

# ***SURFACE MANAGEMENT PLAN***

*(July 2014)*

***INTENDED FOR –***  
**THE WHEATHERSTONE PROPERTY OWNERS  
ASSOCIATION OF LAKE OSWEGO, OREGON**

**PREPARED BY –**  
**CAPITOL ASSET & PAVEMENT SERVICES INC.**  
**SALEM, OREGON**

**“DRAFT II”**

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## EXECUTIVE SUMMARY

Capitol Asset & Pavement Services, Inc. was contracted by The Weatherstone Property Owners Association of Lake Oswego (WPOA) to: 1) Conduct a visual pavement assessment of all WPOA streets, and 2) Determine the impact of funding levels on the current and future pavement conditions. Our main purpose of this study is to develop a maintenance strategy that first, will improve the overall condition of both streets to an optimal Pavement Condition Index (PCI) and second, maintain it at that level for as long as possible.

A detailed visual inspection of The Weatherstone Property Owners Association of Lake Oswego streets resulted in a calculated average PCI of 47. Using a 0-100 PCI scale, with 100 being the most favorable, a rating of 47 places the WPOA's street network in the upper range of the 'Fair' condition category. In order to determine asset valuation and funding levels to maintain current infrastructure, the WPOA's street network replacement value is estimated at \$325,000. Using this estimate an unrestricted funding level of \$29,500 over the next five-year period is needed to achieve an optimal PCI. Of this total, approximately \$24,500 is needed, and should be spent in the first year (summer 2015). The remaining \$5,000 should be directed towards preventive maintenance over the five year period. These overlay funds should be directed to a structural 1.5 to 2.0 inch asphalt concrete (AC) overlay program with some minor localized depression repairs (digouts). As mentioned beforehand, the remaining funds should be spent on a couple of routine street maintenance activities that will be needed to keep the streets in their optimum condition. One would be an on-going crack and slurry seal program approximately every two to three years as needed, as well as some periodic street sweeping. All of these activities can be completed within the \$5,000 budget that is being recommended as "preventive maintenance" for the years 2015-2019.

The Weatherstone Property Owners Association's current funding level should be enough to increase the current PCI by 44 points over this 5-year analysis period. A funding level of \$29,500 over the next five years will result in the PCI increasing to 91, from the current level of 47, and 100% of the WPOA's street network would be in "excellent" condition. Under this funding level, there would be zero dollars in deferred maintenance at the end of five years. Of course dollars will still need to be set aside for future years as sooner or later some type of structural overlay will need to be applied again within 20-30 years. Based upon asphalt pavement life-cycles, the climate in Lake Oswego, and the average daily traffic patterns, as well as the preventive maintenance applied over the years, the Weatherstone Property Owners Association should be looking at a relative low cost street maintenance budget of less than \$5,000 over the next 10-15 years if the recommendations within this report are applied during the analysis period of 2015-2019.

If the WPOA were to cease all funding to maintain the Weatherstone Property Owners Association streets, the result would be a precipitous fall in WPOA street conditions, and an increase in deferred maintenance backlog costs, necessitating more-costly repairs in the future. A zero funding investment level was analyzed to show the effects of ceasing funding to WPOA streets. The network level PCI would drop by 5 points to 42 by the year 2017, and deferred maintenance costs would rise to over \$40,000 within the five years (by 2019). This would also bring the WPOA's streets dangerously close to where a thin AC overlay would not be an option for maintaining the street surfaces. Once the PCI falls below a certain condition category, the

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options for repairing the street become a more costly asphalt overlay (2.5 - 3.0 inch) as well as some significant asphalt deep base repair patching.

Although the Pavement Condition Index currently is 47, the PCI is not the only critical indicator of the overall health of the paved street network. Current funding levels also help determine the current as well as future overall health of these WPOA streets. A commitment by the WPOA to perform preventive maintenance instead of reactive maintenance can go a long way in being a good steward of the limited street funds that The Weatherstone Property Owners Association currently has available. The main purpose of this surface management plan is to address the projected deferred maintenance back-log and to avoid future exponential cost in providing an acceptable service level of the WPOA's paved street system.

## **Purpose**

This report is intended to assist The Weatherstone Property Owners Association with identifying street maintenance priorities specific to the HOA. The WPOA's street network and replacement value is estimated at \$325,000 and represents a significant asset for WPOA officials to manage. The replacement value of \$325,000 is in reference to the roadway only and does not include any asset outside of the concrete curbs such as street-lighting, ADA ramps, sidewalks and so forth. This asset valuation is assessed by the assumption of replacing the entire street network (full reconstruction) at today's dollars. The estimated replacement value is an average cost, which was arrived by surveying local agencies for their unit cost experience for pavement preservation and rehabilitation programs. This report examines the overall condition of the street network and highlights the impacts of funding levels on the network pavement condition and deferred maintenance funding shortfalls.

