



## INFRASTRUCTURE COMMITTEE

**DATE:** April 27, 2023

**TO:** Infrastructure Committee/City Manager

**FROM:** Maria Fierner, Public Works Director  
By: Robin Bartlett, Division Manager/District Engineer

**SUBJECT:** Five-Year Pavement Management Plan Update

### EXECUTIVE SUMMARY

The Five-Year Pavement Management Plan provides a list of streets anticipated to be treated in San Ramon over the next five years. The Plan is based on the available Five-Year Pavement Management Program Budget (including Measure J Funds, Gas Tax or Highway Users Tax Account (HUTA) Funds, Refuse Vehicle Impact Fee, and savings from previous pavement projects). This Plan was developed using the “critical point” pavement management approach, and the goal to prioritize and treat all low PCI streets in the City within the Five-Year Plan. The City’s current overall average Pavement Condition Index (PCI) is 78. Based on proposed funding, the PCI is anticipated to rise to 80 by the end of 2023, drop gradually to 75 by the end of 2028, and down to 71 by the end of 2032. Factors influencing the PCI and discussion of areas to be treated over the next five years are discussed below.

### RECOMMENDED ACTION

Staff recommends that the Infrastructure Committee review the Five-Year Pavement Management Plan Update and provide comments to staff.

### BACKGROUND/DISCUSSION

#### *Pavement Condition Index (PCI)*

The City uses a Pavement Management Program (PMP) to assist with prioritizing streets to include in maintenance and rehabilitation projects. As part of this Program, the City is required to regularly inventory the condition of the streets and assign each a rating from 0 to 100. This rating is referred to as the Pavement Condition Index (PCI).

PCI is an objective and rational, although not perfectly precise, basis for determining pavement condition and establishing maintenance priorities. The method is based on a visual survey of various types of distresses in a pavement on selected parts of a given

street. The result of the survey is a numerical value between 0 and 100 for a specific street section, with 0 representing the worst possible condition and 100 representing the best possible condition. PCI averages are reported as a whole number; variations of one or more point in any given year should be expected.

PCI is a budgeting and planning tool, not a design tool. Therefore, projected treatments may change when staff does detailed inspections prior to design. Given the timing of treatment methods, this may result in the schedule of treatment changing by one to two years and occasionally more. In order to reduce changes and maintain cost efficiency, staff is endeavoring to do more detailed follow-up inspection earlier in the design cycle, as staff availability allows.

The City utilizes an independent engineering consultant to perform the Pavement Condition Survey every two years to determine the condition of all pavement sections throughout the City. Staff then utilizes the Metropolitan Transportation Commission’s Pavement Management System (MTC-PMS) StreetSaver software to help prepare a Five-Year Pavement Management Plan, which identifies likely repair locations and types. The StreetSaver software incorporates data gathered from most agencies in the Bay Area, as well as many other agencies in other locations. As such, it provides a powerful tool for predicting pavement life and treatment costs.

In February 2022, staff applied for a grant through the Pavement Management Technical Assistance Program (P-TAP) Round 23. The City received Surface Transportation Program (STP) funding for \$67,900. With this grant, plus the City's local matching funds of \$16,800, MTC and City staff jointly retained Pavement Engineering, Inc. (PEI) to perform the 2023 Pavement Condition Survey of the City’s roadways. As part of the Survey, an updated PCI was assigned to each pavement section. The overall average PCI was calculated based on the updated survey of each street section. The current overall PCI, per roadway classification and based on the survey results, is summarized below.

***Current Conditions***

The current data and condition of the City’s streets are as follows:

|                                 |                                 |
|---------------------------------|---------------------------------|
| Total centerline miles          | 242.50                          |
| Total lane miles                | 508.17                          |
| Total pavement area             | 42.9 million square feet        |
| Parking Lot area                | 1.1 million square feet         |
| System Replacement value        | \$706.9 million                 |
| Current Average PCI             | 78                              |
| Current Average PCI Arterials   | 78 (27% of total pavement area) |
| Current Average PCI Collectors  | 78 (13% of total pavement area) |
| Current Average PCI Residential | 78 (58% of total pavement area) |
| Current Average PCI Other       | 74 (2% of total pavement area)  |

This is the same average PCI as last year.

