish a proper method for maintaining their street network in the most cost effective manner.

Based on the 2014 pavement condition ratings, the City has a total of \$2.70 Million dollars in unfunded maintenance and repair, which included localized repairs, global maintenance such as surface treatments, and major M&R including overlays and reconstruction.

PSI analyzed four different budget scenarios based on either a specific budget requirement or a pavement condition constraint. Based on our analysis, we offer the following conclusions:

Scenario 1. An annual expenditure of \$577K from 2015-2020 would eliminate the M&R backlog for the entire street system. The resulting funding needs from 2021-2025 would decrease to \$193K annually.

Scenario 2. In order to stabilize the condition of the street system at the current PCI of 83, an annual budget of \$447K is required during the period of 2015-2020. At this level of investment, the unfunded M&R shrinks from \$2.70M to \$458K by year 2020.

Scenario 3. At the current funding level of \$325,000 annually, the unfunded M&R will reduce to \$1.42M by the year 2020.

Scenario 4. If only safety maintenance such as pothole filling is performed until 2020, the unfunded M&R will grow from \$2.70M to \$3.12M and the average PCI will drop from 83 to 73.

Figure 3 shows the effect of the four budget scenarios on the resulting condition of the Veneta street system.

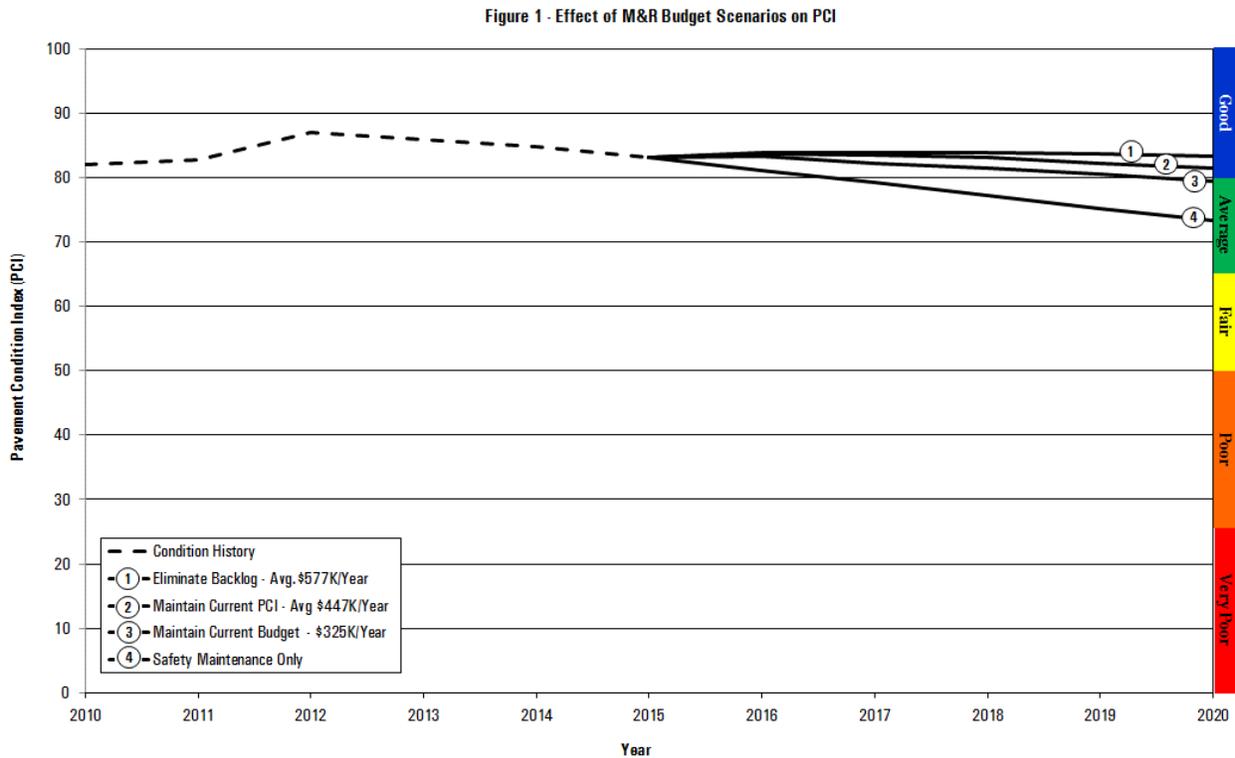
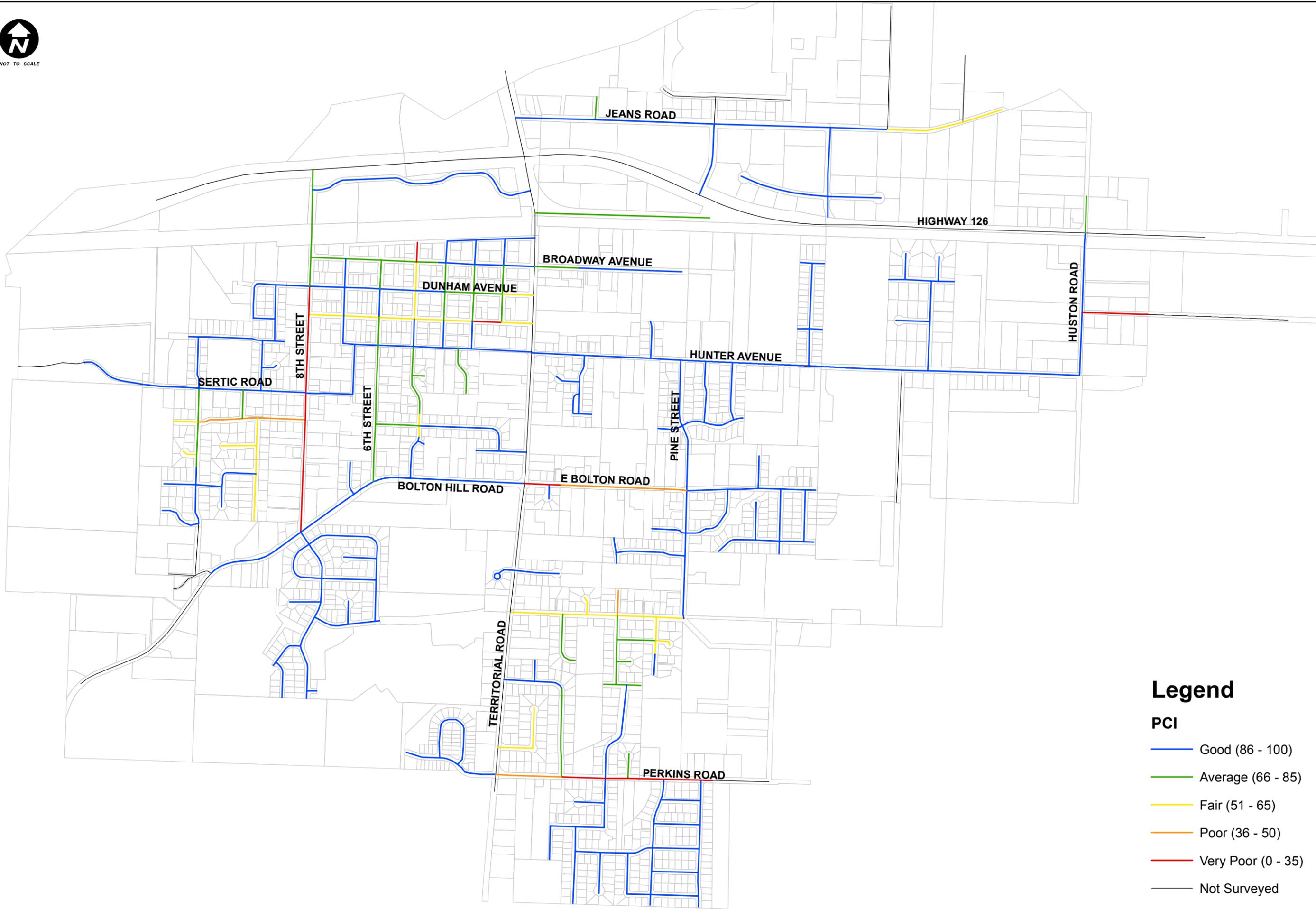


Figure 3 – Effects of Various Budget Scenarios on PCI



NOT TO SCALE



Legend

PCI

- Good (86 - 100)
- Average (66 - 85)
- Fair (51 - 65)
- Poor (36 - 50)
- Very Poor (0 - 35)
- Not Surveyed

INTRODUCTION

City of Veneta Public Works Department maintains and operates approximately 22 centerline miles of local and collector, streets. Approximately 0.5 centerline miles of the existing street system are gravel surfaced with the remainder 21.5 miles constructed with an asphalt concrete (AC) surface. The City has a desire to determine the current condition of the pavement surface and establish a maintenance and rehabilitation (M&R) plan year 2020.

In 2014, the City adopted the ASTM International Test Method D6433 as the standard method for conducting pavement surveys. ASTM D6433 is the Pavement Condition Index (PCI) system for local roads and streets that uses a zero to 100 rating scale. Surveys are conducted visually by foot, which provides the best vantage point for observing the actual condition of the pavement surface. By standing or walking the pavement surface, the pavement rater has the opportunity to closely observe pavement distresses such as cracks, weathering, raveling, and rutting, allowing for a better assessment of the amount of distress in a specific survey location.

In order to develop M&R recommendations based upon the PCI survey, the PAVER pavement management system (PMS) was utilized. PAVER was selected as the pavement management system because it is based upon the ASTM D6433 methodology and it uses a proactive management approach as opposed to a reactive management approach. A proactive approach uses a long-term, life-cycle perspective and takes advantage of sound, engineering-based procedures.

PAVER is the pavement management system developed by the US Army Corps of Engineers and is valuable in assessing pavement managers in deciding when and where to appropriate funds for pavement M&R.

The City is interested in using the PMS analysis to understand the impact different funding levels have on the condition of the street system, and to prioritize street M&R projects during the period of 2015-2020.

OBJECTIVES

This project for the City of Veneta involves several objectives. The first was to establish the current condition of the street system and sidewalks. Second was to determine the immediate and future M&R needs. In order to achieve these objectives, Pavement Services, Inc. performed the following tasks:

1. Conducted a visual condition survey of the street network using the ASTM D6433-11: *Standard Practice for Roads and Parking Lots Pavement Condition Index Surveys* method.
2. Conduct a visual survey to establish the condition of the City's sidewalks.
3. Determined the consequences of the current budget and the impacts of supplementary funding on the pavement condition.
4. Prioritized M&R projects for the 2015-2020 timeframe so the City can manage expenditures and begin to implement a preservation management style.

PAVEMENT MANAGEMENT METHODOLOGY

PAVER Database

PSI developed a PAVER database by populating an inventory with accurate information regarding the street network such as the street geometry, surface type, location, and the historical construction and maintenance data.

Currently, the Veneta street network is defined and managed in a Geographical Information System (GIS) by Lane County. PSI was provided the City's GIS files by Lane County in October 2014. The City also provided the most recent construction date for 76% of the City's pavement area. Utilizing the GIS and construction date information, we were able develop a PAVER database using the "Create PAVER Inventory from Shape Data" tool.

Pavement Condition Index (PCI)

PSI conducted a PCI survey from November 17, 2014 through November 25, 2014. Due to the typically wet climate in Veneta during the winter months, we performed the survey only on days when the pavements were free of standing water.

Our survey crews used the PAVER FieldInspector handheld tablet devices for data collection in the field. The FieldInspector allowed us to improve the accuracy of the data by eliminating redundant data entry. It also streamlined the data handling process by allowing us to compute the pavement condition index as soon as the day following the inspection.

Pavement Condition Prediction Models

Prediction models are used to predict future pavement condition, which is an essential component of M&R planning. The models are developed using historical PCI inspection data from a specific location (e.g., airport, city, town, etc.). A model is developed for each group of pavement sections that share similar characteristics (e.g., surface type, functional classification, traffic, etc.). For example, a model may be developed for asphalt concrete surfaced minor collector street.

In order to develop an effective prediction model, the age of each pavement section with unknown last major construction dates must be established. Having both the last major construction date (age) and the PCI from one or multiple inspections allows us to accurately model the condition deterioration of a pavement. The method we used to estimate the last construction date is described below.

The age of a pavement section is based on the last major M&R activity (e.g., structural overlay, reconstruction, etc.). The date of the last major M&R activity is referred to as the last construction date (LCD). Veneta had several sections with unknown LCD. For pavement sections where we did not have LCD information, we used the PAVER LCD Wizard.

The LCD backcalculation starts from the first inspection following the uncertain LCD, as shown in Figure 4. This is an example where a pavement with a PCI of 90 in 2012 would have a backcalculated LCD of 2007, assuming a condition deterioration rate of 2.0 PCI points/year and a PCI of 100 at the LCD.

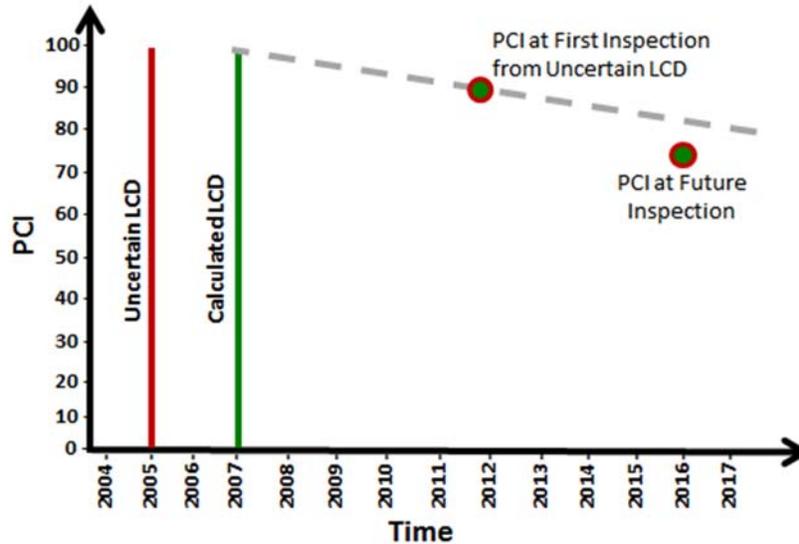


Figure 4. LCD Backcalculation Process.

For Veneta's LCD analysis, we used one deterioration rate of 2.0 points per year for all streets. The deterioration rate of 2.0 points/year was determined by establishing the deterioration rates of sections with known LCD. We also used a straight line deterioration model because the 2014 pavement condition index survey was the first PCI inspection for the Veneta street system. Once several PCI inspections have been conducted, the PAVER prediction modeling can use the actual deterioration patterns of pavements to determine the future condition. Models using the actual deterioration patterns of the pavements are developed when each pavement sections has multiple PCI and work history data points.

Deterioration rates can change over time due to changes in traffic or infrastructure development and therefore, deterioration rates and prediction models should be updated on a regular basis.

Development of M&R Plans

The PAVER M&R Work Planning module identifies when and where M&R is required and how much it will cost. M&R plans can be developed either by assuming an annual budget or by identifying the desired pavement condition. Based on either a known annual budget or a desired overall condition level, PAVER will produce a prioritized M&R plan.

PSI developed M&R plans for six budget years, where the first plan year begins July 1, 2015 and the last plan year begins July 1, 2020. The following four budget scenarios were considered:

- Scenario 1. Eliminate Backlog: This scenario eliminates all unfunded major M&R requirements by the year 2020. More specifically, it eliminates the M&R backlog and ensures that all pavement sections have PCI values greater than the critical PCI. The critical PCI is described in more detail in Appendix G.
- Scenario 2. Funding to Stabilize Street System at the Current PCI: This scenario maintains the average PCI of the street system at 83 through the year 2020.
- Scenario 3. Maintain Current Budget: This scenario assumes that the current annual budget of \$325,000 is maintained.
- Scenario 4. Safety Maintenance Only: This scenario assumes that no Major, Global or Localized Preventive M&R is conducted and only Localized Stopgap M&R such as pothole repair is performed.

PAVER determines the timing to perform M&R based on predicted future pavement conditions. The anticipated cost of performing M&R is based on cost tables that relate M&R cost to PCI. The cost tables used in this analysis can be seen in Appendix F. The budget scenarios include only pavement inspection data collected during the 2014 survey. We set the critical PCI to 65 for collectors and to 50 for local access streets for all M&R plans. Appendix D includes detailed results for the M&R planning analysis.

M&R Recommended Projects

Project development and prioritization was based upon the current and future predicted pavement condition. The street segments selected for projects were first generated by optimizing the current budget and performing preservation based analysis within the PAVER software. We then grouped the sections into projects based upon the year the work is to be performed. Each street segments was assigned M&R activities based upon the PCI and the distresses observed during the 2014 survey. For example, a pavement with medium to high severity alligator cracking or rutting triggers a requirement for full depth patching. For pavement with only low or medium severity weathering, low severity patching, or low severity longitudinal/transverse cracking a surface treatment is assigned. Mill and overlay is triggered for pavements with medium and high severity cracking, patching, block cracking, weathering, or raveling. Note that these recommendations are developed at the network level. Network level work looks at the entire system as a whole in order to evaluate the large scale needs such as funding or backlog. Project level work includes performing in-depth evaluation. Project level work typically occurs before preparing plans and specifications for a specific M&R project. Additional structural and project level analysis is required in order to implement and refine these M&R recommendations.

VISUAL SURVEY RESULTS

PAVEMENT CONDITION INDEX SURVEY

A total of 21.5 centerline miles of pavements were surveyed as part of this project. This accounts for approximately 97.7% of the total centerline miles of streets in Veneta. The remaining 2.3% of street that were not surveyed are unsurfaced streets or inaccessible to the traveling public.