## **Definitions**

The *pavement condition index*, or PCI, is a measurement of the health of the pavement network 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. The PCI is calculated based on pavement distresses identified in the field.

*Network* is defined as a complete inventory of all streets and other pavement facilities in which the HOA has jurisdiction and maintenance responsibilities. To facilitate the management of streets, they are subdivided into management sections identified as a segment of street, which has the same characteristics.

*Preventive Maintenance* refers to repairs applied while the pavement is in "good" or "very good" condition. Such repairs extend the life of the pavement at relatively low costs, and prevent the pavement from deteriorating into conditions requiring more expensive treatments. Preventive maintenance treatments include slurry sealing, crack sealing, and deep patching. Treatments of this sort are applied before pavement deterioration has become severe and usually cost less than \$2.00/sq. yd.

*Rehabilitation* refers to repairs applied to the street when the condition of the road has fallen below the "good" condition category. The pavement shows some form of distress caused by

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traffic load related activity or environmental distress that requires more than a preventive maintenance treatment. Rehabilitation treatments include thin overlays, mill and thick overlays, and reconstructing the entire pavement surface.

*Deferred Maintenance* refers to the dollar amount of maintenance and rehabilitation work that should have been completed to maintain the street in “good” condition, but had to be deferred due to funding deficiencies for preventive maintenance and/or pavement rehabilitation programs. The actual repairs that are being deferred are often referred to as “backlog.”

*Current Industry Prices for time period 2015-2019:*

Sweeping of WPOA Streets - \$90.00 per hour times three (3) times per year = \$270.00 annually

Crack Sealing of WPOA Streets - \$0.95 per linear foot. Estimated one (1) time application over a five (5) year period after PAVING HAS BEEN COMPLETED IN 2015 = \$420.00

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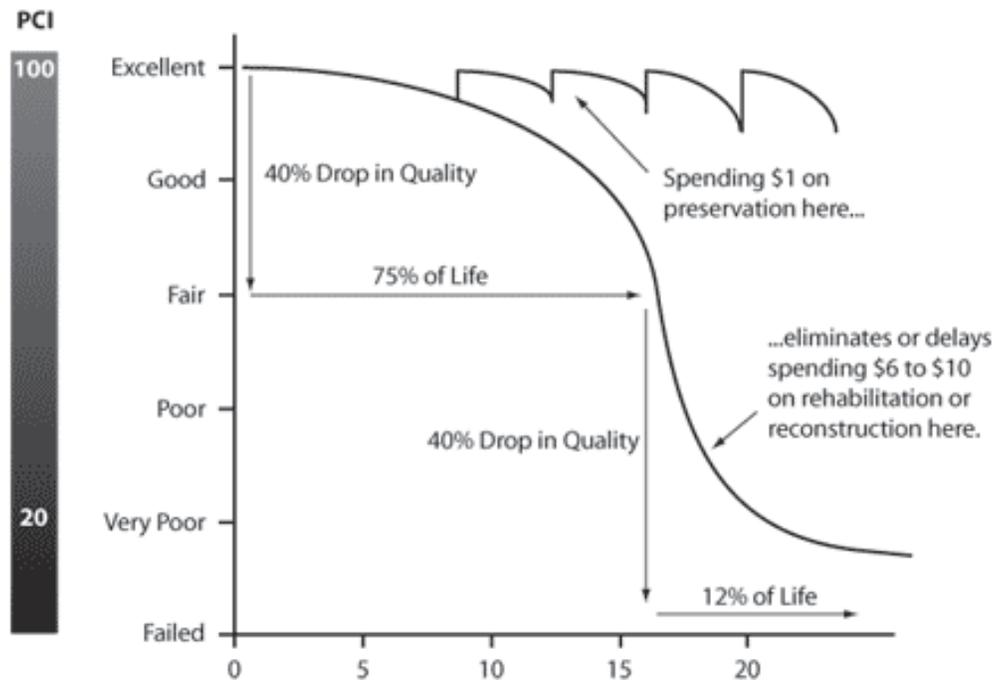
## Existing Pavement Condition

The WPOA is responsible for the repair and maintenance of 0.244 (1/4 mile) centerline mile of streets. To assist with the overall management of the street network, the WPOA's Street Systems have been subdivided into 5 individual units identified as management sections. Those five sections are identified as Weatherstone St, Weatherstone Pl, Weatherstone Ct, Weatherstone Alley, and Weatherstone St. Parking Area. All section information is displayed below and contains the following information, Street Name, Begin Location, End Location, Length, Width, Surface Type, PCI, Recommended Treatment and Cost.

