



# Memorandum

**TO:** TRANSPORTATION AND ENVIRONMENT COMMITTEE  
**FROM:** John Ristow  
**SUBJECT:** SEE BELOW  
**DATE:** February 13, 2019

Approved

Date

2-25-19

**SUBJECT: REPORT ON PAVEMENT MAINTENANCE CONDITIONS, FUNDING, AND PROGRAM DELIVERY STRATEGY**

## **RECOMMENDATIONS**

1. Accept report on Citywide Pavement Conditions, Funding, and the planned Program Delivery Strategy with the infusion of funds from Senate Bill 1, VTA Measure B, and City Measure T.
2. Refer this report to the full City Council for the March 12, 2019 agenda.

## **BACKGROUND**

The City's 2,434 mile pavement network is rated overall in "Fair" condition with an average pavement Condition Index (PCI) rating of 66 on a scale of 0-100, with 100 being a new street. Due to significant new funding, the PCI rating is projected to increase to 69 over the upcoming 10-year maintenance cycle. For the first time in well over a decade, the pavement maintenance program is projected to be fully funded for the 2020 construction season (FY 2019-20). The improvements in the projected pavement condition can be primarily attributed to the passage by San José voters of Measure T, the Disaster Preparedness, Public Safety, and Infrastructure Bond Measure, which will provide \$300 million for maintenance on 388 miles of Local and Neighborhood streets in the worst condition.

Because of sustained investments and maintenance on the 944-mile Major Street Network, the average PCI for these streets remains at 75, or "good" condition. The PCI on the 1,490 mile Local and Neighborhood Street Network fell from 61 to 60, which brought the citywide PCI down from 67 to 66 in 2018. There was also an increase to the one-time deferred maintenance backlog from \$453.4 million in 2018 to \$539.1 million, as streets on the Local and Neighborhood Street Network continued to deteriorate. The PCI decline and corresponding backlog increase has been directly related to the lack of funding available for maintenance on this network. However, with the recent California Supreme Court dismissal of the lawsuit

challenging the VTA 2016 Measure B, the City intends to initiate approximately \$42.8 million in maintenance projects on local and neighborhood streets in 2019. With the expanded maintenance activities, DOT anticipates that by 2028, the backlog will only modestly increase to \$600 million, which is a significant reduction of approximately \$500 million from the previous projection of \$1.1 billion in the 2018 pavement report.