The average PCI of the Veneta street system was 83 on a scale of 0 to 100. Herein, the term average indicates area-weighted average unless otherwise specified. The standard rating scale defines seven PCI categories. This scale can be customized to have as many categories as desired in order to more easily view the distribution of PCI. For Veneta, we used a five-category scale as shown in Figure 5. Having five condition categories allows for quick observation of pavements that are in need of immediate repair (51 to 65), or which pavements have fallen into the worse category (0 to 50) and may require more costly repairs.

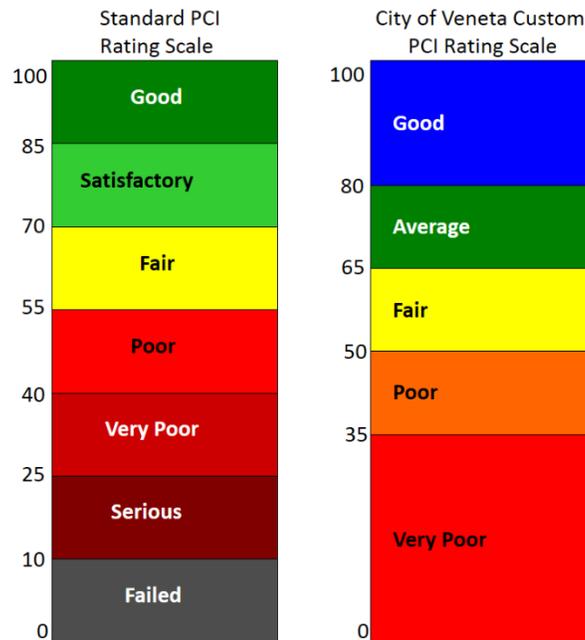


Figure 5. PCI Rating Scales

Table 1 presents the overall PCI for the sections that are classified as major collector, minor collector, and local access streets.

Table 1. Veneta Pavement Network Pavement Condition Index Results

Pavement Classification	Pavement Sections	Section Area (SqFt)	Section Area (%)	Weighted Average PCI	PCI Rating
Major Collector	11	537,221	16%	85	Good
Minor Collector	20	537,002	16%	75	Average
Local Access	140	2,240,339	68%	86	Good
All Inspected	171	3,314,562	100%	83	Good

Figure 6 through Figure 8 provide a graphical representation of the PCI distribution for each of the pavement classifications listed in Table 1.

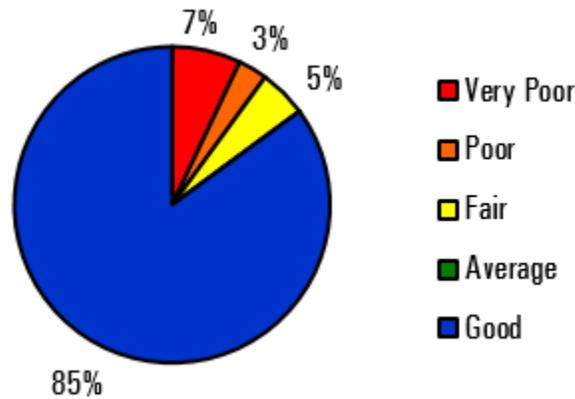


Figure 6. PCI Distribution for Major Collector Streets

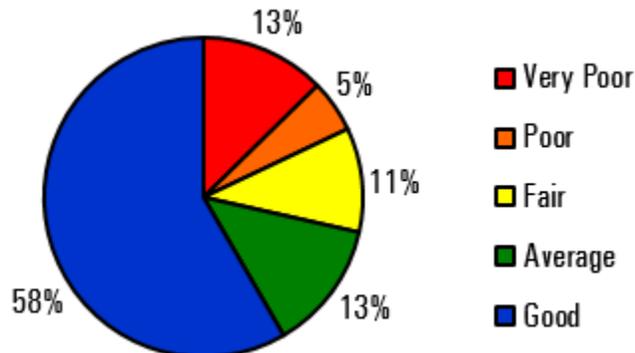


Figure 7. PCI Distribution for Minor Collector Streets

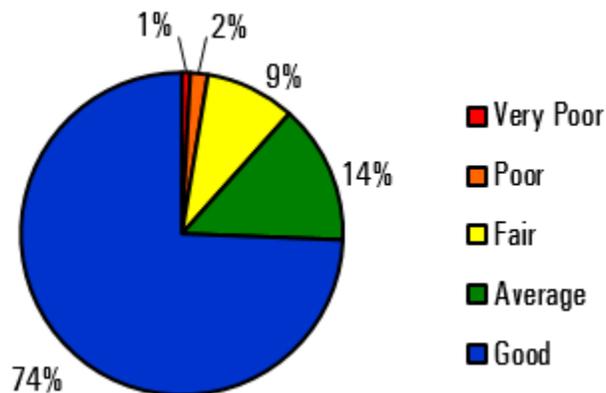


Figure 8. PCI Distribution for Local Access Streets

Shown another way, Figure 9 presents the overall PCI distribution of the Veneta pavement network.

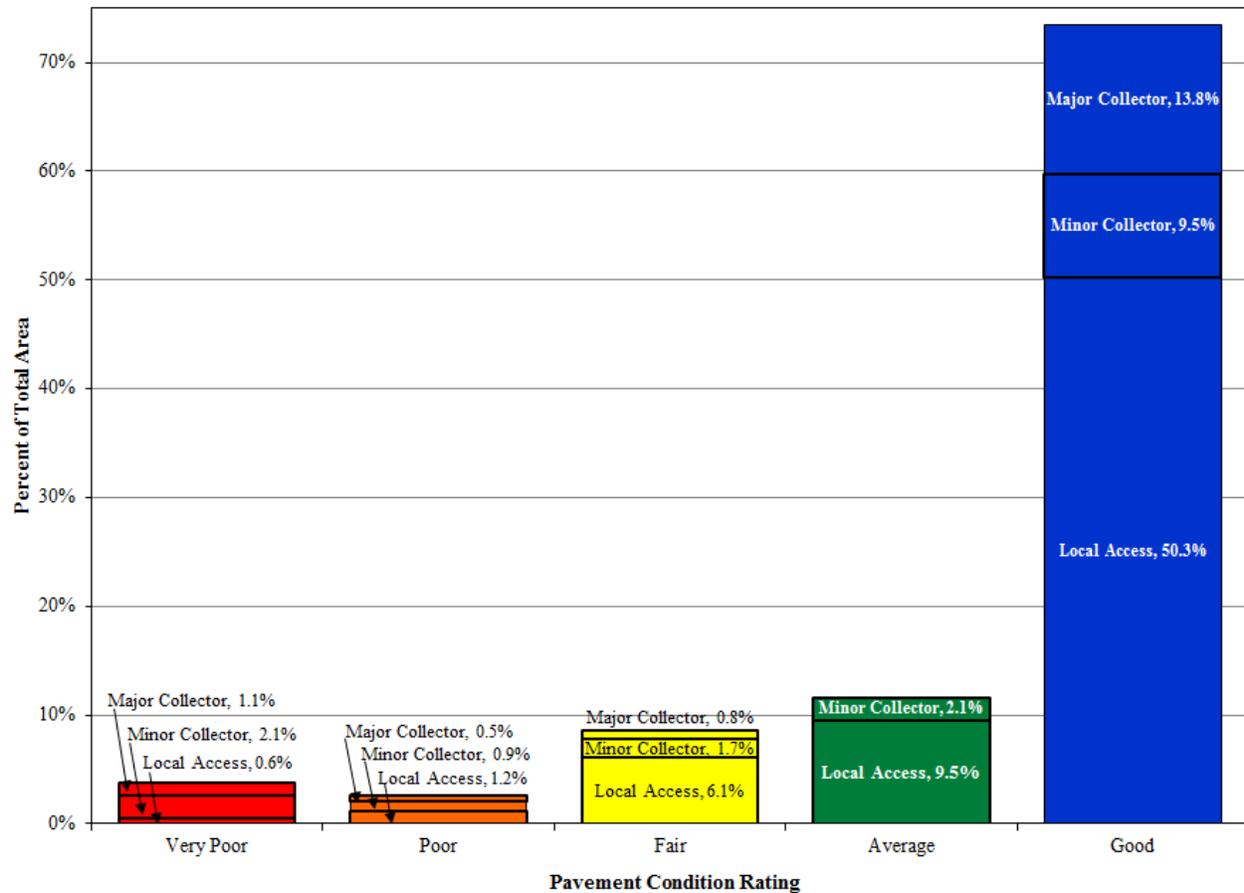


Figure 9. Overview of the Veneta Pavement Condition in 2014

For further detail, consult the following Appendices, which contain information on the condition of the Veneta street network:

- › Appendix A contains tables showing summary inventory and condition data by section.
- › Appendix B contains maps that show section identification and PCI ratings.

SIDEWALK CONDITION SURVEY & BIKE LANE INVENTORY

In addition to the PCI survey that PSI conducted on the pavements, the sidewalk location, width, condition, and bike lane locations were inventoried. Since there is no widely used standard for conducting a visual survey on sidewalks, PSI worked with the City of Veneta to develop the rating criteria presented in Table 2.

Table 2. Sidewalk Condition Rating Criteria

<p><u>Excellent Condition</u></p> <ul style="list-style-type: none"> • Uniform & Flat Cross Slope • No Slab Faulting • No Cracks • No Obstacles 		
<p><u>Good Condition</u></p> <ul style="list-style-type: none"> • Uniform & Flat Cross Slope • No Slab Faulting • Minimal Cracks < 1/4" • No Obstacles 		
<p><u>Fair Condition</u></p> <ul style="list-style-type: none"> • Slightly Non-Uniform Cross Slope • Several Cracks > 1/4" • Several Faulted Slabs or Obstacles 		
<p><u>Poor Condition</u></p> <ul style="list-style-type: none"> • Non-Uniform Cross Slope • Many Multi-Directional Cracks • Missing Pieces of Concrete • Significant Quantity of Faulted Slabs or Obstacles 		

The sidewalks in the City of Veneta are largely in Excellent or Good condition. There are no sidewalks in Poor condition. The majority of the sidewalks in Fair condition are located in the Neighborhood off of Hunter Road and Fern Meadows Lane. The location, width, repair location and condition of the sidewalks are detailed on maps in Appendix C.

Currently, there are eight streets with marked bike lanes, these are listed in Appendix C.

BUDGET SCENARIO ANALYSIS

PSI analyzed four budget scenarios for the period of 2015-2020 and the results are summarized below. Additional graphical and tabular information regarding the comparison of the budgets and the effects on the PCI are given in Appendix D.

The M&R costs in the analysis are based on estimated unit prices from bid tabs that were provided by the City of Veneta and bid tabs from the City of Eugene's website. These costs are summarized in Appendix F and are presented in constant 2014 dollars, i.e., they assume no inflation over the long term.

Based upon the 2014 PCI survey, the estimated total unfunded M&R is \$2.70 million. This includes Localized Preventive M&R, Global M&R, and Major M&R, which are defined in Appendix G.

Scenario 1 – Eliminate M&R Backlog

M&R backlog is any major work type that is required for a pavement with a PCI below critical value. The backlog for Veneta as of 2015 is approximately \$1.55M. The results of the analysis found that an annual budget of \$577,000 dollars is needed to eliminate the backlog, and all other unfunded M&R by the year 2020. Table 3 displays a summary of the analysis.

Table 3 – Summary of Results for Budget Scenario 1

Budget Scenario		PCI at Beginning of Analysis	Funded M&R Cost Over Analysis Period ¹	Unfunded M&R Cost at End of Analysis ²	Total Cost ³	PCI at End of Analysis
1	Eliminate Backlog Avg.\$577K/Year	83	\$3,460,983	\$0	\$3,460,983	85
Notes: ¹ Total Funding for the M&R budget scenarios. ² Total unfunded stopgap, preventive, global, and major M&R values. ³ The sum of the total funded and total last year unfunded cost.						

The total cost over the initial six years, including the funded and unfunded M&R cost is \$3.46M. The resulting annual M&R cost after eliminating backlog in 2020 would be approximately \$193,000 annually for the five following years and would result in a network PCI of 79 in year 2025.

Due to the high overall PCI of Veneta's network, while the unfunded M&R is being eliminated, the PCI only increases slightly to 85 in 2020. The rate of PCI change can be compared to the rate of unfunded M&R decline in Figure 10.

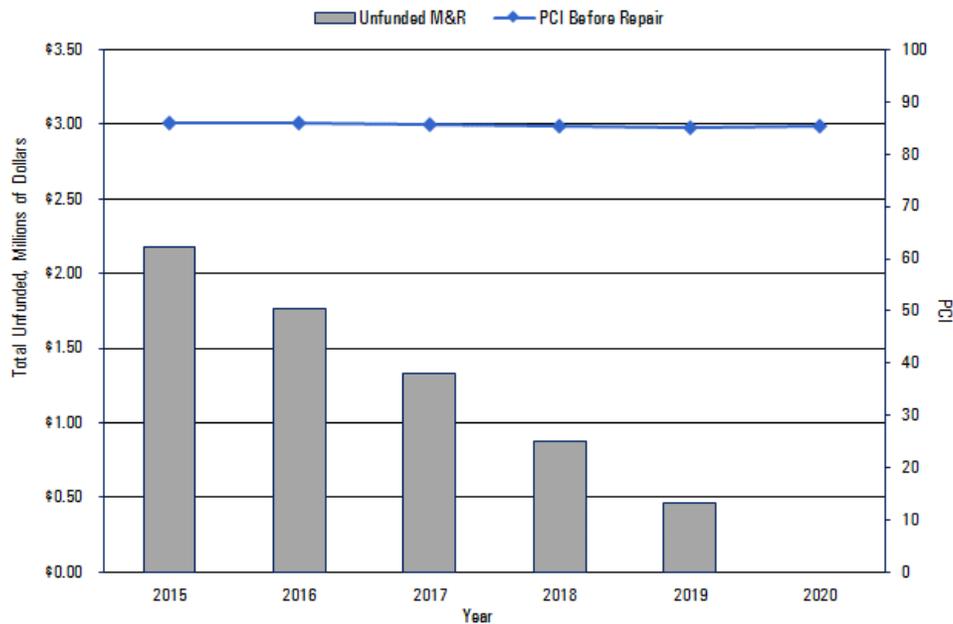


Figure 10–Scenario 1 Analysis Results

Scenario 2 – Funding to Stabilize Street System at Current Conditions

Funding at an average annual amount of \$447K is estimated to be sufficient to stabilize the street system at its current average condition rating of 83. This funding level would result in a decrease in the current unfunded M&R over the analysis period.

A summary of this budget is in shown in Table 4. The total cost over the next six years, including the funded and unfunded M&R cost is \$3.14M if the goal is to maintain a PCI of 83.

Table 4– Summary of Results for Budget Scenario 2

Budget Scenario		PCI at Beginning of Analysis	Funded M&R Cost Over Analysis Period ¹	Unfunded M&R Cost at End of Analysis ²	Total Cost ³	PCI at End of Analysis
2	Maintain Current PCI Avg \$447K/Year	83	\$2,679,250	\$458,004	\$3,137,254	83

Notes: ¹Total Funding for the M&R budget scenarios. ²Total unfunded stopgap, preventive, global, and major M&R values. ³The sum of the total funded and total last year unfunded cost.

Figure 11 displays the impact to the network PCI over time with respect to the unfunded M&R. By supporting a funding level that maintains the PCI, the total unfunded M&R will continue to decrease over time to \$458K in 2025.

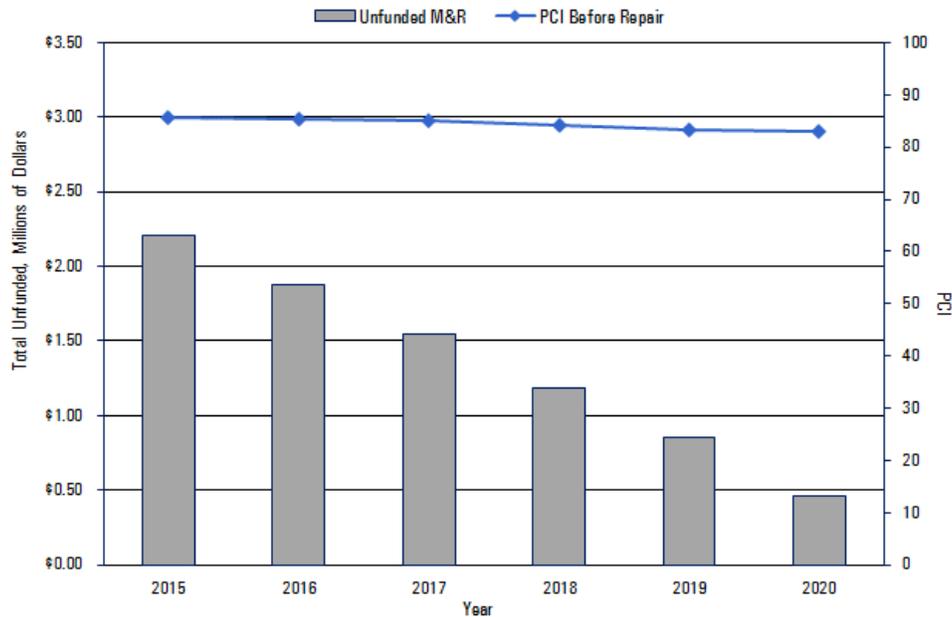


Figure 11–Scenario 2 Analysis Results

Scenario 3 – Maintain Current Budget of \$325,000 Annually

With maintaining the funding at the current level, the average PCI is estimated to decline to 80 by 2020. It is projected that the amount of the unfunded M&R will decrease to about \$1.41M in 2020. At this funding level, it is estimated that at the end of the analysis period 7% of the streets would require reconstruction (PCI less than 35) as compared to 5% in 2015.