### ***Critical Point Approach and Implementation Strategies***

In 2018, based on staff’s recommendation, the City adopted a “critical point” approach to pavement maintenance. The “critical point” refers to implementing a pavement preservation or rehabilitation on a given street just prior to that street’s condition deteriorating to the point where it requires the next most expensive treatment. This method maximizes the useful life obtained from the original pavement and each successive treatment while minimizing the cost of each successive treatment. Key recommendations for the approach include:

1. Maximizing the use of a “critical point” strategy to get the most life out of a given pavement prior to it requiring more substantial and costly rehabilitation treatment.
2. Continuing to use a modified “pave by area” approach to help contain costs by concentrating the work into selected locations, but with larger areas and with only select streets subject to treatment.
3. Combining critical point analysis and identifying select “low PCI” streets and “special case” streets to address those streets in the worst condition or with special problems. Low PCI streets have been defined as follows:

| <b>Functional Classification (FC)</b> | <b>Low PCI Defined</b> |
|---------------------------------------|------------------------|
| Arterials (A)                         | PCI less than 50       |
| Collectors (C)                        | PCI less than 45       |
| Residential/Local Streets (R)         | PCI less than 30       |

4. Undertaking an extensive preventative maintenance program on newer streets, predominantly within the Dougherty Valley, which are approaching the critical point to where low-cost preventative maintenance treatments will no longer be effective.

When presented to the Infrastructure Committee, they agreed with the approach of implementing “critical point” pavement management when selecting streets to be treated while also maintaining the policy of treating low PCI streets in the City by the end of the five-year period.

In addition, staff began implementing new strategies to improve cost-effectiveness, including, when possible:

- Preparing plans, specifications, and engineer’s estimates (PS&Es) in-house, whenever possible, reducing the design costs;
- Minimizing subcontractor work, by utilizing in-house staff for necessary crack seal work prior to paving, where appropriate;
- Obtaining separate bids for asphalt concrete (AC) and preventative maintenance treatments;
- Minimizing subcontractor work by obtaining separate concrete repair bids for necessary curb ramp construction for compliance with the Americans with

Disabilities Act (ADA), including necessary sidewalk, curb, gutter, and valley gutter concrete repairs;

- Moving streets previously done within the Stop Gap Program into the Pavement Management Project, to the extent practical;
- Enhancing coordination between Public Services street maintenance staff and Engineering staff to improve efficient provisions of in-house Stop Gap work (pothole repair, crack sealing, and minor patching);
- Writing bid documents with more flexibility in terms of working hours and lane closures, to pavement contractors, as long as it does not affect construction safety;
- Increasing the amount of preventive maintenance done as a portion of the whole including increasing crack sealing operations;
- Proposing to conduct enhanced pre-design evaluation of pavement conditions to help verify appropriate pavement treatment methods further in advance to help reduce changes during the design phase; and
- Evaluating paving technologies that have not been used in the City to determine if they can provide better solutions. A product of such evaluations will be the increased use of Rubberized Cape Seals on residential streets throughout the City.

### ***Pavement Funding***

#### *Projected Five-Year Pavement Management Program Budget*

Funding for Pavement Management is provided by several sources, which are summarized below and shown on the projected Five-Year Pavement Management Program (PMP) Budget in Attachment A. The attachment shows projected Federal, State, and Local funds per fiscal year. The anticipated funding sources are:

- Highway Users Tax Account (HUTA) or Gas Tax, which includes the Road Repair and Accountability Act of 2017 (SB-1); and
- City's Refuse Vehicle Impact Fee (RVIF).

The City's Measure J funds are discussed below.

In addition to the funding shown, the City receives funds from time to time from utility companies as in-lieu fees to compensate for pavement damage. These fees are most commonly collected in accordance with the City's Pavement Cut Moratorium Ordinance when utility company's damage recently paved streets. The funds are not shown because they cannot be easily predicted, and the funds are intended to offset damage caused by the utility companies and not to improve the streets.

The deductions, shown in Attachment A, account for administrative and General Fund overhead per fiscal year, as well as a set-aside contingency of 20% of the combination of upcoming fiscal year's Gas Tax and Measure J Funds to secure proper cash flow and variance in forecasted revenue projections. After deductions are applied, the table shows the projected distribution of the available funds per year into the different City programs and/or projects.