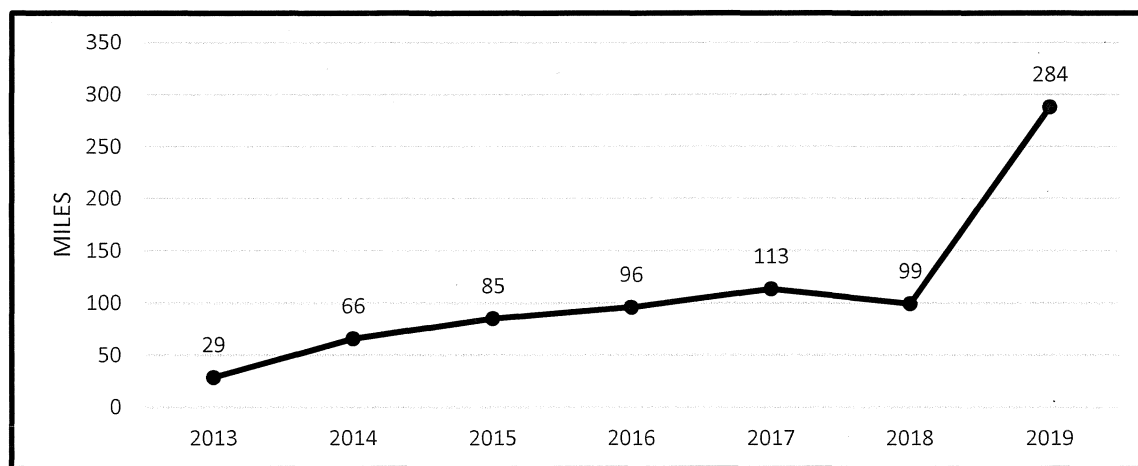
### **How We Got Here**

Staff has provided annual reports on the status of pavement conditions and funding needs and presented strategies to increase and secure the needed investment. In 2010, the City Council established a goal of improving pavement conditions to an overall “Good” rating with a PCI of 70 by 2020. To accomplish this, it was estimated at that time that an average investment of \$100 million annually would be required, a funding amount that has never reached.

In 2011, as the funding targets were not met, and the backlog grew, the City Council provided direction to staff to prioritize use of available maintenance funds on the City’s most important and heavily traveled major streets. This resulted in the creation of two Major Street Network categories: 1) Priority Street Network, and 2) Other Major Street Network. These major street categories represent only about 40% of the entire City street system, yet they carry over 85% of traffic in and through the City. Since 2012, and due to the allocation of available funding to the Major Street Network, DOT has been able to stabilize and improve the City’s major streets to an overall “Good” condition (currently PCI 75).

DOT has steadily increased pavement maintenance since 2013, when only 29 miles were maintained due to limited funding. Several one-time federal grants added mileage in both 2014 and 2015, and Senate Bill 1 allocations positively impacted recent construction seasons. Now that the challenge to VTA 2016 Measure B has been dismissed, the City will see its highest pavement maintenance one-year mileage total ever in 2019, as demonstrated in Figure 1 below.

***Figure 1 – Pavement Maintenance History***



The results of the November 2018 elections will have lasting and positive impacts on the condition of street pavement in the City of San José. In addition to the passage of Measure T by San José voters, Senate Bill 1 withstood a repeal effort and will continue to provide the City with an estimated \$17.5 million in annual pavement maintenance funds. The combined revenues from Senate Bill 1 and Measure T will account for an average of \$47.5 million annually for street pavement maintenance over the next 10 years. Additionally, VTA 2016 Measure B is projected to provide approximately \$19 million in ongoing annual funding after the City receives its first \$42.8 million in accumulated funding from the first two years of revenue in 2019. DOT will also receive a federal grant that will provide approximately \$17.2 million for maintenance on the major streets in the 2020 construction season. Over \$107 million is now projected to be available in FY 2019-2020 for the 2020 construction season, and the average annual funding level for pavement maintenance over the next 10 years is approximately \$87.2 million.

With an average of \$87.2 million over the next 10 years, the City will be able to fully fund pothole repairs, program management activities, and provide significant maintenance on the Major Street Network and Local and Neighborhood Streets Network. DOT plans to provide maintenance on approximately 200 miles of the 1,490-mile residential street network in 2019 in addition to the planned major streets maintenance program. In 2020, DOT will initiate the first year of Measure T residential street resurfacing, which, in combination with annual allocations from VTA 2016 Measure B, is expected to provide maintenance to all residential streets in the City within a 9-year horizon.

**ANALYSIS**

**Pavement Condition Overview**

DOT utilizes a standard set of pavement condition rating criteria established by the Metropolitan Transportation Commission (MTC) to regularly assess the conditions of the City’s streets. Data from these assessments are then entered into the City’s Pavement Management System (PMS) where pavement conditions and funding needs are formulated and can be analyzed. In a typical year, approximately half of the City’s 944 miles of major streets and one fifth of the 1,490 miles of local and neighborhood streets are assessed. The resulting data is then entered into the PMS and the Citywide Pavement Condition Index (PCI) is automatically updated.