A summary of this budget is shown in Table 5. The total cost over the next six years, including the funded and unfunded M&R cost is \$3.29M if the current budget is maintained.

Table 5– Summary of Results for Budget Scenario 3

Budget Scenario		PCI at Beginning of Analysis	Funded M&R Cost Over Analysis Period ¹	Unfunded M&R Cost at End of Analysis ²	Total Cost ³	PCI at End of Analysis
3	Maintain Current Budget \$325K/Year	83	\$1,878,631	\$1,414,032	\$3,292,663	80

Notes: ¹Total Funding for the M&R budget scenarios. ²Total unfunded stopgap, preventive, global, and major M&R values. ³The sum of the total funded and total last year unfunded cost.

As shown in Figure 12, the total unfunded M&R decreases over the 6-year analysis period. However, when the analysis is carried out until 2030, the unfunded M&R decreases to \$891K in 2024. This unfunded M&R level holds steady for a couple years before it begins to increase. All the while, the PCI continues to decrease. This parabolic trend is due to the inability of the current annual budget to accommodate several of the larger rehabilitation projects, which if repaired would allow the unfunded M&R to continue to be reduced.

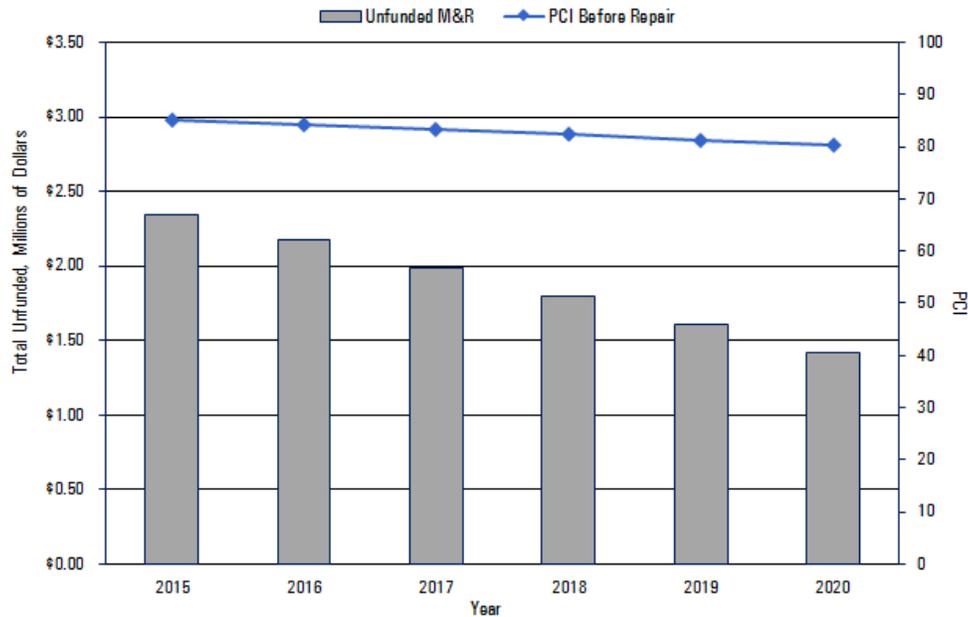


Figure 12–Scenario 3 Analysis Results

Scenario 4 – Funding to Perform Safety Maintenance Only

If only Localized Safety M&R is conducted to maintain operational streets, Veneta’s network PCI will drop to 73 in 2020. Although the City will only need to spend approximately \$45,000 annually, this will cause the total unfunded M&R to increase to \$3.12M in 2020 i.e., a 10.6% increase.

A summary of this budget is in shown in Table 6. The total cost over the next six years, including the funded and unfunded M&R cost is \$3.39M.

Table 6– Summary of Results for Budget Scenario 4

Budget Scenario	PCI at Beginning of Analysis	Funded M&R Cost Over Analysis Period ¹	Unfunded M&R Cost at End of Analysis ²	Total Cost ³	PCI at End of Analysis
4 Safety Maintenance Only	83	\$268,703	\$3,118,813	\$3,387,516	73

Notes: ¹Total Funding for the M&R budget scenarios. ²Total unfunded stopgap, preventive, global, and major M&R values. ³The sum of the total funded and total last year unfunded cost.

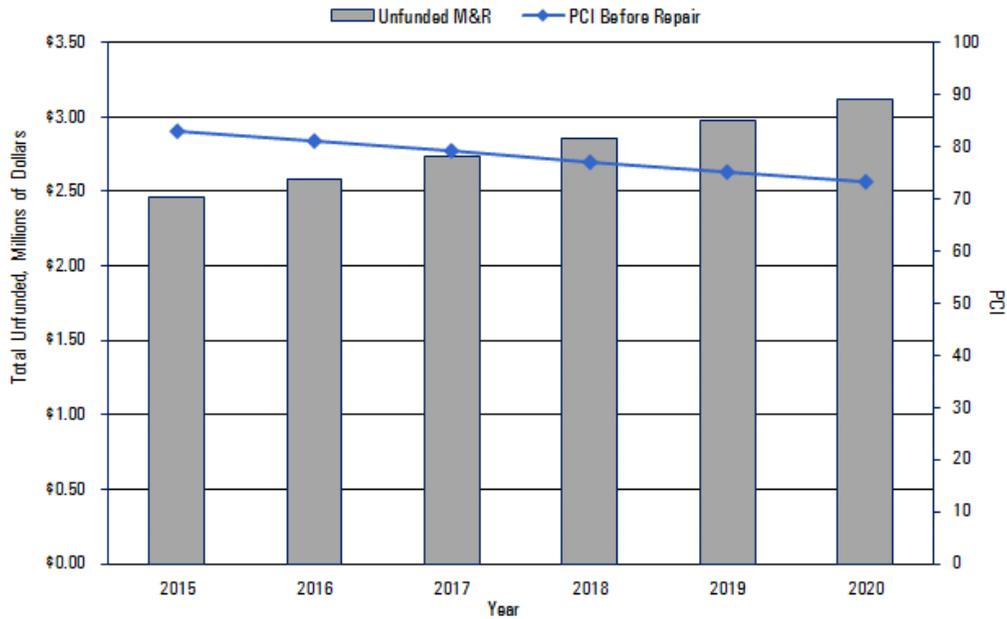


Figure 13–Scenario 4 Analysis Results

Figure 13 shows the rate of PCI decline and unfunded M&R growth during the analysis period of 2015-2020.

If safety maintenance is continued to be performed for an additional 5 years until 2025, the resulting total unfunded M&R will increase from \$3.12M to \$4.90M, and the PCI will decrease from 73 in 2020 to 2025 in 64.

PRIORITIZED M&R PLAN

Projects were developed based on Budget Scenario 3 – Maintain current budget of \$325,000 annually.

Detailed project information is provided below for budget scenario 3. Each section or grouping of sections has information pertaining to the recommended work, PCI before and after the work, an approximate cost, and the types of distresses that were observed during the 2014 PCI survey.

Maps showing the project locations and the year of construction are presented in Appendix E.

RECOMMENDED PROJECTS

Project Year: 2015

BranchID: 5TH
Name: 5th Street
SectionID: 5
From: Pavement Change near Woodland Ave
To: Bolton Hill Road
PCI Before Project: 54
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$22,887
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2015 Continued

Street Name: BROADWAY
Name: Broadway Avenue
SectionID: 2
From: 6th Street
To: Pavement change near 4th Street
PCI Before Project: 76
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$35,509
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Patching,
and Weathering



Project Year: 2015 Continued

Street Name: BROADWAY
Name: Broadway Avenue
SectionID: 5
From: Territorial Road
To: Pavement change
PCI Before Project: 64
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$39,560
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2015 Continued

BranchID: JEANS
Name: Jeans Road
SectionID: 1
From: Territorial Road
To: Forest Meadows Lane
PCI Before Project: 86
PCI After Project: 96
Work Type: Slurry seal. Full depth patching, and crack sealing.
Approximate Cost: \$37,561
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2015 Continued

BranchID: 8TH
Name: 8th Street
SectionID: 1 & 2
From: Highway 126
To: Dunham Avenue
PCI Before Project: 83 & 76
PCI After Project: 88 & 82
Work Type: Slurry seal. Full depth patching and crack sealing.
Approximate Cost: \$13,040
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2015 Continued

BranchID: BROADWAY
Name: Broadway Avenue
SectionID: 1
From: 8th Street
To: 6th Street
PCI Before Project: 76
PCI After Project: 82
Work Type: Slurry seal. Crack sealing.
Approximate Cost: \$8,856
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: 3RD
Name: 3rd Street
SectionID: 2, 3, & 5
From: Broadway Avenue
To: South Terminus
PCI Before Project: 68, 68, & 84
PCI After Project: 77, 77, & 93
Work Type: Slurry seal. Crack sealing.
Approximate Cost: \$8,653
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



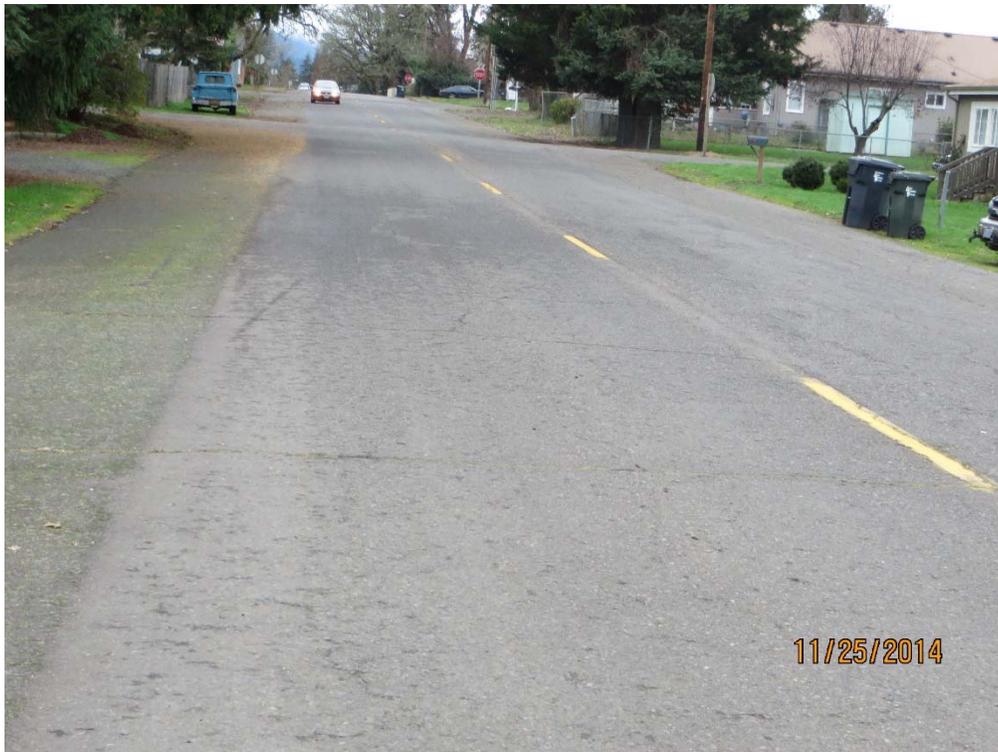
Project Year: 2015 Continued

BranchID: 4TH
Name: 4th Street
SectionID: 2
From: Broadway Avenue
To: McCutcheon Avenue
PCI Before Project: 79
PCI After Project: 88
Work Type: Slurry seal. Crack sealing.
Approximate Cost: \$4,788
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: DUNHAM
Name: Dunham Avenue
SectionID: 5
From: 4th Street
To: 2nd Street
PCI Before Project: 69
PCI After Project: 78
Work Type: Slurry seal. Crack sealing.
Approximate Cost: \$7,011
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: 10TH
Name: 10th Street
SectionID: 2
From: Sertic Road
To: Pavement Change near Forest Court
PCI Before Project: 65
PCI After Project: 74
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$7,951
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: PARKSIDE
Name: Parkside Drive
SectionID: 1
From: West Terminus
To: 10th Street
PCI Before Project: 61
PCI After Project: 70
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$2,140
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: FOREST
Name: Forest Court
SectionID: 1
From: West Terminus
To: 10th Street
PCI Before Project: 60
PCI After Project: 69
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$1,582
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: 9TH
Name: 9th Street
SectionID: 4
From: Sertic Road
To: Parkside Drive
PCI Before Project: 74
PCI After Project: 73
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$2,611
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: 6TH
Name: 6th Street
SectionID: 1, 2, & 3
From: Broadway Avenue
To: Bolton Hill Road
PCI Before Project: 68, 92 & 70
PCI After Project: 78, 96 & 79
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$17,819
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



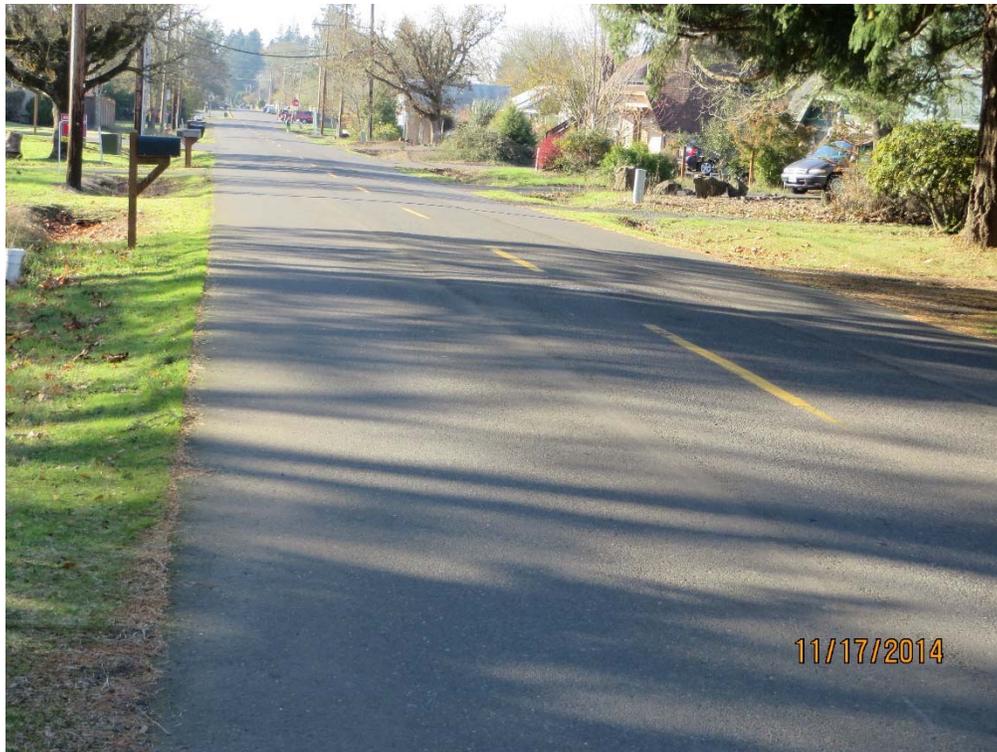
Project Year: 2015 Continued

BranchID: 5TH
Name: 5th Street
SectionID: 4
From: Hunter Road
To: Pavement change near Woodland Avenue
PCI Before Project: 80
PCI After Project: 89
Work Type: Slurry Seal. Crack sealing. Full depth patching
Approximate Cost: \$6,195
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: HUNTER
Name: Hunter Road
SectionID: 4
From: Territorial Road
To: Pavement change near Ruby Jean Lane
PCI Before Project: 86
PCI After Project: 96
Work Type: Slurry Seal. Crack sealing. Shoulder leveling
Approximate Cost: \$8,544
Visual Distresses: Lane Shoulder Drop Off, Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: TRINITY
Name: Trinity Street
SectionID: 1
From: E Bolton Road
To: Longwood Lane
PCI Before Project: 88
PCI After Project: 94
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$13,793
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: NORMAN
Name: Norman Avenue
SectionID: 1
From: Cheney Drive
To: South Terminus
PCI Before Project: 78
PCI After Project: 87
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$4,907
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: OAK ISLAND
Name: Oak Island Drive
SectionID: 2 & 3
From: North Terminus
To: Cherry Lane
PCI Before Project: 48 & 78
PCI After Project: 57 & 87
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$8,322
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: CHERRY
Name: Cherry Lane
SectionID: 1
From: West Terminus
To: East Terminus
PCI Before Project: 78
PCI After Project: 87
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$33,01
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: ACORN
Name: Acorn Court
SectionID: 1
From: Oak Island Drive
To: East Terminus
PCI Before Project: 71
PCI After Project: 80
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$1,545
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: BERRY
Name: Berry Lane
SectionID: 1 & 2
From: Oak Island Drive
To: Ponderosa Drive
PCI Before Project: 68 & 60
PCI After Project: 77 & 70
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$5,242
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: PONDEROSA
Name: Ponderosa Drive
SectionID: 1
From: Cheney Drive
To: Pavement Change
PCI Before Project: 58
PCI After Project: 67
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$3,291
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2015 Continued

BranchID: BLEK
Name: Blek Drive
SectionID: 2
From: Pavement Change
To: Perkins Drive
PCI Before Project: 83
PCI After Project: 92
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$6,791
Visual Distresses: Longitudinal/Transverse Cracking, Patching, and Weathering