### *Contra Costa County Return to Source Measure J*

Measure J is the Contra Costa County's half-cent transportation sales tax through Year 2034. For the City, Measure J represents approximately \$1M for different City programs and/or projects. This source of funding has been eliminated in order to pay back a \$9.2M State Transportation Improvement Fund (STIP) loan to help pay for the Bollinger Canyon Road/Iron Horse Trail Bicycle Pedestrian Overcrossing Project (CIP 905530). These funds were partially offset by the reallocation of approximately \$4.6M in Certificate of Participation and General Fund money to PMP 2021 and PMP 2022.

### *Refuse Vehicle Impact Fee (RVIF)*

The purpose of the RVIF is to recoup the costs associated with impacts to the pavement by heavy refuse collection trucks. These vehicles account for approximately 46% of vehicle loads on residential pavements. The Pavement Management Program started to receive RVIF funds in FY 2018/19 in the amount of \$1.369M. The Fee resulted in the addition of \$1.529M in FY2019/20, and a projected flat fee of \$1.5M annually starting in FY2020/21, subject to an inflation adjustment, for the Pavement Management Program only.

In June 2021, City Council approved an Amendment to the contract with Alameda County Industries of San Ramon, Inc. (ACI) for solid waste collection services. With the onset of the COVID-19 Pandemic, ACI sustained large reductions in services, particularly from commercial enterprises with commensurate loss in revenue. This loss in revenue occurred while residential waste generation increased. This resulted in a substantial financial impact to ACI, estimated at more than \$1.5M from March 2020 through June 2021. As a result, ACI requested an "extraordinary rate increase." ACI and City staff discussed the situation and arrived at an agreement, which avoided the need for an extraordinary rate increase and the complex process that it would have entailed.

Under this agreement, ACI will be able to avoid operating at a loss, but with little or no profit until businesses restore their service levels to pre-COVID levels. This agreement will use \$750,000 of existing reserves in the Solid Waste Fund and defer payment of \$750,000 in Refuse Vehicle Impact Fees (RVIF), rather than an increase to customer rates, to resolve ACI's claim. ACI will pay back the RVIF over a three-year period, starting July 1, 2022.

### ***Pavement Management 2022 Project (CIP 000005) and 2023 Project (CIP 000008)***

The Pavement Management 2022 Project (CIP 000005) and Pavement Management 2023 Project (CIP 000008) were coordinated to minimize costs and maximize efficiencies. The 2022 PMP focused on the use of hot mix asphalt concrete. This includes pavement treatment of low PCI streets and streets that require heavy maintenance or light rehabilitation treatments such as overlays, while undertaking the asphalt concrete work (primarily local dig-out repairs needed for PMP 2023 streets). The Pavement

Management 2023 Project (CIP 000008) will focus on a combination of slurry, microsurfacing, and rubberized cape seals, which can be completed by one contractor.

The Pavement Management 2022 Project (CIP 000005) included the treatment of two arterial streets: Bollinger Canyon Road, between Canyon Lakes Drive and the northern intersection with Dougherty Road; and Dougherty Road, between Crow Canyon Road and the northern intersection with Bollinger Canyon Road. CIP 000005 also included the treatment of residential streets such as Anza Court, Aranda Drive, Arlewood Court, and Kinvarra Court; and localized base repairs of all streets programmed under the Pavement Management 2023 Project (CIP 000008).

CIP 000005 and CIP 000008 included the following low PCI streets, that fell into or would have fallen into the low PCI category during the 5-year plan. All have been completed.

| Street   | Functional Class | Current PCI |
|--|------------------|-------------|
| Bollinger Canyon Road (EB)<br>Canyon Lakes Drive to South<br>Gale Ridge Road | A                | 58          |
| Derby Road   | R                | 38          |
| Dougherty Road   | A                | 56          |
| Millbridge Place   | R                | 33          |
| Ryegate Place  | R                | 30          |
| Sage Circle  | R                | 37          |
| Scarboro Place   | R                | 36          |
| Seneca Lane  | R                | 30          |
| Wilton Place   | R                | 34          |

Omega Road was also anticipated to be treated during this cycle but was removed due to anticipated development work in the area. Omega Road will be added back as soon as practical.

