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Water & Sanitation
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June 4, 2024

Board of Supervisors
County of Ventura
800 South Victoria Avenue
Ventura, CA 93009

Subject: Receive & File a Presentation on The Public Works Agency Pavement Management Program and Process for Selection of Surface Treatments; All Supervisorial Districts.

Recommendations:

Receive & File a Presentation on The Public Works Agency Pavement Management Program and Process for Selection of Surface Treatments.

Fiscal/Mandates Impact:

There is no immediate fiscal impact associated with the proposed actions.

Discussion:

The Public Works Agency (PWA) is responsible for maintaining 542.65 miles of roadways in the unincorporated area to ensure safe and efficient transportation infrastructure. The primary purpose of the roadway network is to provide safe use and access for motorized and non-motorized vehicles.

Roadway pavement maintenance involves routine activities like repairing cracks, potholes, and other damage to the road surface, as well as periodic surface treatments that rejuvenate or resurface the pavement.

For over 30 years PWA has used the pavement management software StreetSaver developed by Metropolitan Transportation Commission. It is designed to assist local governments in managing roadway infrastructure efficiently by providing tools for pavement management, budgeting, and planning. StreetSaver is widely used throughout California; it is used by 8 of the 10 Ventura County cities to manage their pavement assets. PWA has assisted the cities of Ojai, Fillmore, Santa Paula, and Camarillo with developing their Pavement Management Plans using the program.



StreetSaver recommends cost-effective options for providing, evaluating, and maintaining pavement in serviceable condition. It maintains data on road conditions collected through visual inspections and assesses the condition of the pavement based on surface distress. StreetSaver uses algorithms and models to analyze the collected data and assign condition ratings to different sections of the road network.

These pavement condition ratings, known as the Pavement Condition Index (PCI) are used to prioritize the maintenance and repair needs of our roadway network. Every roadway is visually inspected every three years to update and validate its PCI. As projects are completed the information is added into StreetSaver which adjusts the PCI and updates the history of surface treatments for each roadway.

PWA staff inputs proposed budget information into StreetSaver, which is used to develop a priority list of roads with recommended surface treatments. Based on the pavement condition, there are generally three classes of pavement treatments: Rejuvenation, Rehabilitation, and Reconstruction. StreetSaver uses a pavement deterioration curve to assist in recommending cost-effective options and surface treatments for maintaining pavement in serviceable condition based on the PCI for each roadway. The higher PCI indicates better pavement conditions; a new pavement with no distress is assigned a PCI of 100.

The list of roads and surface treatments recommended by StreetSaver is further assessed to consider the roadway classification, average daily traffic, truck traffic and geographical location. The list is modified to group roads within the same neighborhood and/or vicinity where feasible, packaging projects that will provide better construction contract costs. This reduces contractor mobilization costs, allows roads within the same neighborhood to deteriorate at the same rate, and provides consistency to future repaving cycles of the area.

The County road network currently has an average PCI of 77, which is in the “Good Condition” category; 80% of the road network is in good condition. Based on the latest California Statewide Local Streets and Roads Needs Assessment Report the statewide average PCI is 65. The average PCI for the County of Ventura including the cities is 68. In 2008 the County road network had an average PCI of 61. By 2012 the PCI had increased to 70. The increase was due to the one-time revenue source of Proposition 1B, and Federal Stimulus package funding from the American Recovery and Reinvestment Act, approximately \$25 million in funding that funded all pavement projects between 2009-2012. By 2014 the average increased PCI to 74. On July 29, 2014, your Board provided guidance to maintain an average PCI in the mid-70’s for the County road network. Since then PWA has been successful in maintaining the road network PCI in the mid 70’s across all five districts.