Project Year: 2015 Continued

BranchID: TERRITORIAL
Name: Territorial Court
SectionID: 1
From: Territorial Road
To: North Terminus
PCI Before Project: 59
PCI After Project: 68
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$6,737
Visual Distresses: Longitudinal/Transverse Cracking, Patching, and Weathering



Project Year: 2016

BranchID: BOLTON
Name: Bolton Road
SectionID: 1
From: Territorial Street
To: East at end of sidewalk
PCI Before Project: 23
PCI After Project: 100
Work Type: Reconstruction.
Approximate Cost: \$61,024
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Patching and Weathering



Project Year: 2016 Continued

BranchID: 5TH
Name: 5th Street
SectionID: 2
From: Broadway Avenue
To: McCutcheon Avenue
PCI Before Project: 52
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$77,259
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Patching, and Weathering



Project Year: 2016 Continued

BranchID: PARKSIDE
Name: Parkside Street
SectionID: 2
From: 10th Street
To: 8th Street
PCI Before Project: 47
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$147,144
Visual Distresses: Alligator Cracking, Bleeding, Longitudinal/Transverse Cracking,
and Weathering



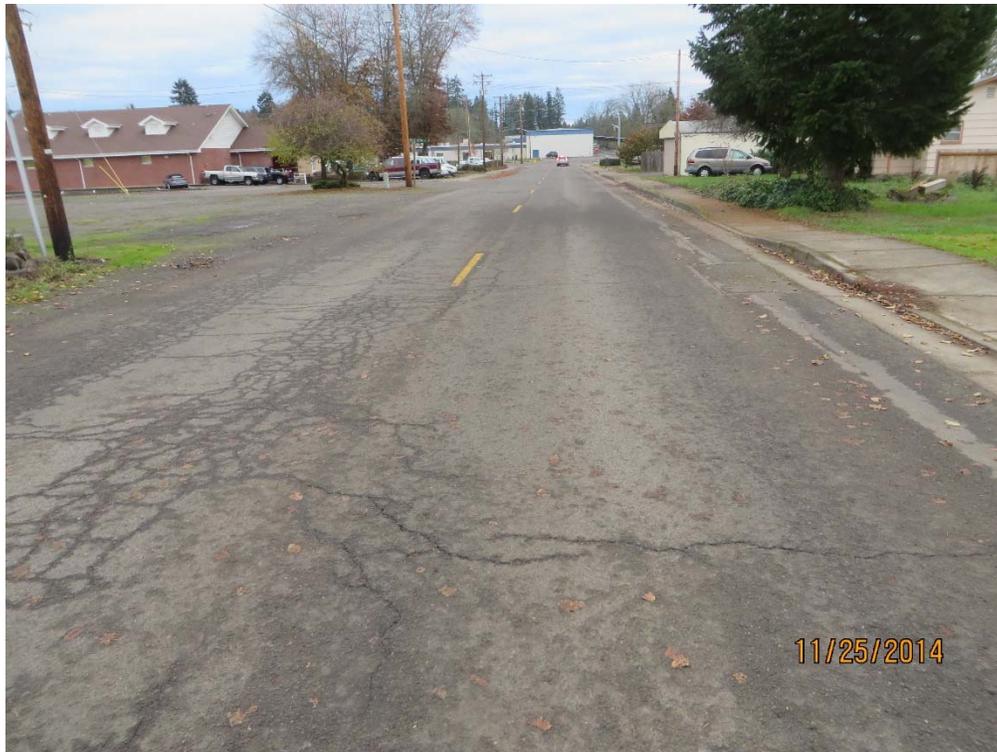
Project Year: 2016 Continued

BranchID: WOODLAND
Name: Woodland Avenue
SectionID: 1 & 2
From: 6th Street
To: Meadowdale Lane
PCI Before Project: 65 & 90
PCI After Project: 74 & 95
Work Type: Slurry Seal. Crack sealing.
Approximate Cost: \$7,596
Visual Distresses: Longitudinal/Transverse Cracking and Weathering



Project Year: 2017

BranchID: MCCUTCHEON
Name: McCutcheon Avenue
SectionID: 1, 2 & 3
From: 8th Street
To: Territorial Road
PCI Before Project: 55, 29, 54
PCI After Project: 100
Work Type: Mill & Overlay to Reconstruction. Full depth patching.
Approximate Cost: \$278,398
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2017 Continued

BranchID: TIDBALL
Name: Tidball Lane
SectionID: 1
From: Huston Road
To: Eastern City Limits
PCI Before Project: 27
PCI After Project: 100
Work Type: Reconstruction.
Approximate Cost: \$57,390
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Patching, Rutting, and Weathering



Project Year: 2018

BranchID: JEANS
Name: Jeans Road
SectionID: 2
From: Forest Meadow Lane
To: Eastern City Limits
PCI Before Project: 51
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$105,253
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2018 Continued

BranchID: 2ND
Name: 2nd Street
SectionID: 2
From: Broadway Avenue
To: Dunham Avenue
PCI Before Project: 64
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$31,434
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, and Weathering



Project Year: 2018 Continued

BranchID: 9TH
Name: 9th Street
SectionID: 5
From: Parkside Drive
To: South Terminus
PCI Before Project: 54
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$126,669
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Patching and Weathering



Project Year: 2018 Continued

BranchID: DUNHAM
Name: Dunham Street
SectionID: 6
From: 2nd Street
To: Territorial Road
PCI Before Project: 51
PCI After Project: 100
Work Type: Mill & Overlay. Full depth patching.
Approximate Cost: \$70,440
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking and Weathering



Project Year: 2019

BranchID: 8TH
Name: 8th Street
SectionID: 3
From: Dunham Avenue
To: Pavement Change north of Bolton Hill Road
PCI Before Project: 3
PCI After Project: 100
Work Type: Reconstruction
Approximate Cost: \$458,006
Visual Distresses: Alligator Cracking, Longitudinal/Transverse Cracking, Rutting, and Weathering



Project Year: 2020

BranchID: PERKINS
Name: Perkins Road
SectionID: 2 & 3
From: Territorial Road
To: Pavement Change east of Oak Island Road
PCI Before Project: 27 & 23
PCI After Project: 100
Work Type: Reconstruction.
Approximate Cost: \$247,706
Visual Distresses: Alligator Cracking, Bleeding, Longitudinal/Transverse Cracking, Patching, Pothole, and Weathering
Comments: If funding is available, we recommended that PERKINS_4 is also reconstruct, which extends to the eastern City Limits.



SUMMARY

The overall pavement condition of the streets in Veneta is GOOD. This average rating does not represent the areas in the city where there is advanced deterioration which may require complete reconstruction.

PSI conducted the budget analysis based on a preservation philosophy as opposed to a worst-first methodology. The worst-first strategy is a suboptimal method because M&R work is only applied after the pavement has structural damage. Once a pavement has significant structural damage, the only repair option is reconstruction. Preservation, on the other hand utilizes optimum timing to perform preventive treatments such as crack sealing, surface seals, and hot-mix asphalt concrete overlays.

Four budget scenarios were evaluated for the time period of 2015-2020. A summary of the four budgetary scenarios is shown in Table 7.

Table 7 – City of Veneta Budget Scenarios

	Budget Scenario	PCI at Beginning of Analysis	Funded M&R Cost Over Analysis Period¹	Unfunded M&R Cost at End of Analysis²	Total Cost³	PCI at End of Analysis
1	Eliminate Backlog Avg. \$577K/Year	83	\$3,460,983	\$0	\$3,460,983	85
2	Maintain Current PCI Avg \$447K/Year	83	\$2,679,250	\$458,004	\$3,137,254	83
3	Maintain Current Budget \$325K/Year	83	\$1,878,631	\$1,414,032	\$3,292,663	80
4	Safety Maintenance Only	83	\$268,703	\$3,118,813	\$3,387,516	73

Notes: ¹Total Funding for the M&R budget scenarios. ²Total unfunded stopgap, preventive, global, and major M&R values. ³The sum of the total funded and total last year unfunded cost.

We recommend that the City of Veneta increase annual pavement maintenance funding. At the current funding level, the average condition of the street system will fall from 83 to 80 by 2020 based on our analysis. By increasing funding to approximately \$447,000 annually until 2023, the average PCI will be maintained and the unfunded M&R will continue to decrease until it is eliminated. As pavements that are in good condition continue to deteriorate, they will become increasingly more expensive to maintain. If preservation activities can be funded now, the cost of maintaining the pavements over their lifetime will be minimized.

Additionally, we recommend that the City perform routine pavement condition surveys every four years. Regular PCI surveys provide up-to-date information to the City staff and allow the most cost-effective use of maintenance and rehabilitation dollars.

APPENDIX A - INVENTORY AND CONDITION DATA

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
10TH (10TH ST)	1	6/1/2002	AC	Local Access	17,292.96	11/25/2014	12	95	Good
10TH (10TH ST)	2	11/18/1997	AC	Local Access	26,504.75	11/18/2014	17	66	Average
10TH (10TH ST)	3	6/1/2008	AC	Local Access	19,164.20	11/18/2014	6	95	Good
2ND (2ND ST)	1	5/26/2012	AC	Local Access	12,176.95	11/25/2014	2	95	Good
2ND (2ND ST)	2	6/1/2010	AC	Local Access	11,574.42	11/25/2014	4	71	Average
2ND (2ND ST)	3	6/1/2010	AC	Local Access	11,624.16	11/25/2014	4	76	Average
3RD (3RD ST)	1	6/1/2010	AC	Local Access	11,491.94	11/25/2014	4	95	Good
3RD (3RD ST)	2	5/27/1999	AC	Local Access	6,509.55	11/25/2014	15	69	Average
3RD (3RD ST)	3	5/27/1999	AC	Local Access	6,370.55	11/25/2014	15	69	Average
3RD (3RD ST)	4	5/26/2012	AC	Local Access	9,009.45	11/25/2014	2	95	Good
3RD (3RD ST)	5	6/1/2003	AC	Local Access	15,963.78	11/18/2014	11	85	Good
4TH (4TH ST)	1	6/1/2010	AC	Local Access	10,234.17	11/25/2014	4	95	Good
4TH (4TH ST)	2	11/25/2004	AC	Local Access	15,958.94	11/25/2014	10	80	Average
4TH (4TH ST)	3	5/26/2012	AC	Local Access	9,040.39	11/25/2014	2	95	Good
5TH (5TH ST)	1	5/27/1971	AC	Local Access	3,147.49	11/25/2014	43	13	Very Poor
5TH (5TH ST)	2	5/26/1992	AC	Local Access	19,902.37	11/25/2014	22	55	Fair
5TH (5TH ST)	3	5/26/2012	AC	Local Access	9,093.43	11/25/2014	2	95	Good
5TH (5TH ST)	4	6/1/1977	AC	Local Access	20,650.32	11/18/2014	37	81	Good
5TH (5TH ST)	5	6/1/2002	AC	Local Access	6,177.00	11/18/2014	12	55	Fair
5TH (5TH ST)	6	6/1/2002	AC	Local Access	12,998.09	11/18/2014	12	95	Good
6TH (6TH ST)	1	11/26/1999	AC	Local Access	9,666.83	11/25/2014	15	70	Average
6TH (6TH ST)	2	5/27/2011	AC	Local Access	9,712.54	11/25/2014	3	93	Good
6TH (6TH ST)	3	6/1/1977	AC	Local Access	40,018.08	11/25/2014	37	71	Average
7TH (7TH ST)	1	11/25/2009	AC	Local Access	9,577.14	11/25/2014	5	90	Good
7TH (7TH ST)	2	5/26/2012	AC	Local Access	9,540.55	11/25/2014	2	95	Good
7TH (7TH ST)	3	11/25/2010	AC	Local Access	7,055.27	11/25/2014	4	92	Good
7TH (7TH ST)	4	6/1/1999	AC	Local Access	11,126.71	11/18/2014	15	95	Good
7TH (7TH ST)	5	6/1/2003	AC	Local Access	11,260.90	11/18/2014	11	95	Good
8TH (8TH ST)	1	6/1/2002	AC	Minor Collector	33,770.17	11/18/2014	12	84	Good
8TH (8TH ST)	2	5/20/2003	AC	Minor Collector	9,697.44	11/18/2014	11	77	Average
8TH (8TH ST)	3	11/18/1978	AC	Minor Collector	60,026.73	11/18/2014	36	28	Very Poor

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
8TH (8TH ST)	4	6/1/2004	AC	Minor Collector	21,312.50	11/17/2014	10	95	Good
8TH (8TH ST)	5	6/1/2007	AC	Minor Collector	38,593.47	11/17/2014	7	95	Good
9TH (9TH ST)	1	6/1/2003	AC	Local Access	14,326.12	11/25/2014	11	95	Good
9TH (9TH ST)	2	6/1/1973	AC	Local Access	12,741.17	11/25/2014	41	95	Good
9TH (9TH ST)	3	5/26/2012	AC	Local Access	5,605.77	11/25/2014	2	95	Good
9TH (9TH ST)	4	6/1/1973	AC	Local Access	8,703.86	11/18/2014	41	75	Average
9TH (9TH ST)	5	6/1/1999	AC	Local Access	34,487.50	11/18/2014	15	61	Fair
ACORN (ACORN CT)	1	6/1/1976	AC	Local Access	5,151.39	11/17/2014	38	72	Average
ALLURE (ALLURE AVE)	1	6/1/2004	AC	Local Access	15,880.59	11/17/2014	10	95	Good
AMBER (AMBER CT)	1	6/1/2006	AC	Local Access	7,950.86	11/17/2014	8	95	Good
ANGELCREEK (ANGEL CREEK DR)	1	6/1/2005	AC	Local Access	6,496.36	11/17/2014	9	95	Good
APPLEGATE (APPLEGATE CT)	1	6/1/1993	AC	Local Access	5,103.41	11/18/2014	21	86	Good
ARCANE (ARCANE AVE)	1	6/1/2005	AC	Local Access	11,792.79	11/17/2014	9	95	Good
ASPENRIDGE (ASPEN RIDGE DR)	1	6/1/2007	AC	Local Access	14,272.16	11/18/2014	7	95	Good
BERRY (BERRY LN)	1	6/1/1976	AC	Local Access	11,524.80	11/17/2014	38	69	Average
BERRY (BERRY LN)	2	6/1/1976	AC	Local Access	5,950.91	11/17/2014	38	61	Fair
BLEK (BLEK DR)	1	6/1/1999	AC	Local Access	17,690.04	11/17/2014	15	93	Good
BLEK (BLEK DR)	2	6/1/1972	AC	Local Access	22,635.26	11/17/2014	42	84	Good
BOLTON (E BOLTON RD)	1	11/17/1980	AC	Minor Collector	7,998.10	11/17/2014	34	32	Very Poor
BOLTON (E BOLTON RD)	2	11/17/1982	AC	Minor Collector	28,422.06	11/17/2014	32	36	Poor
BOLTON (E BOLTON RD)	3	11/17/2009	AC	Local Access	28,629.48	11/17/2014	5	90	Good
BOLTONHILL (BOLTON HILL RD)	1	6/1/2009	AC	Major Collector	128,592.27	11/18/2014	5	95	Good
BROADWAY (E BROADWAY AVE)	1	5/27/2003	AC	Minor Collector	29,520.64	11/25/2014	11	77	Average
BROADWAY (E BROADWAY AVE)	2	5/27/2003	AC	Minor Collector	16,439.24	11/25/2014	11	77	Average
BROADWAY (E BROADWAY AVE)	3	5/26/2012	AC	Minor Collector	20,457.32	11/25/2014	2	95	Good
BROADWAY (E BROADWAY AVE)	4	5/26/2012	AC	Minor Collector	10,322.48	11/25/2014	2	95	Good
BROADWAY (E BROADWAY AVE)	5	6/1/1997	AC	Minor Collector	14,654.64	11/18/2014	17	66	Average
BROADWAY (E BROADWAY AVE)	6	6/1/1997	AC	Minor Collector	25,599.09	11/18/2014	17	95	Good
BROADWAY (E BROADWAY AVE)	7	6/1/1997	AC	Minor Collector	7,370.00	11/18/2014	17	95	Good
BROADWAY (E BROADWAY AVE)	8	6/1/2003	AC	Local Access	8,604.96	11/17/2014	11	95	Good
BROADWAY (E BROADWAY AVE)	9	6/1/1994	AC	Local Access	21,995.13	11/17/2014	20	95	Good