*Figure 2 – Pavement Condition Index (PCI) Rating System*

PCI Rating	PCI Categories
70 – 100	Good to Excellent
50 – 69	Fair to At Risk
25 – 49	Poor to Very Poor
0 – 25	Failed

The condition of a street, or network of streets, falls into one of four categories in the PCI rating system that range from “Excellent” (PCI 100) to “Failed” (PCI 0). Figure 2 provides a general



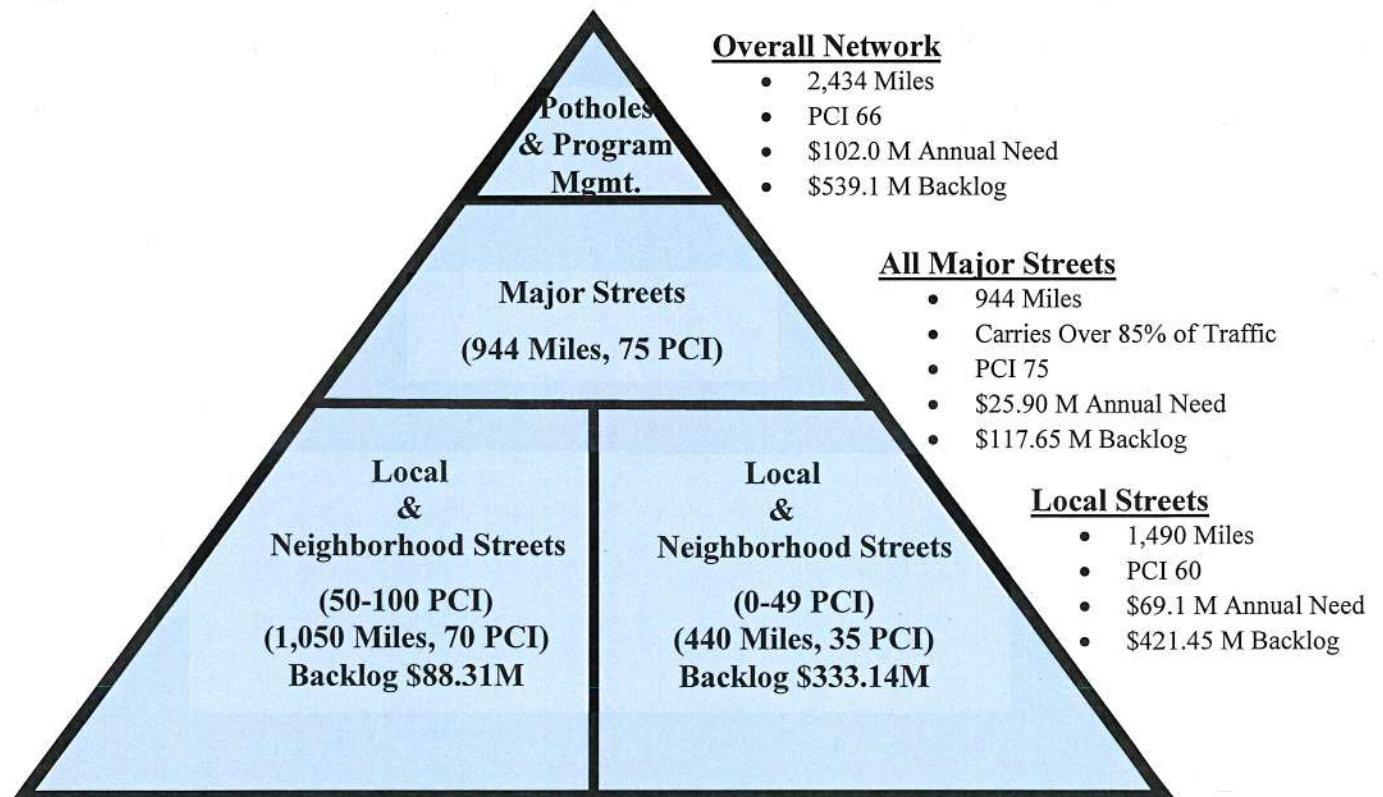
description of the PCI rating scale and associated condition ratings. Visual examples of pavement in various states of condition that correlate to the PCI scale are highlighted in Attachment A. It is important to understand, however, that the condition rating of a street goes beyond its visual characteristics. Different types of failures (e.g. cracking, raveling, shoving, sinking, etc.) and the degree of failure can have varying effects on the condition rating.

