

CITY OF SANTA ROSA
CITY COUNCIL

TO: MAYOR AND CITY COUNCIL
FROM: ANDREW KOZEL, MATERIALS ASSOCIATE
DAN BAKER, QUALITY CONTROL ASSOCIATE
TRANSPORTATION AND PUBLIC WORKS DEPARTMENT
SUBJECT: CITYWIDE PAVEMENT CONDITION UPDATE – STUDY
SESSION

AGENDA ACTION: NONE

RECOMMENDATION

It is recommended by the Transportation and Public Works Department that Council hold a study session for to provide a presentation and information on the current status of the City's pavement condition status.

EXECUTIVE SUMMARY

The City of Santa Rosa Materials Engineering Laboratory staff will be presenting an update to our current Pavement Condition Index, the value of our pavement infrastructure, various pavement treatments, current spending trends and projects on the horizon.

BACKGROUND

The City uses an asset management program to make reasoned investment in its paving infrastructure. The system is named StreetSaver and is used by all the 106 agencies in the Metropolitan Transportation System (MTC) region, so there is good comparability between agencies. The City of Santa Rosa is an active participant in the use and upkeep of this regional system.

The StreetSaver asset management system requires that each piece of roadway be inspected once every four years for Residential streets, and every 2 years for Arterial and Collector streets, and rated according to objective criteria. A newly paved street is defined as having a pavement index of 100. A street that is beginning to show cracks and distress but is still in good enough condition to be overlaid typically has an index between 50 and 70. Below an index of 50, potholes are beginning to occur, and the underlying base has been damaged, requiring reconstruction rather than an overlay. Below 50 damage becomes much more obvious to the average citizen.

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In general, areas in the City built after 1980 tend to have better designed pavement, and so receive mostly overlays and slurry seals. Areas built before 1980 are of course older and also used less conservative engineering assumptions during their original design, and have tended to fail, so reconstruction is more often needed in those areas.

The City's overall current Pavement Condition Index (PCI) is 62. By 2031, with current levels of spending, we expect the PCI to drop to 55, and by 2041 to 50.

ANALYSIS

The replacement value of the City's entire pavement system is over \$1.4 billion. The StreetSaver asset management system indicates that we would need to spend \$15.5 million per year on pavement rehabilitation to maintain the current PCI of 62. This amounts to an annual investment of about 1.1% of the value of the asset.

For about the last 10 years we have been spending about 0.8% per year on our pavement asset. For the last few years this has averaged \$11 million per year.

Because we should be spending \$15.5 million, but are actually spending less than \$11 million, each year the backlog of needs increases. The longer we wait to address this problem, the more difficult it will become. The backlog of needed pavement projects is also subject to inflation, especially the price of oil. If the price of oil increases greater than general inflation, the price to rehabilitate our pavement will also increase greatly.

Pavement deteriorates over time at an accelerating rate if not maintained. The first 15 years of life would typically see a drop from a PCI of 100 to 65. At that time, ideally, the pavement would be slurried, bringing it back up to a PCI of 90. If the pavement is allowed to continue to deteriorate, its PCI will drop an additional 40% in just a few years, to a very unacceptable PCI of 25. These are very general concepts. In many cases through careful design and maintenance our streets perform better than this, but the concept holds, that deterioration of a street accelerates quickly after it reaches a PCI of 65.

The City has begun to change its decision making towards optimizing construction materials based on impacts for long term asset performance. We have initiated two projects with the use of concrete, and more are on the way. The use of concrete in a project provides less up-front costs while also having twice the life expectancy when compared to traditional asphalt products. The use of concrete is a long-term strategy to reduce future network costs.

To give an idea of what can be accomplished with a given amount of funding, staff has estimated pavement treatments for a typical Santa Rosa street. We chose a street of the size of Sonoma Avenue, which is very typical of many of our streets. If such a street

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was in condition to be overlaid, \$1,000,000 would be needed to overlay 960 feet of roadway. If a similar street instead needed to be reconstructed, \$1,000,000 would be needed to rebuild 224 feet of roadway. If on the other hand we slurry-seal such streets, 2.1 miles could be treated for \$1,000,000. But it should be kept in mind that a slurry-seal would not return the asset to a PCI of 100. It would add about 8 years to the useful life of the pavement and postpone the need for future reconstruction. It would typically be used to boost a street with a PCI of 75 up to 90 (see Exhibit 1).

While there is a need and desire to repave the worst streets, the “worst first” approach will end up costing more than a hybrid approach of pavement preservation and rehabilitations. Currently, we dedicate 9% (\$1 million) of our budget to pavement preservation. In order to keep our City streets at an average PCI of 62, we will have to increase our pavement spending to \$15.5 million +inflation and increase our percentage of pavement preservation to 20% (\$3.1 million). This pavement preservation plan of keeping good streets in good condition is a cost effective and greener approach to getting the most life out of the roads, while continuing to address roads that require more aggressive pavement rehabilitation and funding.

ATTACHMENT

- Attachment 1 – Pavement Rehabilitation Curve

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