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
BROOKER (BROOKER LN)	1	6/1/2010	AC	Local Access	10,758.75	11/25/2014	4	95	Good
CHENEY (CHENEY DR)	1	6/1/2007	AC	Local Access	24,653.67	11/17/2014	7	95	Good
CHENEY (CHENEY DR)	2	6/1/1977	AC	Minor Collector	56,734.36	11/17/2014	37	55	Fair
CHENEY (CHENEY DR)	3	6/1/1977	AC	Local Access	6,611.25	11/17/2014	37	60	Fair
CHERRY (CHERRY LN)	1	6/1/1976	AC	Local Access	11,004.54	11/17/2014	38	79	Average
CHRISTOPHE (CHRISTOPHER LN)	1	6/1/2003	AC	Local Access	3,926.97	11/17/2014	11	95	Good
CHRISTOPHE (CHRISTOPHER LN)	2	6/1/2003	AC	Local Access	4,278.08	11/17/2014	11	95	Good
CORKY (CORKY LN)	1	6/1/2006	AC	Local Access	3,178.46	11/17/2014	8	95	Good
CORKY (CORKY LN)	2	6/1/2004	AC	Local Access	8,386.58	11/17/2014	10	95	Good
CORKY (CORKY LN)	3	6/1/2004	AC	Local Access	21,284.37	11/17/2014	10	91	Good
CORNERSTON (CORNERSTONE DR)	1	6/1/2007	AC	Minor Collector	32,668.64	11/18/2014	7	95	Good
COTTAGE (COTTAGE CT)	1	6/1/2007	AC	Local Access	15,785.32	11/17/2014	7	95	Good
CROSSWOOD (CROSSWOOD LN)	1	6/1/2005	AC	Local Access	13,538.98	11/18/2014	9	95	Good
CRYSTAL (CRYSTAL ST)	1	6/1/2004	AC	Local Access	19,326.34	11/17/2014	10	90	Good
DAWN (DAWN CT)	1	6/1/1980	AC	Local Access	12,819.30	11/18/2014	34	61	Fair
DOGWOOD (DOGWOOD LN)	1	6/1/1900	GR	Local Access	14,972.27	6/1/1900	N/A	N/A	N/A
DUNHAM (DUNHAM AVE)	1	6/1/2003	AC	Local Access	7,119.87	11/25/2014	11	95	Good
DUNHAM (DUNHAM AVE)	2	6/1/2003	AC	Local Access	11,875.81	11/25/2014	11	95	Good
DUNHAM (DUNHAM AVE)	3	6/1/1994	AC	Local Access	35,664.36	11/25/2014	20	95	Good
DUNHAM (DUNHAM AVE)	4	6/1/1994	AC	Local Access	9,882.44	11/25/2014	20	95	Good
DUNHAM (DUNHAM AVE)	5	11/26/1999	AC	Local Access	23,369.74	11/25/2014	15	70	Average
DUNHAM (DUNHAM AVE)	6	11/25/1993	AC	Local Access	12,040.51	11/25/2014	21	58	Fair
EASTWOOD (EASTWOOD CT)	1	6/1/2005	AC	Local Access	8,306.82	11/17/2014	9	95	Good
ERDMAN (ERDMAN WAY)	1	6/1/2005	AC	Local Access	21,636.78	11/18/2014	9	95	Good
ESPRIT (ESPRIT CT)	1	6/1/2004	AC	Local Access	12,071.30	11/17/2014	10	95	Good
FERNDAL (FERNDAL CT)	1	6/1/2007	AC	Local Access	8,232.85	11/17/2014	7	95	Good
FERNMEADOW (FERN MEADOWS LN)	1	6/1/1994	AC	Local Access	28,449.38	11/17/2014	20	95	Good
FOREST (FOREST CT)	1	6/1/1980	AC	Local Access	5,271.70	11/18/2014	34	61	Fair
GARBER (GARBER LN)	1	6/1/1999	AC	Local Access	6,252.33	11/17/2014	15	93	Good
GREENBRIER (GREENBRIER CT)	1	6/1/2007	AC	Local Access	10,998.24	11/17/2014	7	95	Good
HALCYON (HALCYON DR)	1	6/1/2005	AC	Local Access	37,385.51	11/17/2014	9	93	Good

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
HAWK VIEW (HAWK VIEW DR)	1	6/1/2007	AC	Local Access	10,795.51	11/17/2014	7	95	Good
HEATHERGLE (HEATHER GLEN CT)	1	6/1/2008	AC	Local Access	8,808.94	11/18/2014	6	95	Good
HEAVENLY (HEAVENLY LN)	1	6/1/2004	AC	Local Access	10,495.02	11/17/2014	10	95	Good
HEAVENLY (HEAVENLY LN)	2	6/1/2004	AC	Local Access	22,091.56	11/17/2014	10	95	Good
HOPE (HOPE LN)	1	6/1/1900	AC	Local Access	9,130.57	6/1/1900	N/A	N/A	N/A
HOPE (HOPE LN)	2	6/1/1980	AC	Minor Collector	24,638.33	11/18/2014	34	94	Good
HUNTER (HUNTER AVE)	1	6/1/2003	AC	Local Access	24,351.25	11/25/2014	11	95	Good
HUNTER (HUNTER AVE)	2	6/1/2003	AC	Minor Collector	8,999.40	11/18/2014	11	93	Good
HUNTER (HUNTER AVE)	3	5/19/2012	AC	Minor Collector	43,801.45	11/18/2014	2	95	Good
HUNTER (HUNTER AVE)	4	5/18/2008	AC	Major Collector	28,479.40	11/17/2014	6	87	Good
HUNTER (HUNTER AVE)	5	6/1/2012	AC	Major Collector	94,606.11	11/17/2014	2	100	Good
HUNTER (HUNTER AVE)	6	6/1/1900	GR	Local Access	24,095.28	6/1/1900	N/A	N/A	N/A
HUSTON (HUSTON RD)	1	11/18/2005	AC	Major Collector	9,334.83	11/18/2014	9	82	Good
HUSTON (HUSTON RD)	2	5/19/2010	AC	Major Collector	35,871.85	11/17/2014	4	91	Good
IRENIC (IRENIC AVE)	1	6/1/2005	AC	Local Access	36,954.43	11/17/2014	9	94	Good
JACK KELLY (JACK KELLY LN)	1	6/1/2003	AC	Local Access	66,717.94	11/25/2014	11	95	Good
JAKE (JAKE ST)	1	6/1/2005	AC	Local Access	23,367.21	11/17/2014	9	95	Good
JAKE (JAKE ST)	2	6/1/2005	AC	Local Access	33,553.29	11/18/2014	9	95	Good
JEANS (JEANS RD)	1	5/19/2008	AC	Major Collector	125,201.50	11/18/2014	6	87	Good
JEANS (JEANS RD)	2	11/18/1993	AC	Major Collector	26,340.33	11/18/2014	21	58	Fair
KINGPIN (KINGPIN LP)	1	6/1/1994	AC	Local Access	21,535.39	11/17/2014	20	93	Good
KINGPIN (KINGPIN LP)	2	6/1/2003	AC	Local Access	18,337.76	11/17/2014	11	95	Good
LARO (LARO CT)	1	6/1/2005	AC	Local Access	10,982.42	11/17/2014	9	95	Good
LEGACY (LEGACY CT)	1	6/1/2004	AC	Local Access	8,789.56	11/17/2014	10	95	Good
LINDSAY (LINDSAY LN)	1	6/1/2003	AC	Local Access	33,354.00	11/17/2014	11	95	Good
LLAMA (LLAMA LN)	1	6/1/2004	AC	Local Access	19,949.34	11/17/2014	10	90	Good
LONGWOOD (LONGWOOD LN)	1	6/1/2004	AC	Local Access	17,403.10	11/18/2014	10	95	Good
LOTEN (LOTEN WAY)	1	6/1/2007	AC	Local Access	29,158.51	11/18/2014	7	95	Good
LOTEN (LOTEN WAY)	2	6/1/2007	AC	Local Access	17,385.89	11/18/2014	7	95	Good
LUTHER (LUTHER LN)	1	5/20/1998	AC	Local Access	56,918.55	11/18/2014	16	67	Average
MCCUTCHEON (MCCUTCHEON AVE)	1	11/25/1994	AC	Local Access	48,412.43	11/25/2014	20	60	Fair

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
MCCUTCHEON (MCCUTCHEON AVE)	2	11/25/1981	AC	Local Access	8,877.42	11/25/2014	33	34	Very Poor
MCCUTCHEON (MCCUTCHEON AVE)	3	5/27/1994	AC	Local Access	10,059.73	11/25/2014	20	59	Fair
MEADOWDALE (MEADOWDALE LN)	1	6/1/2003	AC	Local Access	2,061.29	11/18/2014	11	95	Good
MEADOWDALE (MEADOWDALE LN)	2	6/1/2003	AC	Local Access	17,497.14	11/18/2014	11	93	Good
MUSE (MUSE DR)	1	6/1/2004	AC	Local Access	22,606.16	11/17/2014	10	94	Good
NATALIE (NATALIE LN)	1	6/1/2006	AC	Local Access	21,310.64	11/17/2014	8	95	Good
NORMAN (NORMAN AVE)	1	6/1/1977	AC	Local Access	16,357.88	11/17/2014	37	79	Average
NOTTINGHAM (NOTTINGHAM ST)	1	6/1/2008	AC	Local Access	10,689.48	11/18/2014	6	95	Good
NOTTINGHAM (NOTTINGHAM ST)	2	6/1/2008	AC	Local Access	8,764.88	11/18/2014	6	95	Good
OAK ISLAND (OAK ISLAND DR)	1	6/1/2000	AC	Local Access	8,568.12	11/17/2014	14	95	Good
OAK ISLAND (OAK ISLAND DR)	2	6/1/1976	AC	Local Access	7,434.63	11/17/2014	38	49	Poor
OAK ISLAND (OAK ISLAND DR)	3	6/1/1976	AC	Local Access	20,306.87	11/17/2014	38	79	Average
OAK ISLAND (OAK ISLAND DR)	4	6/1/2012	AC	Local Access	29,557.87	11/17/2014	2	95	Good
OAK ISLAND (OAK ISLAND DR)	5	6/1/2001	AC	Local Access	14,522.13	11/17/2014	13	95	Good
OAKS ORCHD (OAKS ORCHARD RD)	1	6/1/2007	AC	Local Access	11,170.81	11/17/2014	7	95	Good
OREGON (OREGON CIR)	1	6/1/1978	AC	Local Access	4,503.13	11/18/2014	36	67	Average
PARKSIDE (PARKSIDE DR)	1	6/1/1980	AC	Local Access	7,132.49	11/18/2014	34	62	Fair
PARKSIDE (PARKSIDE DR)	2	6/1/1980	AC	Local Access	31,898.39	11/18/2014	34	50	Poor
PERKINS (PERKINS RD)	1	6/1/2007	AC	Major Collector	34,862.86	11/18/2014	7	95	Good
PERKINS (PERKINS RD)	2	11/18/1983	AC	Major Collector	16,050.45	11/17/2014	31	38	Poor
PERKINS (PERKINS RD)	3	5/19/1981	AC	Major Collector	16,414.32	11/17/2014	33	33	Very Poor
PERKINS (PERKINS RD)	4	11/17/1980	AC	Major Collector	21,467.31	11/17/2014	34	32	Very Poor
PERKINS (PERKINS CT)	5	6/1/1981	AC	Local Access	8,950.07	11/17/2014	33	78	Average
PINE (PINE ST)	1	6/1/2004	AC	Local Access	22,822.02	11/17/2014	10	90	Good
PINE (PINE ST)	2	6/1/2007	AC	Local Access	24,844.73	11/18/2014	7	93	Good
PLACID (PLACID ST)	1	6/1/2005	AC	Local Access	12,005.26	11/17/2014	9	95	Good
PONDEROSA (PONDEROSA DR)	1	6/1/2003	AC	Local Access	10,971.44	11/17/2014	11	59	Fair
PONDEROSA (PONDEROSA DR)	2	6/1/2003	AC	Local Access	6,063.83	11/17/2014	11	95	Good
RENDEZVOUS (RENDEZVOUS LP)	1	6/1/2007	AC	Local Access	28,662.36	11/18/2014	7	95	Good
RHAPSODY (RHAPSODY AVE)	1	6/1/2005	AC	Local Access	13,730.94	11/17/2014	9	95	Good
RUBY JEAN (RUBY JEAN LN)	1	6/1/2003	AC	Local Access	13,282.98	11/17/2014	11	95	Good

Table 1 – Section Condition

BranchID	SectionID	Last Construction Date	Surface	Classification	Area (SqFt)	Last Inspection Date	Age at Inspection	PCI	Condition Rating
SERTIC (SERTIC RD)	1	5/20/2011	AC	Local Access	12,826.05	11/18/2014	3	93	Good
SERTIC (SERTIC RD)	2	5/20/2011	AC	Local Access	30,919.84	11/18/2014	3	93	Good
SERTIC (SERTIC RD)	3	6/1/1999	AC	Local Access	11,433.41	11/18/2014	15	95	Good
SHERWOOD (SHERWOOD ST)	1	6/1/2008	AC	Local Access	22,026.13	11/18/2014	6	92	Good
SPARE (SPARE LN)	1	6/1/2004	AC	Local Access	11,712.09	11/17/2014	10	91	Good
STELLAR (STELLAR AVE)	1	6/1/2005	AC	Local Access	21,101.29	11/17/2014	9	95	Good
STRIKE (STRIKE ST)	1	6/1/2004	AC	Local Access	50,715.39	11/17/2014	10	94	Good
SUN RIDGE (SUN RIDGE WAY)	1	6/1/2007	AC	Local Access	2,923.69	11/17/2014	7	95	Good
TERRITORIAL (TERRITORIAL CT)	1	6/1/1977	AC	Local Access	22,457.28	11/17/2014	37	60	Fair
TERRA (TERRA LN)	1	6/1/2003	AC	Local Access	5,331.32	11/25/2014	11	95	Good
TIDBALL (TIDBALL LN)	1	11/17/1980	AC	Local Access	6,650.00	11/17/2014	34	32	Very Poor
TODD (TODD WAY)	1	6/1/1980	AC	Local Access	18,036.54	6/1/1980	N/A	N/A	N/A
TODD (TODD WAY)	2	6/1/1980	AC	Local Access	24,268.58	6/1/1980	N/A	N/A	N/A
TODD (TODD WAY)	3	6/1/1980	AC	Local Access	7,587.56	11/18/2014	34	77	Average
TREK (TREK DR)	1	6/1/2005	AC	Local Access	37,530.15	11/17/2014	9	95	Good
TRINITY (TRINITY ST)	1	6/1/2005	AC	Minor Collector	45,975.71	11/18/2014	9	89	Good
TYRO (TYRO AVE)	1	6/1/2005	AC	Local Access	13,642.28	11/17/2014	9	95	Good
WESTWOOD (WESTWOOD CT)	1	6/1/2005	AC	Local Access	8,714.42	11/17/2014	9	95	Good
WOODBERRY (WOODBERRY LN)	1	5/19/2012	AC	Local Access	7,890.58	11/18/2014	2	95	Good
WOODLAND (WOODLAND AVE)	1	6/1/1972	AC	Local Access	11,052.00	11/18/2014	42	66	Average
WOODLAND (WOODLAND AVE)	2	6/1/1972	AC	Local Access	25,315.50	11/18/2014	42	93	Good

Table 2 – Summary of Section Condition Report

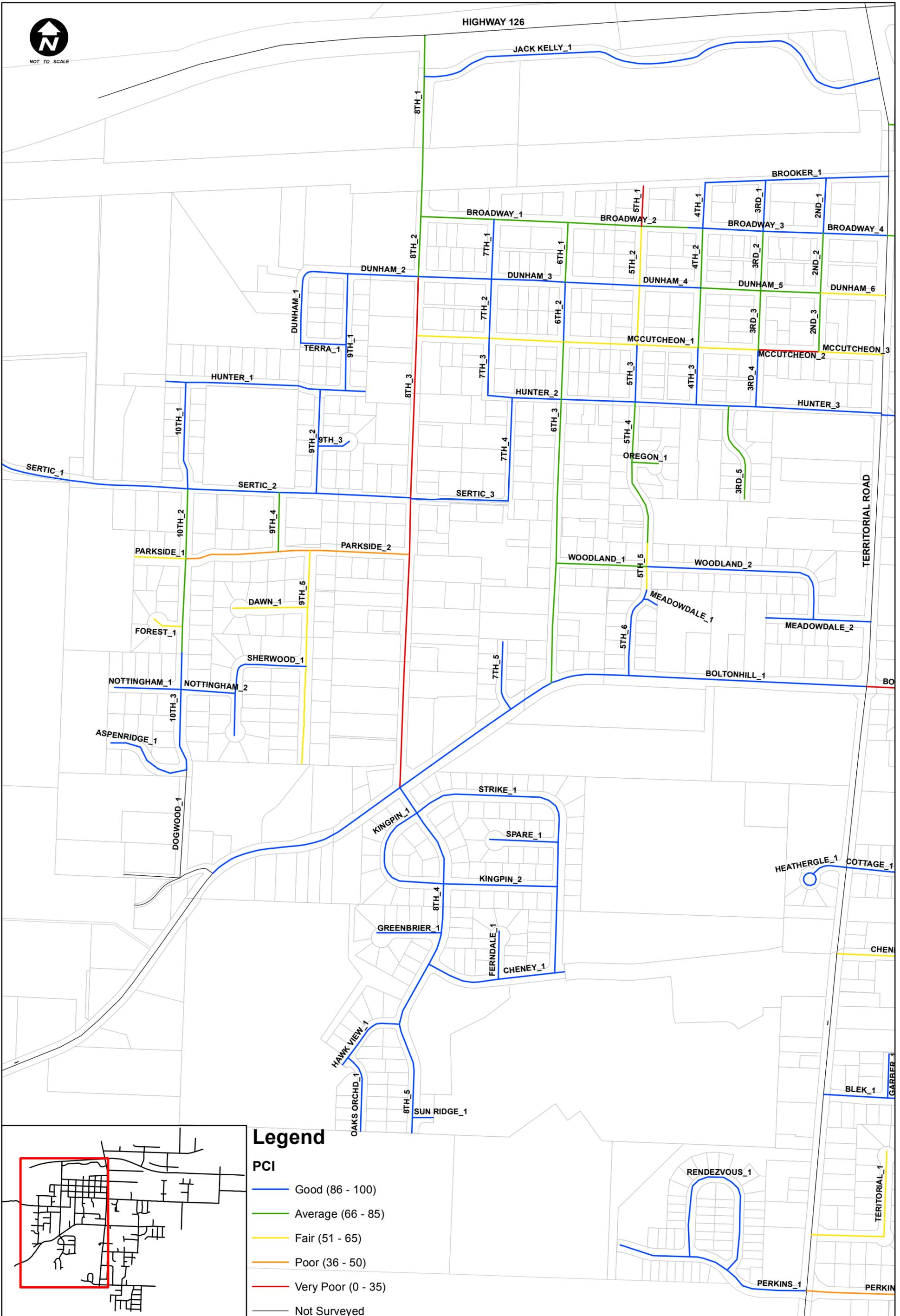
Age Category	Average Age at Inspection	Total Area (SqFt)	Number of Sections	Arithmetic Average PCI	PCI Standard Deviation	Area Weight Average PCI	Rating
0 - 02	1.41	351,606	17	96.76	2.46	97.63	Good
03 - 05	4.00	318,868	13	89.92	7.58	91.99	Good
06 - 10	8.36	1,227,438	59	93.59	3.13	92.87	Good
11 - 15	12.22	560,218	37	87.03	12.37	86.77	Good
16 - 20	18.67	307,046	12	81.75	16.19	79.08	Average
21 - 25	21.25	63,387	4	64.25	14.57	59.31	Average
31 - 35	33.43	204,177	14	51.43	20.87	50.80	Average
36 - 40	37.29	288,732	14	64.93	14.49	58.81	Average
over 40	41.83	83,595	6	71.00	30.44	82.41	Good
All	14.61	3,405,067	176	84.37	17.72	84.74	Good