**Current Pavement Condition**

The current average PCI for all San José streets is 66, which is a rating of “Fair,” and a one-point decrease from 2018. To bring the City’s streets into overall "Good" condition (PCI 70) and significantly reduce the backlog of deferred maintenance, the City would need to invest \$102 million annually for 10 years. Average funding levels for the next ten years are estimated at approximately \$87.2 million per year, falling short of the total amount of needed funding by \$14.8 million; however, this funding level is a marked increase from last year’s deferred maintenance report where the five-year annual funding estimate was \$50.1 million, and is fundamentally changed from 2015 estimates, which assumed annual levels of only \$13 million.

As illustrated in Figure 3 below, three categories of pavement maintenance have been identified and their associated funding requirements have been estimated in order to better define the City’s total annual funding need for pavement. In sequential priority order, they include Pothole Repairs and Program Management, All Major Streets, and Local and Neighborhood Streets.

**Figure 3 – San Jose Pavement Maintenance Pyramid**



Highlights of the condition of San Jose's street network are as follows:

- The overall condition of the City's entire 2,434-mile street network is rated in "Fair" condition at a PCI of 66. There is currently a backlog of one-time maintenance needs totaling \$539.1 million and an annual overall funding need of \$102 million to bring the Citywide average street condition to "good" (PCI 70) over a 10-year period.
- The City's 944-mile major street system is rated as "Good" with a PCI of 75. There is a one-time backlog on the major street system of \$117.65 million. While the major street system is about 40% of the overall street network, it carries over 85% of all citywide traffic. Maintenance on the major streets is now fully funded at approximately \$25.9 million annually.
- The City's 1,490 miles of local and neighborhood streets have a PCI of 60, a rating in the "Fair" category. Approximately 1,050 miles of local and neighborhood streets are in "Fair" or better condition. However, many streets are at risk of rapidly falling into "Poor" condition, where the cost to rehabilitate a street can be about five times higher than if it were preventively maintained on an industry-recommended schedule. Of significance, is that nearly 62% of the citywide deferred pavement maintenance backlog is associated with the 440 miles in "Poor" or "Failed" condition of local and neighborhood streets. Looking forward, with access to on-going VTA Measure B funding and the approval of the \$300 million in Measure T funds, funding levels will significantly increase to an annual average of \$87.2 million over the next 10 years, allowing DOT to perform maintenance on these streets for the first time since 2012.

At current and projected funding levels, the backlog of deferred pavement maintenance will decrease from the current \$539.1 million to \$523 million in 2023. The long-term backlog of deferred maintenance will then modestly grow to approximately \$598 million in 2028, a reduction of \$500 million from last year's projection of \$1.1 billion (Attachment B). It is important to note that the \$300 million in Measure T funds is largely responsible for the \$500 million projected backlog decrease as the funds will allow DOT to tackle the worst residential streets and free existing funding sources to preventively maintain streets on the local and neighborhood network before they deteriorate and cost up to five times more to repair. The added funding is expected to result in an average citywide PCI of 69 by the year 2028.

### **Current Pavement Maintenance Funding Levels and Projections**

In FY 2018-2019, approximately \$94.3 million in funding is available for pavement maintenance. This amount includes revenue from the Construction Excise Tax, state gas taxes, regional vehicle registration fees, and two years of accumulated proceeds from VTA Measure B. FY 2019-2020 funding will also be supported by a \$17.2 million one-time federal grant, and the expected first year of Measure T funding, for a total of over \$107 million. It is expected that Measure T will boost annual funding by approximately \$37.5 million per year through FY 2026-2027 (2027 construction season). When accounting for ongoing, temporary and one-time

funding, the 10-year average annual funding amount through FY 2027-2028 will be \$87.2 million.