## Budget Scenario

Having determined the preventive maintenance needs of The Weatherstone Property Owners Association's street network, the next step is developing a cost-effective preventive maintenance strategy and to conduct 'what-if' analyses of funding it or not funding it. Using the two scenarios of one, full funding based upon the needs scenario and two, the doing nothing scenario, the impact of the two budget scenarios can be clearly evaluated. For the purpose of this report, the two scenarios were run for a five (5)-year period. The key elements of a surface management plan, is to keep these streets in the very good or excellent condition categories from deteriorating. This is particularly true for streets in the very good range such as both the sections that currently have a PCI above 70. This is true because they are at the point where pavement deterioration accelerates if left untreated since one of them (the alley) is approximately ten (10) years old.

**Figure 1 – PCI deterioration & effectiveness of Preventive Maintenance**



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## Budget Needs

Based on the principle that it costs much less to maintain streets in very good condition than fair or poor, we strive to develop a preventive maintenance strategy that will first improve the overall condition of the WPOA's street network to an optimal PCI somewhere between the high 80's and mid 90's, and then sustain it at that level. The average PCI for The Weatherstone Property Owners Association is currently 47, which is in the 'Fair' condition category because of two factors. Most of the network suffers from load-related distresses and aging while little to no preventive maintenance has been applied in recent years.

The first step in developing a cost-effective preventive maintenance strategy is to determine, assuming unlimited revenues, the maintenance "needs" of The Weatherstone Property Owners Association's street network. Using the budget needs way of thinking; street maintenance needs are estimated at \$29,500 over the next five years. If the WPOA follows the strategy recommended by this report, the average network PCI will continue to be between 89 and 91 from the year 2015 through 2020. If, however, current pavement maintenance funding is exhausted and little or no preventive maintenance is applied over the next five years, already aging streets will continue to deteriorate, and the network PCI will drop to a PCI of about 42 by year 2017.

## Recommendations

Of the various maintenance and funding options considered, the *ideal* strategy for The Weatherstone Property Owners Association is presented within the executive summary, with a five-year expenditure total of \$29,500. Not only does this surface management plan maintain the network PCI to an optimal level of 89-91, it also eliminates any deferred maintenance backlog.

In addition to performing cyclic pavement condition inspections, unit cost information for the applications of various maintenance treatments (slurry and crack seals) should be looked at periodically as to stay in touch with industry prices. If this data is not kept current, the WPOA runs the risk of understating actual funding requirements to adequately maintain the street network. It's recommended that the WPOA develops a pavement inspection cycle that would allow for the inspection of their five street segments every three to four years.

The Weatherstone Property Owners Association has completed the foundation work necessary to execute a successful preventive pavement management plan. The street system is in fair condition, indicating that the WPOA has not invested significant resources necessary to maintain this monumental investment known as The Weatherstone Property Owners Association paved street network. At the current year-to-year maintenance level, however, the street condition will continue to deteriorate. To maintain as well as improve the condition of the street system and reduce the maintenance backlog, revenues and support from WPOA decision-making bodies are required at this time. We would strongly recommend at this time to put together a contract with an asphalt paving company to have the streets swept and cleaned free of any foreign debris as well as the certain failed sections of the asphalt dugout and repaired properly on all three segments that have a pci of less than 40. We would also recommend staying away from any "seal-coat" type products and use only a type II slurry seal. These type II slurries will have a useful life of over 12-15 years on the WPOA streets.

St Name	From	To	Lgth	Wt	Sq.Area	Type	PCI	Recommended Treatment	Est. Cost
Wheatherstone St. Parking Area)	Wheatherstone St.	All of vistor parking	120	24	2,880	AC	75	Slurry Seal	\$640.00
Wheatherstone Alley	Wheatherstone Pl.	Wheatherstone Ct.	144	12	1,728	AC	86	Slurry Seal	\$384.00
Wheatherstone Ct.	Wheatherstone St.	Wheatherstone Alley	278	24	7,626	AC	21	Overlay (2") with dig outs	\$6,143.17
Wheatherstone St.	Beg. WPOA property	Dead End	511	33	16,863	AC	31	Overlay (2") with dig outs	\$12,584.08
Wheatherstone Pl.	Wheatherstone St.	Wheatherstone Alley	236	30	7,080	AC	21	Overlay (2") with dig outs	\$5,703.33