

Council Communication

April 20, 2015, Study Session

Pavement Management Strategy

FROM:

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SUMMARY

This is an informational update for the City Council on the current condition of streets in Ashland. The report outlines historic shortfalls of street funding, pavement life cycles, pavement condition index, recommended pavement treatments and recommends changes to the street user fee methodology.

BACKGROUND AND POLICY IMPLICATIONS:

Ashland, like other public entities across the nation, has struggled to find sufficient funding for projects identified in its Transportation Plans and/or for routine street maintenance. Details of Ashland's recent history on the subject can be found in the [October 1, 2007](#), Council communication outlining the findings of the City's Transportation Financing Task Force and the [February 17, 2009](#), Council communication. In summary, the October 7, 2007, report identified a \$2 million per year short fall and the February 17, 2009, report recommended a pavement management strategy that focused on slurry seals and overlays as a priority over streets that had already fallen into the reconstruct category.

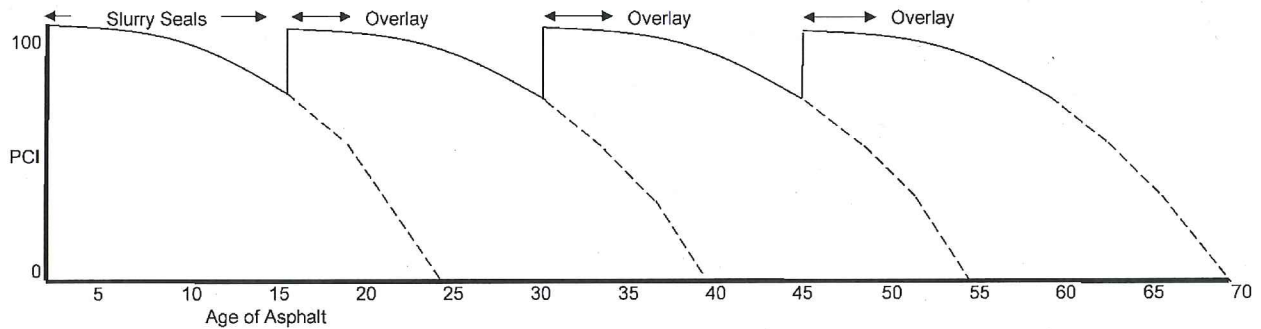
Pavement life cycles

Street life cycles are not unlike the life cycle of a roof on a house. Like a roof, a street has a design life of 20 years and if the street is not maintained during those twenty years and water is allowed to penetrate the surface, structural failures develop. In contrast to a roof, structural deterioration of a street is significantly more expensive to repair.

Typically a new street looks relatively new through the first 15 years of life; however, in the last five years an unmaintained street will begin to deteriorate very quickly. If a street does not receive some kind of maintenance treatment (crack seal, base repair, slurry seal or overlay) it will likely fall into a reconstruct category. Given this life cycle, the most cost effective pavement management strategy is to overlay an arterial or collector street at year 15, which then gives the street section a new 20 year life cycle. Neighborhood collectors and residential street life cycles can be extended to 25 years with routine base repair, and crack sealing followed by slurry seals. The following graph demonstrates a typical street life cycle with routine overlays every 15 years.

Age of Asphalt





This strategy is the most cost effective way to maintain a street system. Overlays cost about \$285,000 per mile (based on a 28 foot residential paved section) as compared to street reconstruction at about \$1.4 million per mile. To put this in perspective, doing nothing and letting Ashland's 91.7 miles of streets fall into the reconstruct category at \$1.4 million per mile would cost \$128 million whereas timely overlays at \$285,000 per mile would cost \$26 million.

The North Mountain Avenue Hersey to I-5 Street Overlay project is a good example of how costs can accelerate during the last 5 years of pavement life. This project was originally scheduled for an overlay in 2011 at an estimated cost of \$275,000. Then, in order to complete the Hersey/Wimer North Main Street Re-alignment project, the North Mountain project was delayed. The project was added back to the 2012-2015 biennium budget with a cost of \$350,000 to account for inflation. However, the actual bids came in at \$655,300 as the number of base repair and asphalt dig outs doubled from the original estimate.