Through the 2027 construction season, \$87.2 million will be sufficient to fully fund pothole repairs and program management and development at \$7 million annually. It will also fully support the \$25.9 million needed each to year to maintain an average PCI of 70 or better on the Major Street Network. Additionally, appropriate and prescribed maintenance on all 1,490 miles of local and neighborhood streets will be performed by the end of the 2027 construction season.

DOT expects to expend all Measure T bond proceeds by FY 2027-2028, at which time the expected on-going budget will decrease to \$51.15 million. This total includes ongoing expected allocations of \$17.5 million in Senate Bill 1 revenue, \$19 million in VTA 2016 Measure B funds, and allocations from state, regional and local sources. This ongoing budget will be sufficient to fund pothole repairs and program management, major streets maintenance, and a portion of the required annual local and neighborhood street maintenance.

**On-going Pavement Maintenance Funding Needs and Projected Conditions**

While the additional on-going and one-time funding will make a significant positive impact on the condition of the City’s streets and fully avoids the catastrophic growth of the backlog of deferred maintenance projected just a few years ago, it does not fully address the City’s pavement maintenance needs in perpetuity. The investment needed for City streets to remain in the current "Fair" condition (not drop below PCI 66) is met, but there is a shortfall of \$14.8 million annually to fully improve to a "Good" condition (PCI 70). As shown in Figure 4 below, the annual average investment needed to "Get No Worse" is \$76.7 million, and to "Improve to Good" is \$102 million.

**Figure 4 – Annual Funding Needs (in \$ millions)**

Funding Scenario	On-going Funding Allocation/Need				Shortfall to Achieve Scenario
	Pothole Repair & Program Management	Major Streets	Local Streets	Total	
1. Current	\$7 M	\$25.9 M	\$54.3 M	\$87.2 M	N/A
2. Get No Worse (66 PCI)	\$7 M	\$30.7 M	\$39.0 M	\$76.7 M	\$0 M
3. Improve to Good (70 PCI)	\$7 M	\$25.9 M	\$69.1 M	\$102.0 M	\$14.8 M

In last year’s pavement report, annual funding projections estimated that the average network PCI would decline to the lower end of “Fair” (PCI 59) in 2027. With the increased funding, the projected average network PCI has improved to the higher end of “Fair” (PCI 69) and just short of “Good” (PCI 70) by 2028. The chart in Attachment C further illustrates the on-going funding needs and contrasts that with current projected funding estimates.

### **Maintaining Local and Neighborhood Streets – Where Most of Our Residents Live**

The City has not had the available resources to invest in preventive maintenance or rehabilitation of the 1,490-mile Local and Neighborhood Street Network since 2012, when the Major Street Network was prioritized for pavement maintenance funding. Additionally, due to many years of underinvestment in pavement maintenance, 1,134 miles (76%), of local and neighborhood streets have not received maintenance in the last ten years. Furthermore, 527 miles were last maintained prior to 2000, 18-plus years ago. The good news is that with additional one-time and on-going investments in pavement maintenance, DOT is now able to implement a full-scale maintenance program on the Local and Neighborhood Street Network.

The City's Local and Neighborhood Street Network is organized into 135 geographically contiguous "Pavement Maintenance Zones" (PMZs). The PMZs were established several decades ago to support efficient planning and delivery of paving projects, maximize the amount of paving work completed at one time within a neighborhood area, and provide geographic equity of pavement maintenance across the City. With nearly 1,500 miles of local and neighborhood streets, DOT is utilizing the PMZ model as a basis to develop and deliver an upcoming nine-year maintenance plan for the Local and Neighborhood Street Network.