Additional low PCI streets or streets that will become low PCI streets and are schedule for treatment in the next five years include:

| Street   | Functional Class | Current PCI | Anticipated Treatment Year |
|--|------------------|-------------|----------------------------|
| Sunnyside Place                                  | R                | 31          | 2024                       |
| Alcosta Blvd<br>(near Market Place)              | A                | 38          | 2026                       |
| Belle Meade Drive                                | R                | 37          | 2026                       |
| Braeburn Court                                   | R                | 37          | 2026                       |
| Sedgefield Court                                 | R                | 38          | 2026                       |
| San Ramon Valley Blvd<br>(near Montevideo Drive) | A                | 65          | 2028                       |

The Pavement Management 2023 Project (CIP 000008) incorporates the treatment of the following locations:

- Dougherty Road, between Old Ranch Road and City Limit;
- Stagecoach Road, between Alcosta Blvd. and City Limit;
- Bollinger Canyon Road, between Crow Canyon Road and San Ramon Valley Blvd.;
- Various residential streets west of Bollinger Canyon Road, between Crow Canyon Road and San Ramon Valley Blvd.;
- Various residential streets east of Bollinger Canyon Road, between Norris Canyon Road and San Ramon Valley Blvd.;
- Various residential streets west of Morgan Drive, between Arapaho Circle and Bollinger Canyon Road;
- Various residential streets in the Richard Fahey Village Green Park area;
- Various residential streets in the neighborhood of Hidden Hill Elementary School;
- Various residential streets south of Windemere Parkway, between Bollinger Canyon Road and Albion Road; and
- Areas where utility companies would have performed pavement cuts and paid the City an in-lieu fee for the City to treat the roadways if these streets have not been treated previously under the Stop Gap Program or by separate contract.

The list of streets and location map for Pavement Management 2022 Project (CIP 000005), Pavement Management 2023 Project (CIP 000008), and proposed Plans through 2008 are shown on Attachment C.

***Crow Canyon Road - west of Bollinger Canyon Road (CIP 000009)***

Not part of the Pavement Management 2023 Project (CIP 000008), but scheduled to take place in 2023, is the treatment of Crow Canyon Road, between Bollinger Canyon Road and the City Limit. This section of Crow Canyon Road was originally scheduled for



pavement treatment in 2020. However, due to lack of sufficient funds, the treatment of this section was rescheduled to 2024. Since early 2021, City staff has been coordinating with Alameda County engineering staff to incorporate this section of Crow Canyon Road into Alameda County's upcoming pavement project along Crow Canyon Road that ends at the County/City limit. The construction of Alameda County's pavement project is anticipated for summer of 2023.

The pavement design consultant for Alameda County is one of the City's on-call pavement consultants. The City and Alameda County have agreed to extend this pavement improvement from the County/City limit to Bollinger Canyon Road, providing better coordination between the two agencies, less traffic disruptions to San Ramon residents, and cost savings by economy of scale. The City would provide the funds to cover this work to Alameda County, which would bid out and administrate construction. The City can afford to pay for this work a year early due to savings from the Pavement Management 2020 Project (CIP 000001), Pavement Management 2021 Project (CIP 000003), and Alcosta Blvd. Pavement Rehabilitation Project (CIP 905602), as previously discussed. A new project for this (CIP 000009) was included in the FY 2022/23 Capital Budget during the Five-Year 2022-2027 Capital Improvement Program budget review last fiscal year.

### ***Other Upcoming Projects***

#### **Pavement Management Projects 2024 – 2028**

Streets selected for treatment between 2024 and 2028 are shown in Attachment C and listed in Attachment D. These are aggressive scenarios for the four years that staff put together based on the overall projected Five-Year Pavement Management Program Budget shown in Attachment A. This list will be subject to yearly revisions based on observations of the actual condition of the street, analysis of its rate of deterioration, selection of other streets in the area, market conditions, cash flow strategies, and other factors. Most low PCI streets within the timeframe of this Study will be treated with PMP 2022. Most of the remaining low PCI streets will be completed with the Crow Canyon Road Widening Project.