APPENDIX B - SECTION CONDITION MAP



NOT TO SCALE

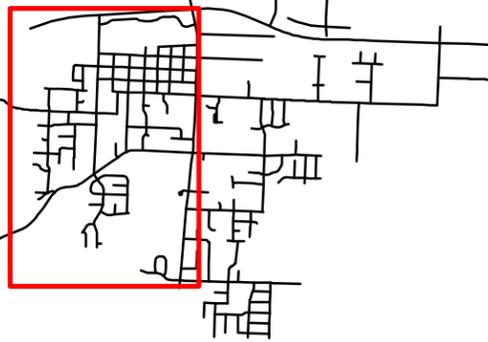
HIGHWAY 126



Legend

PCI

- Good (86 - 100)
- Average (66 - 85)
- Fair (51 - 65)
- Poor (36 - 50)
- Very Poor (0 - 35)
- Not Surveyed



PAVEMENT SERVICES, INC.
INNOVATIVE PAVEMENT SOLUTIONS

Date: 01/22/2015

Job No: 14037

2014 PAVEMENT CONDITION INDEX SURVEY RESULTS Veneta, Oregon

FIGURE

1



NOT TO SCALE

**2014 PAVEMENT CONDITION INDEX
SURVEY RESULTS**
Veneta, Oregon

PAVEMENT SERVICES, INC.
INNOVATIVE PAVEMENT SOLUTIONS



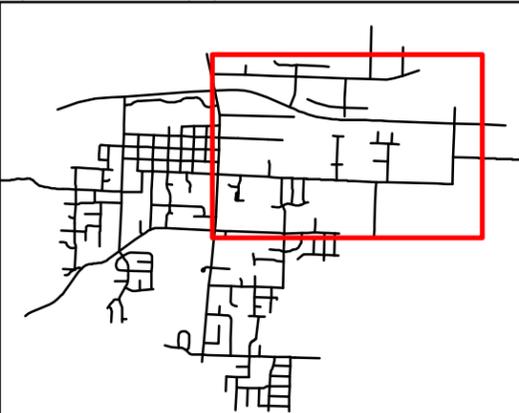
Job No: 14037

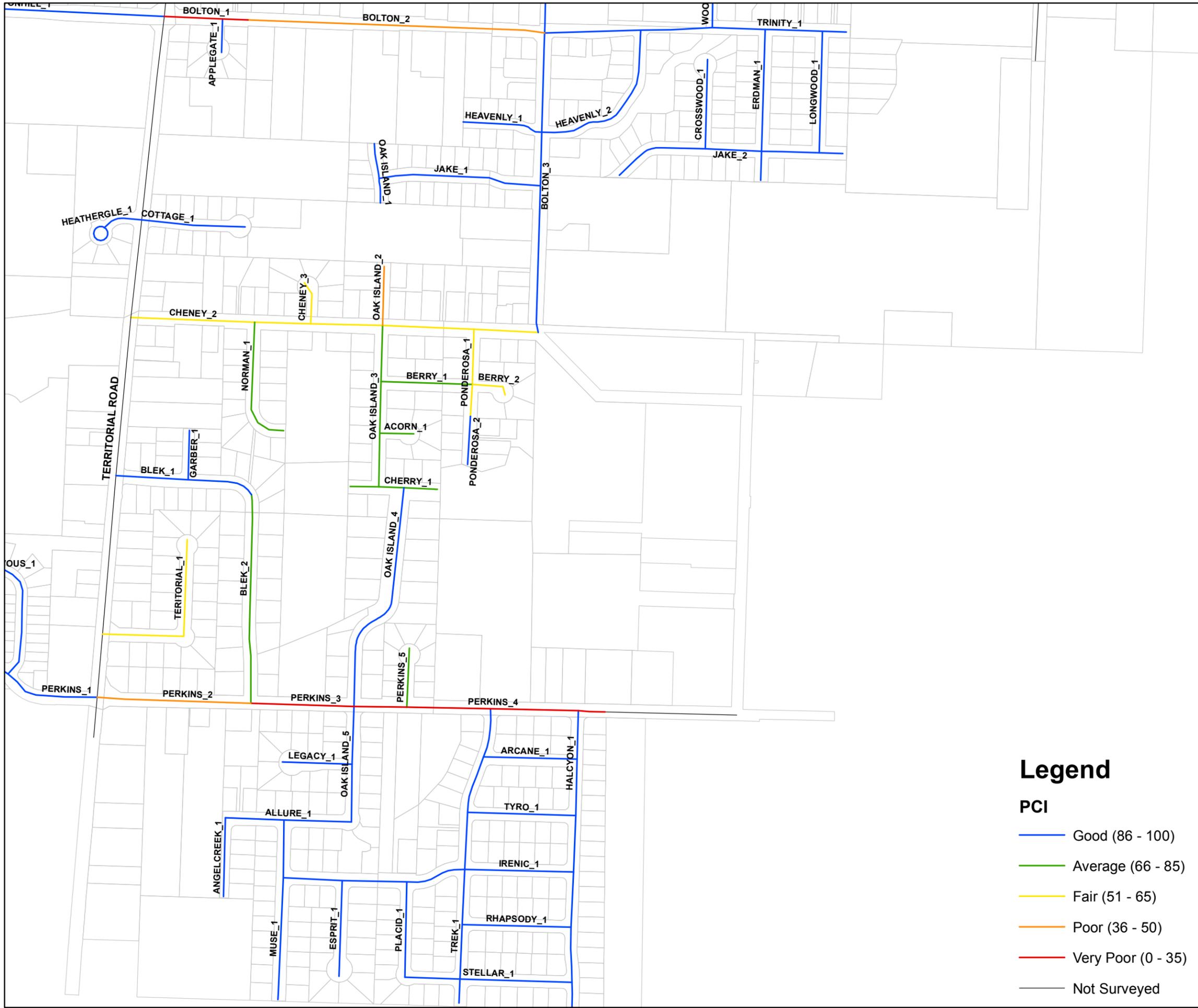
Date: 01/22/2015



Legend

- PCI**
- Good (86 - 100)
 - Average (66 - 85)
 - Fair (51 - 65)
 - Poor (36 - 50)
 - Very Poor (0 - 35)
 - Not Surveyed





NOT TO SCALE

Legend

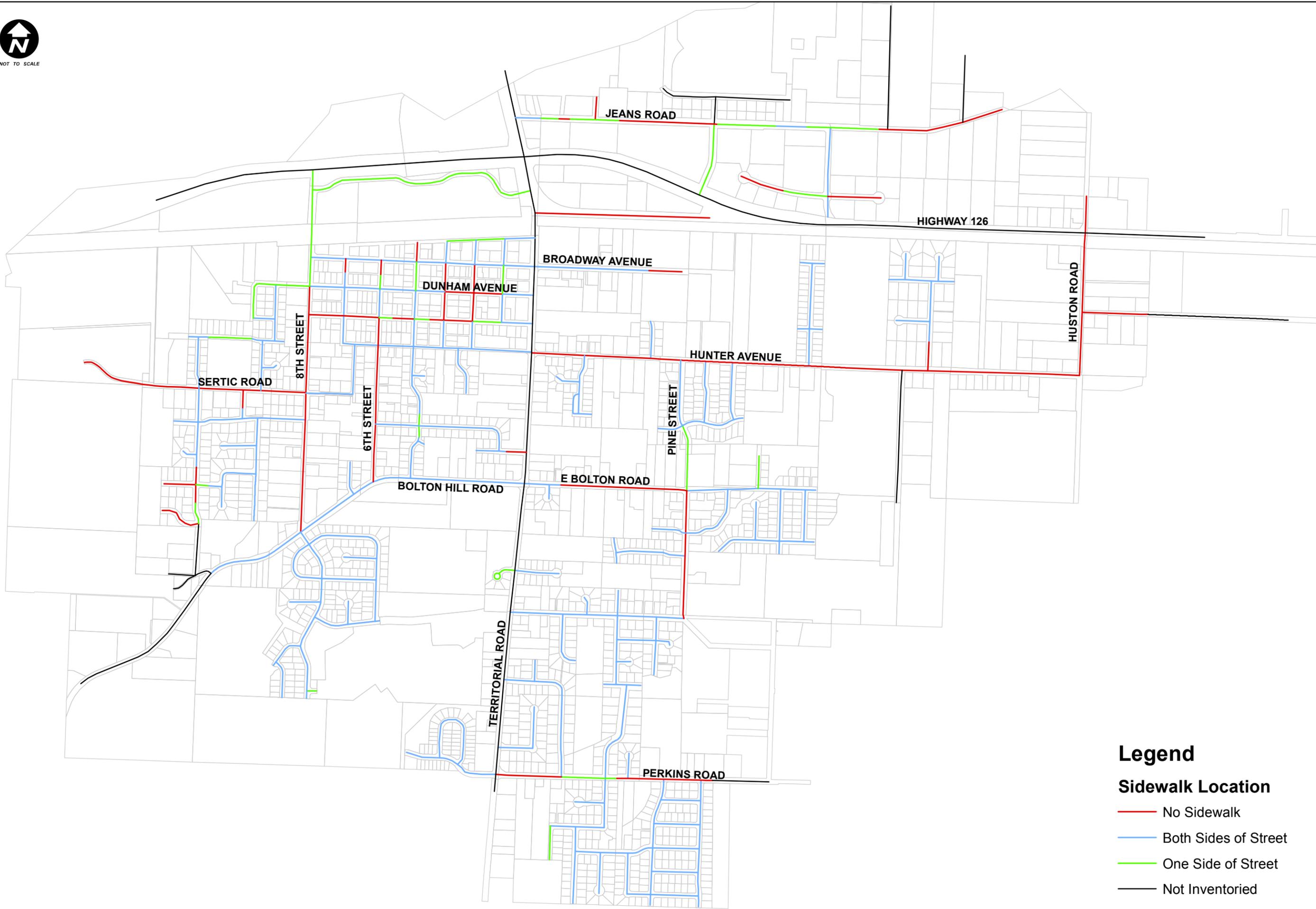
- PCI**
- Good (86 - 100)
 - Average (66 - 85)
 - Fair (51 - 65)
 - Poor (36 - 50)
 - Very Poor (0 - 35)
 - Not Surveyed



APPENDIX C – SIDEWALK AND BIKE LANE INVENTORY



NOT TO SCALE



Legend

Sidewalk Location

- No Sidewalk
- Both Sides of Street
- One Side of Street
- Not Inventoried

2014 SIDEWALK INVENTORY Veneta, Oregon





NOT TO SCALE



Legend

Sidewalk Condition

- Not Surveyed
- No Sidewalk
- Excellent
- Good
- Fair
- Poor

2014 SIDEWALK CONDITION
Veneta, Oregon



NOT TO SCALE



Legend

Sidewalk Width

- Not Surveyed
- No Sidewalk
- 4 Feet
- 5 Feet
- 6 Feet
- 9 Feet

2014 SIDEWALK WIDTH Veneta, Oregon

Table 1. Sidewalk Repair Locations

Street	From	To	Repair Location
5 th Street	Hunter Avenue	Woodland Avenue	88064 5 th Ave & Pioneer Park Apartments
6 th Street	Dunham Avenue	McCutcheon Avenue	88165 6 th St
E. Broadway Avenue	Westwood Court	Eastwood Court	25458 & 25434 E. Broadway Ave
Eastwood Court	North Terminus	E. Broadway Avenue	88198, 88199 & 88202 Eastwood Ct
Fern Meadows Lane	E. Broadway Avenue	E. Hunter Road	88113 & 88139 Fern Meadow Ln & 25462 Laro Ct
Forest Court	West Terminus	10 th Street	24728 Forest Ct
Muse Drive	Allure Avenue	South Terminus	87590 Muse Dr
Territorial Court	North Terminus	Territorial Road	25097 Territorial Ct
Westwood Court	North Terminus	E. Broadway Avenue	88185 & 88200 Westwood Ct



NOT TO SCALE



Legend

Bike Lanes

-  Not Surveyed
-  No Bike Lane
-  Both Sides of Street
-  North Side of Street

2014 BIKE LANE LOCATIONS Veneta, Oregon



Table 2. Bike Lane Locations

Street	From	To	Location
8 th Street	Highway 126	Broadway Avenue	Both Sides of the Street
E. Broadway Avenue	Territorial Road	East Terminus	Both Sides of the Street
W. Hunter Road	7 th Street	6 th Street	North Side of the Street
Jack Kelly Lane	8 th Street	Territorial Road	North Side of the Street
Pine Street	E. Hunter Road	Trinity Street	Both Sides of the Street
Bolton Hill Road	Dogwood Lane	Territorial Road	Both Sides of the Street
Trinity Street	E. Bolton Road	Longwood Lane	Both Sides of the Street
Ruby Jean Court	North Terminus	E. Hunter Road	Both Sides of the Street

APPENDIX D - MAINTENANCE AND REPAIR ANALYSIS

Figure 1 - Effect of M&R Budget Scenarios on PCI

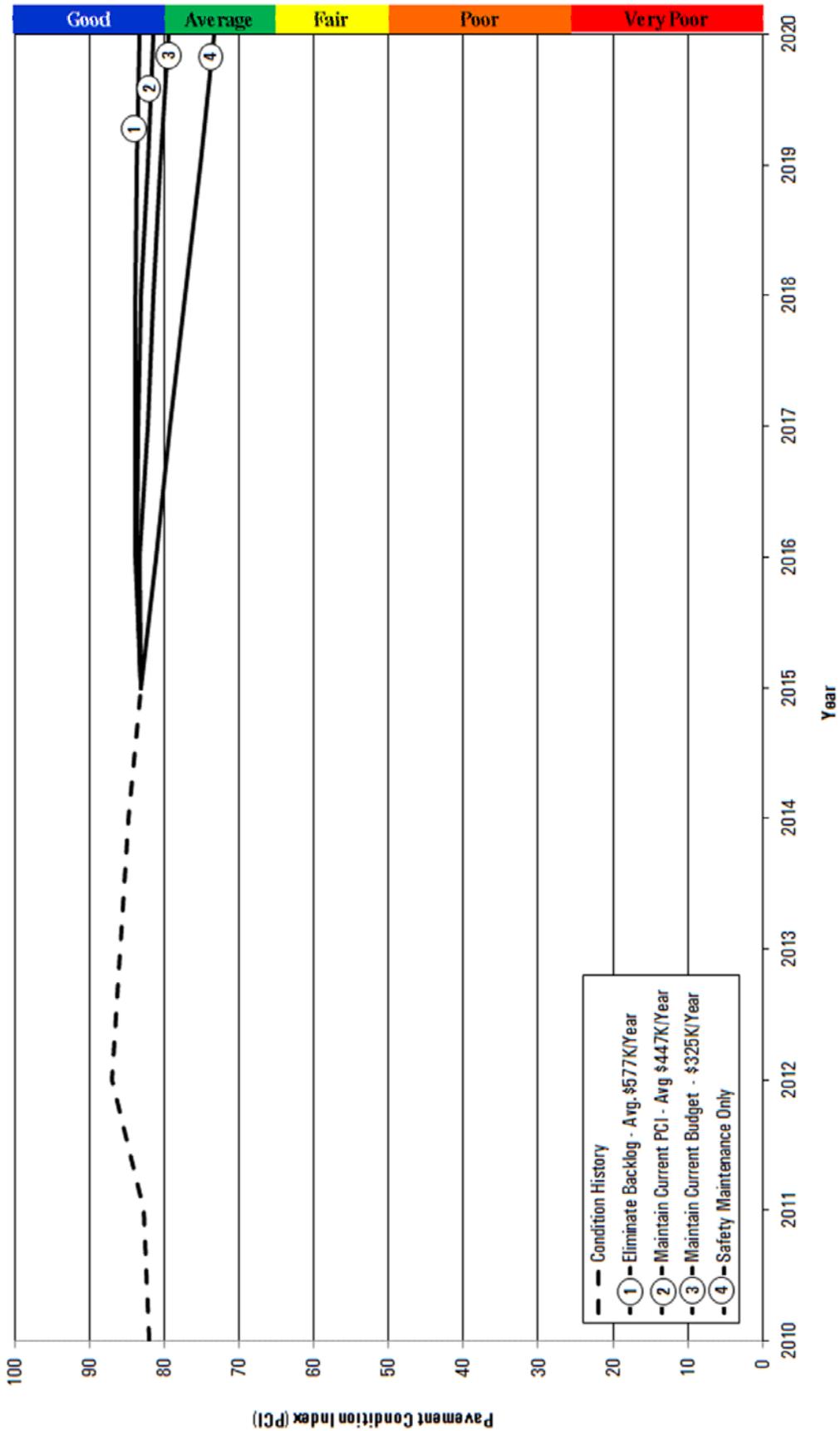


Table 1. Budget Scenario Details

Eliminate Backlog by Year 2020						
Year	PCI Before Repair	Funded M&R Cost ¹	Unfunded M&R Cost			PCI After Repair
			Major Below Critical ²	Sustainment ³	Total ⁴	
2015	83	\$584,536	\$1,549,139	\$627,652	\$2,176,790	86
2016	84	\$568,634	\$1,612,423	\$154,855	\$1,767,278	86
2017	84	\$580,033	\$1,327,213	\$0	\$1,327,213	86
2018	84	\$583,154	\$880,842	\$0	\$880,842	86
2019	84	\$584,949	\$458,004	\$0	\$458,004	85
2020	83	\$559,676	\$0	\$0	\$0	85
Total Funded:		\$3,460,983			Total Cost ⁵ :	\$3,460,983