DOT had planned to provide maintenance on local and neighborhood streets in both the 2017 and 2018 construction seasons, but as mentioned above, the VTA Measure B funding was not made available due to a legal challenge. With two years of accumulated allocations totaling approximately \$42.8 million, DOT intends to maintain 200 miles of residential streets that had been planned for maintenance in 2017 and 2018 in the 2019 construction season. To select these streets, DOT analyzed the conditions of each PMZ and identified those with overall "Fair" to "At Risk" conditions. PMZs in those condition categories were identified because most of the streets within each zone are eligible for preventive maintenance treatments that would save them from further deterioration and the need for more costly rehabilitation in the near future. Since preventive maintenance is typically five times less costly than resurfacing, DOT would also be able to maximize the number of local and neighborhood streets treated, including resurfacing streets within a zone that are in "Poor" (PCI below 50) condition, thus efficiently maintaining all the streets within a neighborhood area. DOT inspection and engineering staff have assessed these streets, formulated engineering estimates, and will bid projects in the Spring and Summer of 2019.

DOT expects to receive its first allocations from Measure T in time for the 2020 construction season, which will provide the dedicated resources needed to add an extensive rehabilitation component to the Local and Neighborhood Streets maintenance plan. DOT has developed a strategy to combine VTA Measure B and Measure T, and other funding sources each year to complete the appropriate preventive maintenance or rehabilitation treatment for every residential street by 2028. To prioritize zones for repair over the expected 8-year cycle of Measure T annual allocations, DOT analyzed the condition of each PMZ to determine the average PCI and the total miles of poor condition streets in each zone for the entire Local and Neighborhood Streets Network. To the extent possible, zones in the worst condition will be targeted earlier in the



maintenance plan in an attempt to avoid higher construction costs due to further deterioration of the street, inflation, and price increases in later years. It is important to note that when a zone is scheduled for maintenance, every street in that zone will receive the appropriate and prescribed treatment based on its condition, thus providing comprehensive maintenance coverage to contiguous streets in a neighborhood, minimizing mobilization costs and disruption to residents.

### **Complete Streets and Other Infrastructure**

Both VTA 2016 Measure B and Senate Bill 1 require “complete street” elements that result in safer streets with improved mobility options in order to be eligible to receive funds. In 2018, City Council adopted the “San Jose Complete Streets Design Standards and Guidelines” which helps guide implementation of the Envision San Jose 2040 General Plan especially as it relates to the public right of way and City street system. The City Council also endorsed the NACTO Design Guidance, which serves as a model for the City’s complete streets standards.

DOT uses these guidelines to incorporate complete street elements to the extent possible as future projects are planned, designed, budgeted, and delivered. DOT also takes advantage of the annual pavement maintenance program to install various “complete street” elements that result in safer streets with improved mobility options. Newly paved streets provide a cost-effective opportunity to reconfigure vehicle lanes, enhance existing or install new bike lanes, and upgrade vehicle and bike detection systems, where appropriate, in a way that maximizes safety and the orderly flow of traffic for all roadway users while minimizing the impact to vehicle capacity and on-street parking. Since 2016, DOT has added 98 miles of bikeways and enhanced another 44 miles of existing bikeways as part of the annual pavement maintenance program. Figure 5 illustrates a “complete street” implemented through the pavement program. Furthermore, the City will be updating its ADA transition plan in 2019, which may result in the need for increased investment in sidewalk accessibility and curb ramp improvements.

*Figure 5 – San Jose Complete Street Implementation*



The street refinements and infrastructure upgrades mentioned above will greatly benefit the residents of the City but will also likely require adjustment of traditional assumptions on pavement maintenance unit costs and budgets. DOT will continue to comprehensively analyze these costs and provide periodic updates to the City Council to ensure that all funds are being managed with the dual goals of maintaining the road network effectively and efficiently and providing safer streets with improved mobility options.



## **New Reality, New Challenges**

DOT is now shifting from a resource-constrained environment to one where proper maintenance of the pavement network is nearly fully-funded and expectations are higher than ever before on project delivery. The information below describes some of the expected high-level challenges faced by the City and its residents, and proactive courses of action taken to mitigate their effects.