### ***Crow Canyon Widening***

The widening of Crow Canyon Road, between City limits with the Town of Danville (Danville) and the I-680 Freeway, from two lanes to three lanes in each direction, is a requirement of the Agreement to Settle Litigation Relating to the Dougherty Valley (Settlement Agreement) signed in 1994. It is also included in the City's General Plan and the Tri-Valley Transportation Plan. Roadway widening was completed between Alcosta Boulevard and the I-680 Freeway in 2008, and between the Danville town limits and Indian Rice Road in 2011.

The Crow Canyon Widening Project (CIPs 905312 and 905328) will complete the widening from Alcosta Boulevard to St. George Road, from two lanes to three lanes in



each direction. As part of the Project, the existing pavement will be repaved. This Project was awarded on February 22, 2022, for a total contract amount not to exceed \$14,296,956. It will take approximately two years to complete. The Project is funded by the Southern Contra Costa JEPA (SCCJEP A) Regional Impact Fees Fund and Traffic Improvement Fund.

**City-Owned Parking Lots and Other Projects**

In addition to maintaining streets in the public right-of-way, funds from Measure J and Gas Tax also pave parking lots, repair sidewalks, replace curb ramps, and undertake “stop gap” work. The City currently owns 32 parking lots, approximately 1.1 million square feet, located at various facilities. The parking lots are included in the Pavement Condition Survey. The PCI of the parking lots currently ranges from 49 to 84. Staff schedules work on an as-needed basis and on those years where the PMP project heavily contains preventative treatments such as slurry seal or microsurfacing. The following City-owned parking lots are targeted for treatment under this Five-Year Pavement Management Plan Update:

| <b>Parking Lot</b>                 | <b>Treatment Year</b> | <b>Current PCI</b> |
|------------------------------------|-----------------------|--------------------|
| Dougherty Station Community Center | 2023                  | 75                 |
| East Branch Park                   | 2023                  | 74                 |
| Hidden Valley Park                 | 2023                  | 76                 |
| Village Green Park                 | 2023                  | 64                 |

**Long-Term Projections**

*Projected PCI*

The City’s current overall average Pavement Condition Index (PCI) is 78. Based on proposed funding, the PCI is anticipated to rise to 80 by the end of 2023, drop gradually to 75 by the end of 2028, and down to 71 by the end of 2032. A graph of the anticipated PCI is shown on Attachment B

*Other Impacts*

In recent years, the City’s Pavement Management Program has been funding other elements not directly related with roadway pavement treatments. This has reduced the available funds from the Program and has the potential to reduce funds further in the coming years. These other elements include: 1) curb ramp construction for compliance with the Americans with Disabilities Act (ADA); 2) sidewalk repairs; and 3) bike lanes and green conflict zone markings. The costs of ADA compliance and restriping for accommodation of new bike lane standards (with some limitations) have been included in the current five-year analysis. Other elements such as Green Infrastructure (GI) have not been included, and the extent to which they impact the available funds will result in reductions in the number of streets treated and commensurate reductions in the City’s PCI. Each of these elements are discussed briefly below.

### 1. *ADA Compliance*

In 2013, the Department of Justice and the Department of Transportation issued ADA requirements to provide or upgrade curb ramps when streets, roads, or highways are altered through resurfacing. For the Pavement Management 2022 Project (CIP 000005) and Pavement Management 2023 Project (CIP 000008) alone, the cost of ADA curb ramps could be as high as 7.5% of the total cost of the projects.

### 2. *Bicycle Master Plan*

One element competing for funds from the Pavement Management Program is funding the restriping to comply with and implement the Bicycle Master Plan (BMP) and current standards for bicycle lanes, including green bike lanes. Green bike lanes have a significant cost due to the preferable thermoplastic application rather than paint.

Staff is analyzing the most effective way to combine the 2019 Certificate of Participation Debt Service Funds (COP) from the Bicycle Network Improvements and Enhancements Project (CIP 905613) with the Five-Year PMP plan and budget. The goal is to schedule, during the same year, elements of CIP 905613 as part of the PMP Projects. This way, COP would be spent, as programmed, on bike lane and green conflict zone markings without utilizing PMP funds. The Pavement Management 2022 Project (CIP 000005) brings forward the treatment of sections of Dougherty Road and Bollinger Canyon Road to accommodate the usage of COP. However, this has resulted in delaying other pavement work including preventative maintenance in the Dougherty Valley.