Maintain Current PCI						
Year	PCI Before Repair	Funded M&R Cost ¹	Unfunded M&R Cost			PCI After Repair
			Major Below Critical ²	Sustainment ³	Total ⁴	
2015	83	\$454,357	\$1,549,139	\$657,088	\$2,206,227	86
2016	84	\$458,377	\$1,612,423	\$261,765	\$1,874,188	85
2017	83	\$443,544	\$1,543,018	\$0	\$1,543,018	85
2018	83	\$455,639	\$1,185,452	\$0	\$1,185,452	84
2019	82	\$434,959	\$854,364	\$0	\$854,364	83
2020	82	\$432,376	\$458,004	\$0	\$458,004	83
Total Funded:		\$2,679,250			Total Cost ⁵ :	\$3,137,254

Maintain Current Budget						
Year	PCI Before Repair	Funded M&R Cost ¹	Unfunded M&R Cost			PCI After Repair
			Major Below Critical ²	Sustainment ³	Total ⁴	
2015	83	\$317,944	\$1,549,139	\$793,501	\$2,342,640	85
2016	83	\$303,381	\$1,612,423	\$563,905	\$2,176,328	84
2017	82	\$322,982	\$1,667,307	\$316,184	\$1,983,492	83
2018	81	\$316,433	\$1,618,769	\$176,602	\$1,795,371	82
2019	80	\$307,908	\$1,609,528	\$0	\$1,609,528	81
2020	79	\$309,983	\$1,414,032	\$0	\$1,414,032	80
Total Funded:		\$1,878,631			Total Cost ⁵ :	\$3,292,663

Safety Maintenance Only						
Year	PCI Before Repair	Funded M&R Cost ¹	Unfunded M&R Cost			PCI After Repair
			Major Below Critical ²	Sustainment ³	Total ⁴	
2015	83	\$13,833	\$1,549,139	\$912,819	\$2,461,958	83
2016	81	\$23,331	\$1,612,423	\$969,583	\$2,582,006	81
2017	79	\$38,860	\$1,753,321	\$978,653	\$2,731,974	79
2018	77	\$54,155	\$1,985,734	\$866,581	\$2,852,315	77
2019	75	\$65,493	\$2,063,634	\$915,829	\$2,979,462	75
2020	73	\$73,031	\$2,279,308	\$839,505	\$3,118,813	73
Total Funded:		\$268,703			Total Cost ⁵ :	\$3,387,516

Notes: ¹Total Funding for the M&R budget scenarios. ²Any major M&R under critical PCI. ³Sustainment includes stopgap, preventive, global, and major above critical M&R unfunded values. ⁴The sum of the major below critical and sustainment unfunded values. ⁵The sum of the total funded and the total unfunded in the last year.

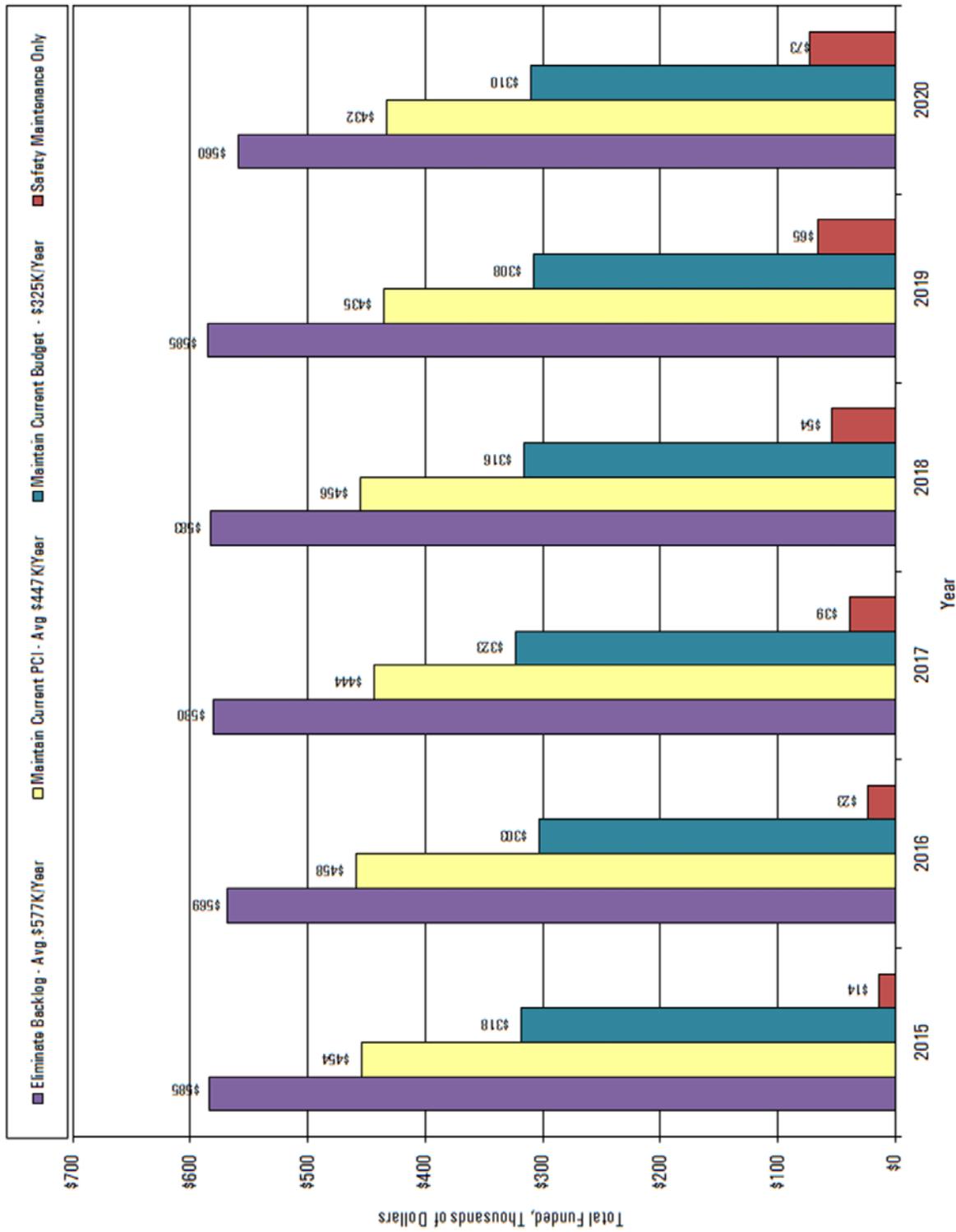


Figure 2 - Annual Funded Budget Amount for Each M&R Scenario

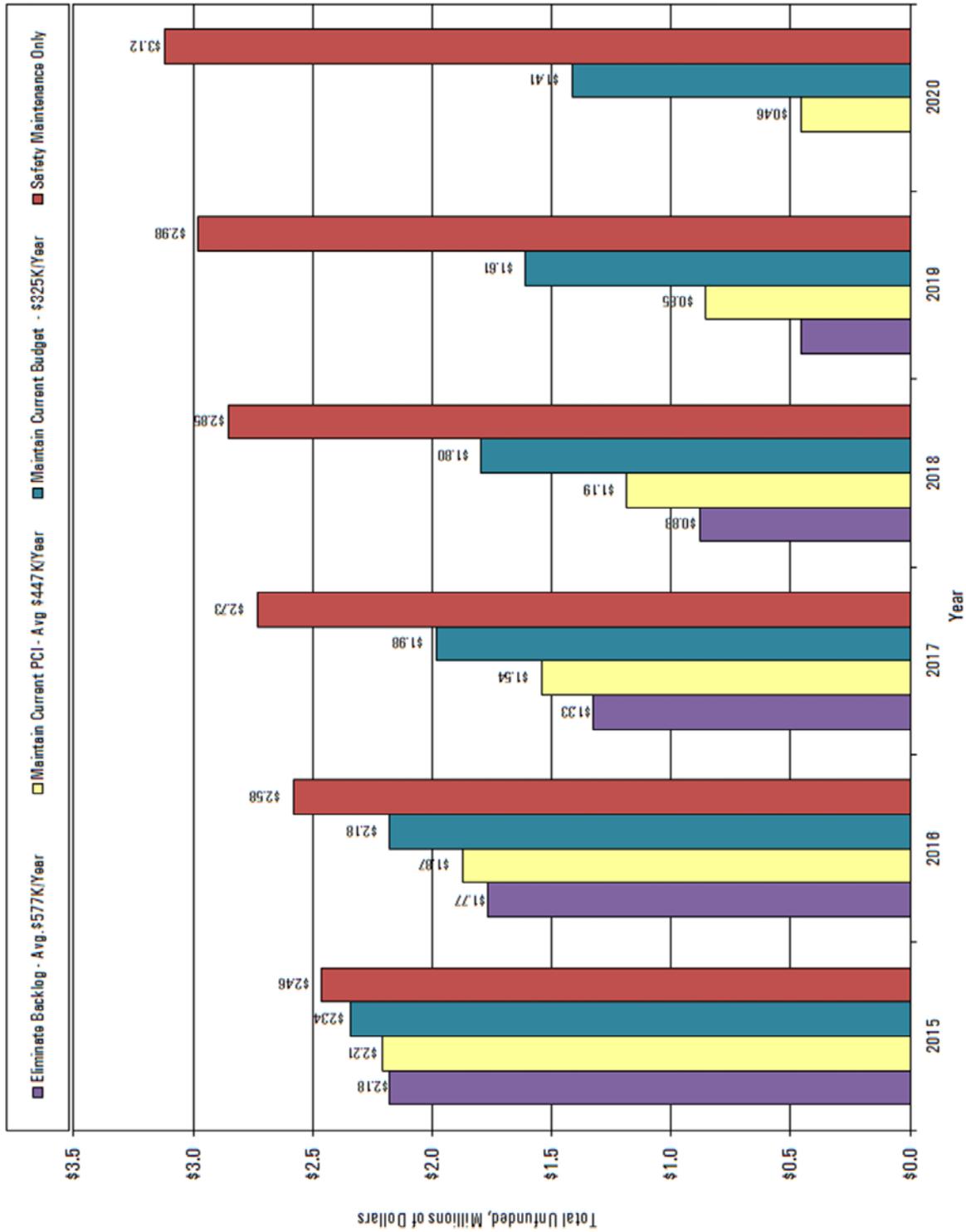


Figure 3 - Total Unfunded M&R for Each Budget Scenario

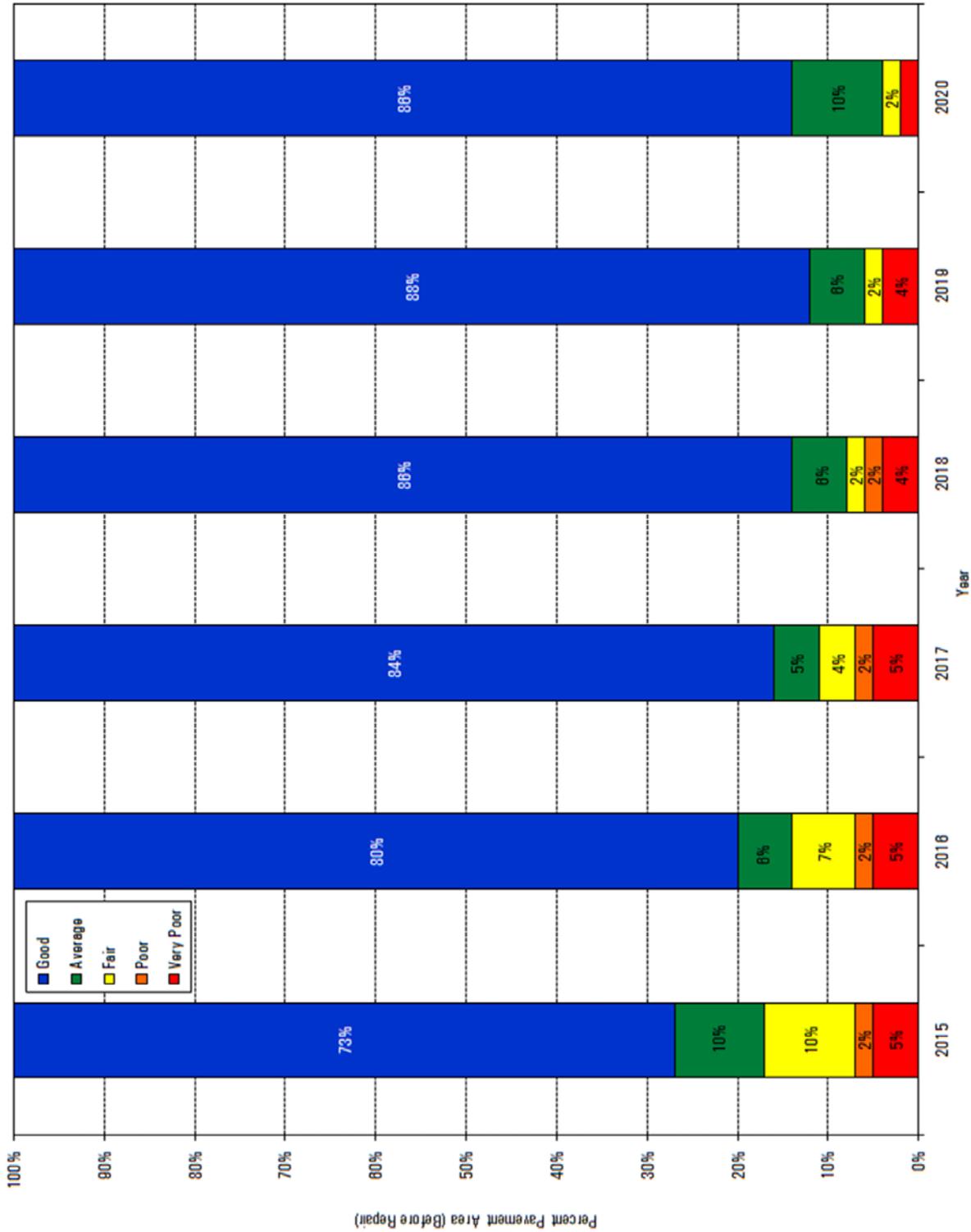


Figure 4 - Budget Scenario 1 - Eliminate Backlog: Annual PCI Rating Distribution

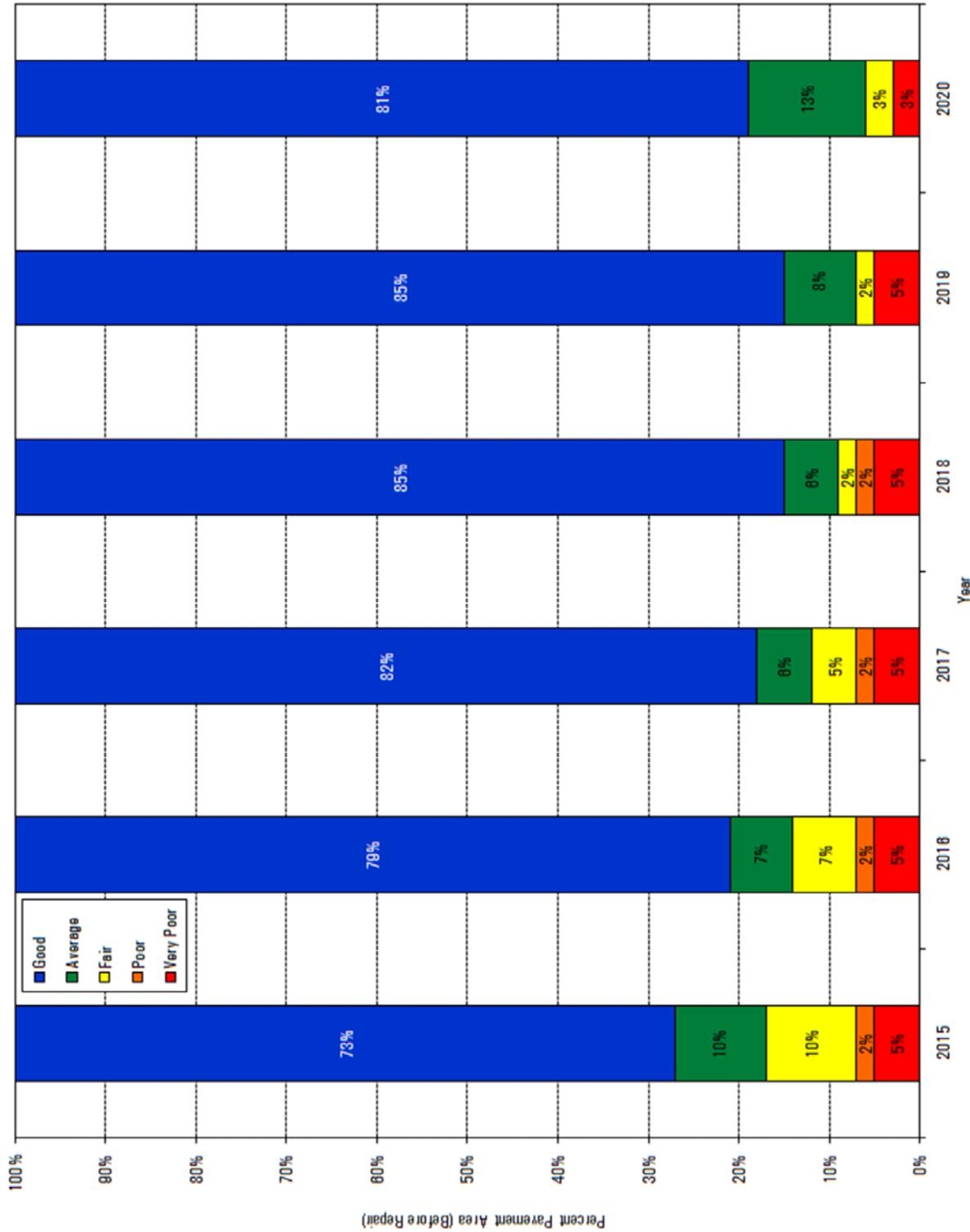


Figure 5 - Budget Scenario 2- Maintain Current PCI: Annual PCI Rating Distribution