Pavement treatment methods available for use are as follows:

- Rejuvenation is used for roadways with PCI between 65 and 80. Treatments include Slurry Seals and Microsurfacing, which are thin-layer maintenance



treatments that can preserve pavements and prolong their life. These treatments consist of mixtures of asphalt emulsion, fine aggregates, water, and other additives. The mixture is placed by a truck with a spreader box behind it that allows the slurry to flow at a measured rate onto the road as the truck drives slowly forward. The layer of slurry is typically about 3/8-inch thick and hardens as the water in the mixture evaporates, usually requiring four to five hours to set. The difference between Slurry Seals and Microsurfacing is that the latter uses a chemical set process rather than evaporation so it can set and cure more quickly and be used in cooler weather. The layer is slightly thicker than slurry and typically contains polymers so it may cost about 30% more than slurry. Slurry typically lasts 7 to 10 years, while Microsurfacing lasts 9 to 12 years.

- Rehabilitation is used for roadways with PCI between 50 and 70. Rehabilitation includes Cape seal and overlays, among other treatments.
 - Cape seal is a two-layer treatment used when the pavement surface is in fair to good condition and shows some distress but does not warrant an overlay, and where a slurry is insufficient to correct the surface defects. The first layer of a cape seal is a rubberized chip seal treatment applied to the existing pavement surface by spraying a layer of asphalt binder (with powdered tire rubber melted into it) onto the road, immediately covering it with a layer of aggregate (usually gravel 3/8" or less) and rolling it with a rubber-tired roller while the binder is still hot. The second layer of the cape seal is a slurry seal layer which is applied on top of the rubberized chip seal to provide a smoother finished surface. A cape seal helps seal the surface against moisture intrusion, rejuvenates an oxidized pavement surface, and helps limit further cracking of the pavement beneath.
 - Overlay. An overlay is placed over existing asphalt concrete pavement by placing a Hot Mix Asphalt layer (HMA) from 1-1/2 inch to 2 inches in thickness. This is placed by an asphalt paving machine. The HMA is rolled immediately to ensure compaction of the new layer, which increases pavement life. A two-layer system consisting of a rubberized chip seal overlain by a layer of HMA is used when the existing pavement surface has moderate cracking and needs moderate base repairs beyond what can be bridged by a simple overlay. The rubberized chip seal layer limits reflective cracking from the older asphalt layer below and preserves the life of the new overlay. This is effective for PCI from about 40 to 50.
- Major Rehabilitation/Reconstruction is used when the PCI is 40 or lower. Major Rehabilitation includes extensive pavement base repairs overlain with a layer of HMA as the top surface. Major reconstruction of the roadway includes grinding the existing surface and placing HMA Overlay. Where roads are too deteriorated for grinding and repaving, two other methods are used. Cold In-Place Recycling (CIPR) and Full-Depth reconstruction of pavements are used when the pavement



is at or near failure. With the current condition of the County road network, PWA rarely requires reconstruction projects.

PWA staff have stayed abreast of the latest and best practices in the industry and participates in organizations representing local governments, academia, and experts in the asphalt pavement industry including the City and County Pavement Improvement Center (CCPIC). CCPIC was established to serve as the mechanism for collaboration between California State Universities, California State Association of Counties (CSAC) and the League of California Cities in delivering the pavement practices, science, tools and resources to California's cities and counties. PWA has been a member of a roundtable of seven Southern California counties for over a decade, who meet annually to discuss pavement projects, materials, and methodologies. Through this roundtable we have learned several best practices and successes or failures with new materials. In addition, PWA hosted a forum with the 10 cities and several pavement contractors to discuss contract best practices and suggestions for improvement.

During construction, PWA inspects contractor performance and tests materials to ensure the surface treatment applied meets specifications in application and quality.

PWA has used the above strategies for surface treatments since the 1980s and they have proved to be quite cost-effective, as seen by the steadily rising average PCI of the County Road Network over time.

Strategic Plan:

This item contributes to the Board of Supervisors 2024-2027 strategic priority to provide:

- II. Fiscal responsibility and economic vitality through
 - 1. Maintaining a transparent and balanced budget, while funding essential services and implementing cost-savings measures.

This item has been reviewed by the County Executive Office, the Auditor-Controller's Office, and County Counsel.

If you have any questions concerning this item, please contact the undersigned at (805) 654-2077.

Sincerely,



Anitha Balan, PE
Director
Roads & Transportation

Attachments:
PowerPoint Presentation