### **Reporting and Staffing**

DOT has adapted to the reporting and auditing requirements of Senate Bill 1 and its other legacy sources, but VTA 2016 Measure B is a source that is expected to be reimbursable to the City, potentially monthly, which is a more labor-intensive process than is assigned to most other funding sources. Due to the scale of the funding sources and reporting requirements, additional administrative support will be required to ensure that the City follows all provisions of a yet to be finalized master agreement with VTA. The \$42.8 million in expected allocations for 2019 will also be subject to this process, and staff is working to ensure that DOT can maximize its use of these funds in the coming construction season. The requirements of Measure T are not fully known, but when combined with Measure B and the increased pavement budget, new administrative support is needed.

DOT expects to provide pavement maintenance to approximately 10 times as many miles of streets when compared to 2013. While the pavement maintenance team added 6 limit-dated positions in the FY 2016-2017 budget, with vastly increased mileage expected, more project planning, engineering and inspection staff will also be needed. The Administration intends to address the need for additional staffing to support the significantly increased pavement program during the FY 2019-2020 budget process.

### **Street Impacts**

DOT has improved its large major street maintenance program since 2016, when new funding sources became available. As the department prepares to expand again and maintain streets on the Local and Neighborhood Streets Network, most of which have not been maintained in a decade or more, there will be new challenges and lessons learned. Resident outreach and education will be critical to the successful implementation of maintenance on the local and neighborhood streets. For pavement maintenance activities to succeed, vehicles must be moved, trees trimmed, and extensive ADA ramp and concrete work performed where required.

In March 2019, DOT will release a supplement to its 2019 Pavement Maintenance Program memorandum, originally released in December of 2018, to identify the local and neighborhood streets planned for maintenance in the 2019 construction season. In subsequent years, the annual informational memorandum that is typically released in the winter preceding a construction season, will highlight all streets (major and local and neighborhood) planned for maintenance.

With annual maintenance mileage totals expected to meet or exceed 10% of the 2,434-mile street network on an annual basis for the foreseeable future, concurrent with other large capital projects, resident concerns may increase around traffic delays resulting from construction work. Along with traffic impacts, the potential for utility and development conflicts will grow as more streets are maintained. DOT will work to refine its coordination with contractors, utility companies and other jurisdictions through the inclusion of its local street pavement plan in the annual coordination process with external stakeholders. DOT will also continue to mitigate resident concerns through proactive notification, increased internal and external stakeholder coordination, presence at community meetings, and project implementation measures taken to minimize the impact of pavement maintenance activities.

### **CONCLUSION**

The City has never been closer to realizing an ongoing, properly funded street pavement maintenance program. With a fully funded 2020 construction season, and a 10-year average funding level adequate to improve the average citywide PCI, residents and City leaders have taken vital steps to protect and preserve the City's most valuable asset from a cost standpoint. City staff will continue to seek additional funding sources at the federal, state and local levels to close the \$14.8 million gap needed to fully restore the street network to "good" condition. For years, DOT has planned and delivered projects in a severely resource-constrained environment and will now rapidly shift to a level of project delivery not seen in its history. This changed reality will bring with it difficulties around hiring and training new staff, coordinating with local utilities and contractors, and preparing residents for the traffic impact and potential disruption resulting from annual maintenance programs encompassing approximately 10% of the entire 2,434-mile street network. However, DOT has invested in its people, refined its processes, built its teams, and identified future needs to the extent where it stands ready to overcome these challenges and deliver essential projects to improve the City's streets conditions.

### **COORDINATION**

This report has been coordinated with the City Manager's Budget Office and the City Attorney's Office.

/s/

John Ristow

Acting Director of Transportation

For questions, please contact Rick Scott, Deputy Director, (408) 794-1925.

Attachments