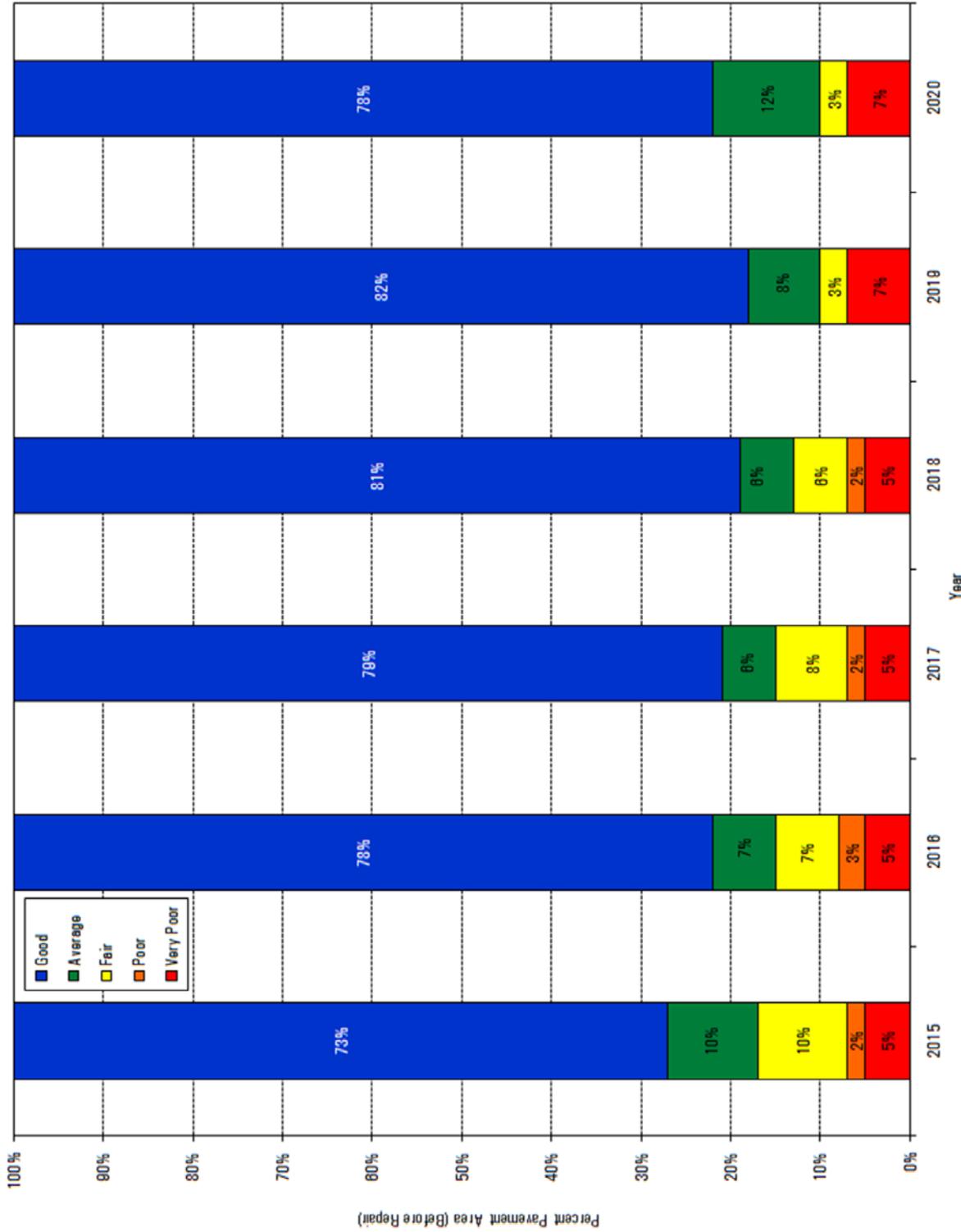


Figure 6 - Budget Scenario 3 - Maintain Current Budget: Annual PCI Rating Distribution

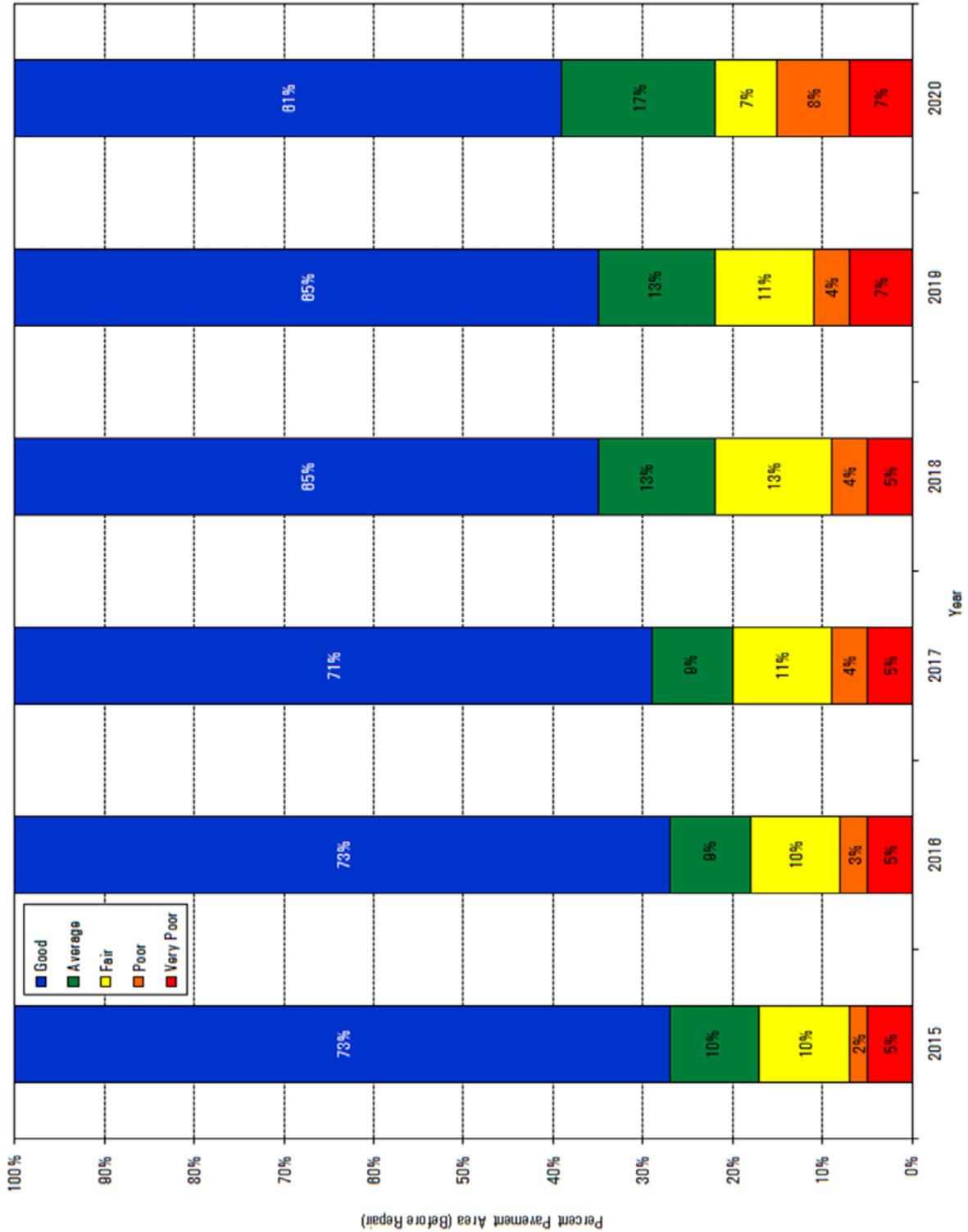


Figure 7 - Budget Scenario 4 - Safety Maintenance Only: Annual PCI Rating Distribution

APPENDIX E – RECOMMENDED M&R PROJECTS



NOT TO SCALE

2015 RECOMMENDED PROJECTS
Veneta, Oregon

PAVEMENT SERVICES, INC.
INNOVATIVE PAVEMENT SOLUTIONS



Date: 01/22/2015

Job No: 14037



Legend

- Major M&R
- Slurry Seal



Legend

- Major M&R
- Slurry Seal



NOT TO SCALE



Legend

— Major M&R





NOT TO SCALE

2018 RECOMMENDED PROJECTS
Veneta, Oregon

Legend

— Major M&R



NOT TO SCALE

2019 RECOMMENDED PROJECTS
Veneta, Oregon

Legend

— Major M&R



Legend

— Major M&R

APPENDIX F - COST DATA

Table 1 – Estimated Unit Cost Data for Roadways

Types of M&R		Amount	Work Unit
Major M&R	Cold Mill and Overlay - 2 Inches	\$2.16	SqFt
	Cold Mill and Overlay - 4 Inches	\$4.07	SqFt
	Surface Reconstruction - AC	\$4.07	SqFt
	Complete Reconstruction - AC	\$7.63	SqFt
	New Construction - AC	\$7.63	SqFt
Localized Stopgap and Preventive M&R	Crack Sealing - AC	\$1.19	Ft
	Patching - AC Deep	\$5.43	SqFt
	Patching - AC Leveling	\$1.46	SqFt
	Patching - AC Shallow	\$3.65	SqFt
	Shoulder leveling	\$1.20	Ft
Global M&R	Overlay - AC Thin (Global)	\$2.16	SqFt
	Surface Treatment - Slurry Seal	\$0.30	SqFt

Table 2 – Localized Stopgap M&R Cost by Condition Data

PCI	AC Localized Stopgap M&R Cost
0	\$0.60
10	\$0.50
20	\$0.20
30	\$0.04
40	\$0.02
50	\$0.01
60	\$0.01
70	\$0.00
80	\$0.00
90	\$0.00
100	\$0.00

Table 3 – Localized Preventive M&R Cost by Condition Data

PCI	AC Localized Preventive M&R Cost
0	\$2.25
10	\$1.75
20	\$1.35
30	\$1.05
40	\$0.75
50	\$0.45
60	\$0.25
70	\$0.10
80	\$0.05
90	\$0.00
100	\$0.00

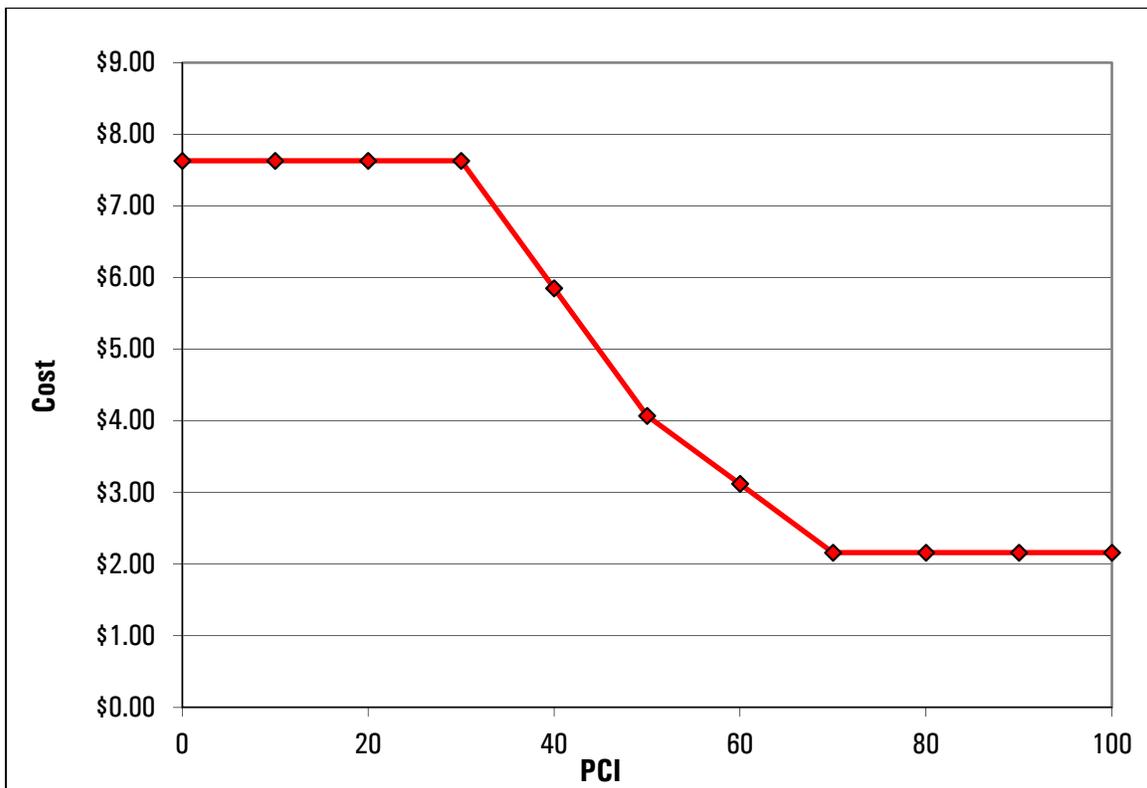


Figure 1 – Major M&R Cost by Condition Data

APPENDIX G - GLOSSARY

Backlog: Total unfunded major M&R requirements.

Branch: A readily identifiable part of the pavement network that has a distinct function. For example, a particular roadway or parking lot.

Critical PCI: The PCI value at which the rate of PCI loss increases with time or the cost of applying M&R increases significantly.

Global M&R: Activities that are applied to entire pavement sections with the primary objective of slowing the rate of deterioration. These activities are primarily for asphalt surfaced pavements, e.g. surface treatments.

Localized Preventive M&R: Distress maintenance activities performed with the primary objective of slowing the rate of deterioration. These activities include crack sealing and patching.

Localized Safety/Stopgap M&R: The localized distress repair needed to keep the pavement operational in a safe condition

Major M&R: Activities that are applied to the entire pavement section to correct or improve existing structural or functional requirements. Major M&R includes reconstruction and structural overlays. The PCI value after major M&R is assumed to be 100.

Network: A group of pavements that will usually be managed together.

PCI Rating: A three category ranking procedure based on PCI values used to rank pavement condition, as shown below.

PCI	PCI Rating
71 – 100	Good
56 – 70	Fair
0 - 55	Poor

PAVER: A pavement management software package developed by the U.S. Army Corps of Engineers' Construction Engineering Research Laboratory. The software package consists of a set of engineering tools for performing condition surveys and condition prediction, and developing work plans with the objective of optimizing spending.

Pavement Condition Index, PCI: A numerical index, ranging from zero for a failed pavement to 100 for a pavement in perfect condition. Calculation of the PCI is based on the results of a visual condition survey in which distress type, severity, and quantity are identified. The PCI was developed to provide an index of a pavement's structural integrity and surface operational condition. The distress information obtained as part of the PCI condition survey provides insight into the causes of distress. Refer to ASTM D-6433-11 "Standard Practice for Roads and Parking Lots Condition Survey" for a complete discussion of the PCI.

Prediction Modeling: The process of grouping pavements with similar deterioration behavior together in order to develop deterioration trends. These trends are used for predicting future

pavement condition and for determining the timing of M&R activities.

Section: The smallest management unit when considering the application of M&R. Factors to consider when dividing a branch into sections: pavement structure, traffic, construction history, pavement rank (or functional classification), drainage facilities and shoulders, and condition.

Shapefile: A shapefile contains map feature items (e.g., polygons) and map feature attributes (e.g., area, surface, use, etc).

Surface Type: Pavement construction type, for example:

1. Asphalt Concrete Pavement, AC
2. Portland Cement Concrete Pavement, PCC
3. Asphalt Overlay AC Pavement, AAC
5. Gravel, GR