Pavement Condition Index

Determining the current pavement condition index (PCI) of our street system has historically been determined by measuring existing defects through a visual evaluation format. Visual defects provide a good snapshot of the PCI; however, the best method of determining the PCI is to take core samples and street deflections (measuring the amount of pavement movement based on truck loading). This methodology provides a more detailed analysis of the current street status. Ashland hired a consultant to provide more detailed analysis. The consultant has provided the City with recommendations for maintenance that are based on the following assumptions:

- Where surface treatment is warranted, microsurfacing is recommended for Urban Minor Collectors and slurry seal is recommended for Urban Neighborhood Collectors.
- The percent of pavement repairs (digouts) was assumed to be 2% (of the overall pavement area for each street) for pavements in good condition, 5% for pavements in fair condition, and 15% for pavements in poor condition. We assumed that digouts would be done in areas of medium and high severity alligator cracking distress. The dig out pavement sections are provided later herein and consist of asphalt concrete over aggregate base over an aggregate base working platform.
- Pavement reconstruction sections are provided later herein and are assumed to consist of full depth reclamation (FDR) consisting of asphalt concrete over in-place cement treated base.



CITY OF ASHLAND

Given that, staff hired Pavement Services, Inc., to evaluate all of Ashland's arterial, collector and neighborhood collector streets. Their findings (see attached Street Treatment Recommendations) recommend completing all pavement treatments within the next five years at an estimated cost of \$13 million. Maintenance of the remaining residential system is estimated (based on visual ratings to determine PCI only at this point) to cost \$19.7 million for overlays, and \$500,000 for slurry seals. With the exception of slurry work, no other residential street projects would begin until the arterial, collector and neighborhood collector projects have been completed.

Staffing

In addition to conducting timely overlays, it is equally important that our Street Division be staffed adequately to provide core maintenance services. Those services include base repair (dig out bad road sections), crack sealing (filling cracks with a rubberized material that keeps water from getting into the sub-surface) and prepping streets for slurry seals. Other annual street maintenance core services include repainting pavement markings, sign maintenance, etc. In order to effectively accomplish all of the core services, the proposed 2015-17 biennium budget includes four additional temporary staff positions. This will provide appropriate staffing levels needed to spend six months per year on the weather-dependent core services.

Funding Needs

Concurrent with the detailed pavement condition analysis, the Public Works Department is also conducting a Street Fund Cost of Service study to determine long-term funding needs and to ensure that the street utility fund is charging customer classes appropriately. The City's consultant, Hansford Economic Consulting (HEC), is recommending that we move away from the existing street user fee methodology and implement a new methodology that uses trip generation rates for customer classes identified in the ITE Manual so that fees are based on proportional usage of the trips generated by land use. Developing new proposed rates based on ITE codes will take some time and the consultant is planning on presenting a report with recommendations in October 2015.

STAFF RECOMMENDATION AND REQUESTED ACTION:

N/A

SUGGESTED MOTION:

N/A

ATTACHMENTS:

Street Treatment Recommendations





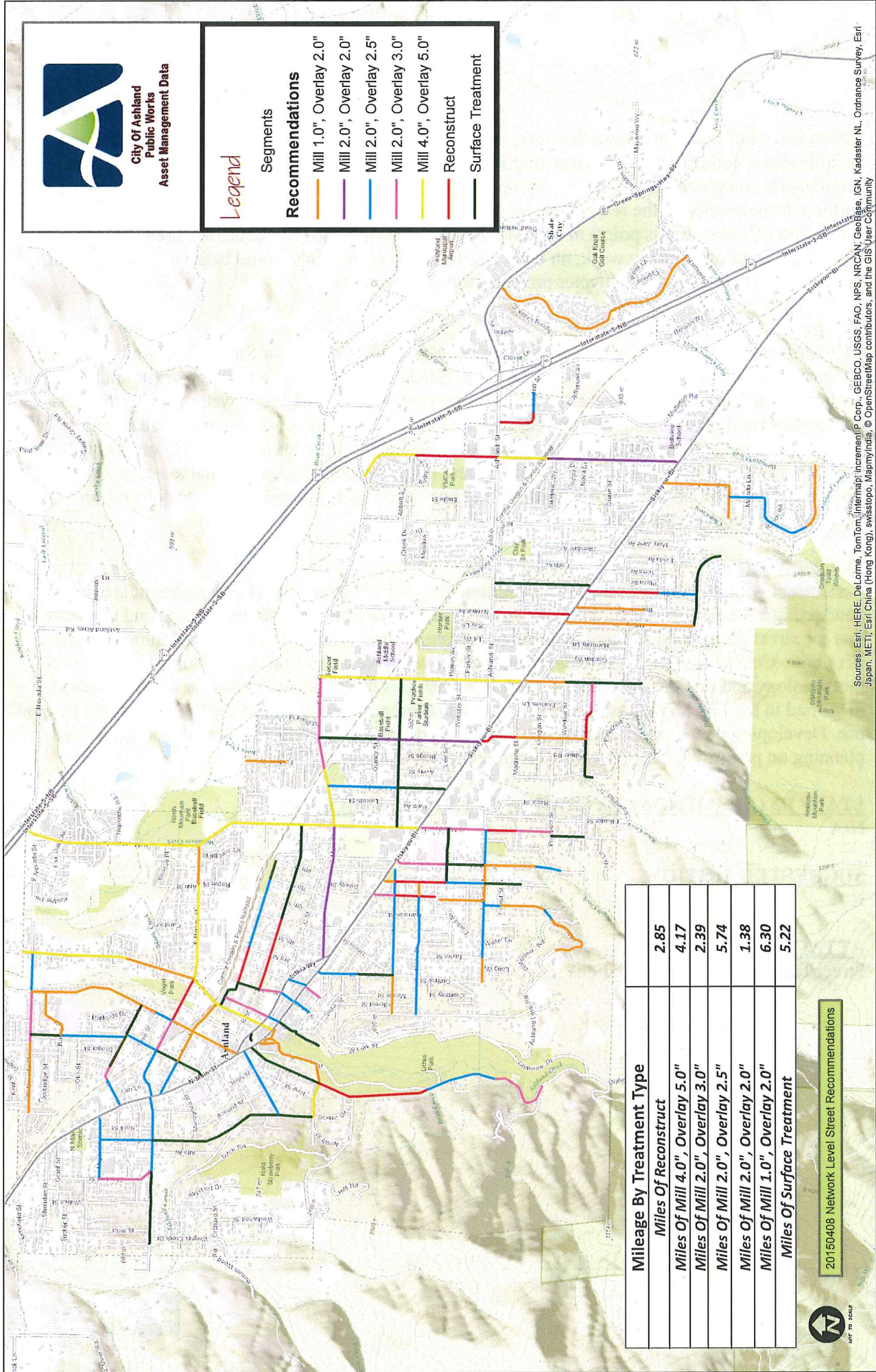
City of Ashland
Public Works
Asset Management Data

Legend

Segments

Recommendations

- Mill 1.0", Overlay 2.0"
- Mill 2.0", Overlay 2.0"
- Mill 2.0", Overlay 2.5"
- Mill 2.0", Overlay 3.0"
- Mill 4.0", Overlay 5.0"
- Reconstruct
- Surface Treatment



Mileage By Treatment Type	
Miles Of Reconstruct	2.85
Miles Of Mill 4.0", Overlay 5.0"	4.17
Miles Of Mill 2.0", Overlay 3.0"	2.39
Miles Of Mill 2.0", Overlay 2.5"	5.74
Miles Of Mill 2.0", Overlay 2.0"	1.38
Miles Of Mill 1.0", Overlay 2.0"	6.30
Miles Of Surface Treatment	5.22

20150408 Network Level Street Recommendations



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBasis, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community