### 3. *Green Infrastructure*

Green infrastructure is intended to treat stormwater at its source to eliminate pollutants while delivering environmental and social benefits. The RWQCB is currently working on a new Permit - MRP 3.0. As currently proposed, MRP 3.0 will require the City of San Ramon to treat a minimum of approximately six (6) acres of impervious surface and treat the runoff from any new pavement projects that add significant impermeable surface, or reconstruct a road, or repave a road with asphalt concrete overlays or inlays. The cost implications of these requirements are difficult to predict as they depend on numerous factors – terrain, available land, or right-of-way to provide treatment areas, conflicts with bicycle lanes, minimum road and travel lane widths, traffic volumes, utilities, and other factors.

#### 4. Maintenance Operations

In order to help alleviate current budget constraints, the current fiscal year's budget also directs \$51,600 towards maintenance activities that have been traditionally funded through the General Fund. These activities include crack sealing and pothole repair.

##### *Target PCI and Alternative Funding*

The long-term projections indicate that the City's pavements will continue a gradual decline from the current high end of "good" condition (PCI 78) to the low end over the next 10 years. A "good" condition is a PCI between 70 and 79; between 60 and 69 is a "fair" condition. The shortfall in spending to maintain the pavement in its current condition is approximately \$2M per year. As the City is challenged to balance the costs to deliver needed and desired services with available funding, finding the money necessary to maintain the pavement is an additional challenge that will not be solved easily or quickly.

Fortunately, the deterioration in overall pavement quality is a gradual process, and some decline in overall PCI can be borne without widespread impacts. However, it must be noted that the cheapest pavement to maintain is a good pavement. Therefore, as the City's overall PCI lowers, the cost to maintain that pavement at the new lower level will actually be higher than current requirements. In addition, as the overall PCI deteriorates, a progressively larger number of streets will fall into one of the "low PCI" categories. This will limit flexibility in determining the best use of funding resulting in lower efficiency and yet higher costs. In addition, the requirement of MRP 3.0 as discussed above poses a major new threat to pavement management, especially when streets deteriorate to the point that asphalt concrete overlays or inlays, or pavement reconstruction is required.

The costs to restore the City's overall pavement condition to the current levels will also increase with time. Staff estimates that it would cost between \$30M and \$40M to return the City's PCI to 78, once it reaches 70 (not including Green Infrastructure). This level of new funding would result in a major burden to the City's budget.

Based on the above logic, staff recommended that the Infrastructure Committee and City Council consider setting a target range of 75 to 80 for the City's overall PCI and incorporate this target into the City's annual goals and objectives, as well as establish a mechanism to evaluate funding alternatives in the near future. During the discussion of the Pavement Management Plan, the Infrastructure Committee, with concurrence from the City Council, selected a target PCI of 75.

The most likely funding mechanisms to help maintain the current PCI include: 1) a parcel tax measure; 2) a sales tax measure; or 3) allocations from the General Fund, which would require offsetting budget reductions, fee increases, or other funding mechanisms to compensate. If recommended by the Infrastructure Committee, staff can begin exploring

options in greater detail. This would be expected to culminate in the hiring of consultants to provide detailed recommendations to the City regarding the best options and timing for any action. At the Committee's recommendation, staff will begin exploring financing options.

### **FISCAL ANALYSIS**

The Projected Five-Year PMP budget is shown in Attachment A. The Five-Year Pavement Management Plan is primarily funded by the Highway Users Tax Account (HUTA) or Gas Tax (including SB-1), the Refuse Vehicle Impact Fee (RVIF).

### **STEPS FOLLOWING APPROVAL**

1. Staff will incorporate comments from the Infrastructure Committee and include any recommendations into the Five-Year 2023/24 - 2027/28 Capital Improvement Program.
2. Staff will continue to seek grant funding for Pavement Management Projects.
3. Staff will provide updates during FY 2023/24 on the Pavement Management Program and will update the Five-Year Pavement Management Plan in 2023.

### **ATTACHMENT**

- A: Projected Five-Year PMP Budget (FY 2022/2023 to FY 2027/2028)
- B: Projected Five-Year Pavement Condition Index (PCI) Projections
- C: Projected Five-Year PMP Maps (FY 2022/2023 to FY 2027/2028)
- D: List of Streets and Street Sections to be treated between 2023 and 2028