STAFF REPORT

City Council
Meeting Date: **12/5/2023**
Staff Report Number: **23-274-CC**

Informational Item: **Update on the City's Five Year Street Maintenance Plan**

Recommendation

Staff recommends that the City Council receive an update on the City's Five Year Street Maintenance Plan (Plan). The Plan identifies potential street maintenance projects for inclusion in the capital improvement program (CIP) over the next five years.

Policy Issues

This Plan is consistent with the City's goal of maintaining and enhancing its municipal infrastructure and extending the life and safety of its streets. The Circulation Element of the City's General Plan also includes policies related to the maintenance and safety of the roadway network.

Background

Existing pavement management system

The City maintains approximately 96 miles of roadways across 348 streets. Staff uses StreetSaver, a pavement analysis software endorsed by the Metropolitan Transportation Commission (MTC), as the pavement management system (PMS) for cataloguing streets and identifying segments in need of repair. Through grants provided by MTC, a survey and inventory of City pavement conditions is performed every two years. Each street is assigned a pavement condition index (PCI) rating, a numeric identifier that has a scale of zero to 100, to classify the condition of the roadway (Table 1). As of March 2023, the City's overall PCI is 76 (Good) and ranks sixth amongst the 20 municipalities in San Mateo County.

Table 1: PCI classification

PCI rating	Street condition
0 to 25	Failed
25 to 50	Poor
50 to 70	Fair
70 to 90	Good
90 to 100	Excellent or brand-new street

The goal of the City's pavement management approach is to maintain the City's overall PCI in the good category through cost effective preventative maintenance measures. In general, streets with higher PCIs are candidates for cost effective surface treatments such as slurry seals, which extend the life of existing

good pavement. By contrast, streets with lower PCIs require more intensive and expensive repairs such as deep overlays or full street reconstruction. Table 2 shows different roadway repairs and unit cost estimates of the repair. With proper maintenance, the number of streets requiring full reconstruction can be minimized.

Table 2: Repair scenarios

PCI	Recommended repair	Estimated unit cost (square yard)
70 to 100	Slurry seal	$6
50 to 69	Overlay (1 to 3-inches)	$34
26 to 49	Deep overlay (over 3-inches)	$50
0 to 25	Full street reconstruction	$200

The City maintains its PCI primarily through the implementation of the annual Street Resurfacing project included in the CIP. The project alternates asphalt overlay and slurry seal projects each year and identifies street segments for repair. The CIP also includes street improvement projects separate from the annual street resurfacing project for streets that have a larger scope, more involved traffic control coordination, and integrate multimodal infrastructure and other street or utility improvements. These separate CIP projects may require additional outreach, permitting with other agencies, multiple sources of funding, and higher complexities of design. Examples of these larger CIP projects include recently completed work at Ravenswood Avenue (from El Camino Real to Laurel Street) and Willow Road (from Middlefield Road to Chester Street).

Each year, staff reviews the StreetSaver recommendations based on PCI and available budget. Site evaluations are conducted to confirm the type of treatment needed for street segments in need of maintenance and to identify the general scope. Staff coordinates with other development or utility improvements, and projects are classified by scope and complexity of work. Isolated pavement repairs are addressed by maintenance staff or the City's on-call contractor while larger projects are programmed in the CIP (under the annual Street Resurfacing project or as separate projects). Overall, the process for determining the street resurfacing needs involves the following:
Review of pavement conditions through reports provided by the MTC and the use of StreetSaver to assess street segments for repair in the CIP;
Gather public input and review of reported roadway damages by the community or staff;
Coordinate with City departments, West Bay Sanitary District, Cal Water, and other utility agencies to eliminate overlaps with upcoming utility or development work;
Review of projects for implementation of complete streets elements (e.g., pedestrian, bicycle and vehicular safety improvements) including curb ramp upgrades per the Americans with Disabilities Act;
Conduct site visits and development of a cost/benefit analysis for the recommended pavement treatment; and
Updates to the Plan and specific street segments and/or projects are included in the CIP based on the available budget.

At the completion of each construction project, staff updates the City's GIS database and StreetSaver to catalogue constructed improvements and ensure the City's PCI is up-to-date.

Analysis

The Plan is a framework to help guide and select future street maintenance projects in the CIP, and as such, proposed street locations in the Plan may change as conditions change and CIP projects are

programmed each year. To develop this proposed Plan, staff utilized StreetSaver to draft a preliminary list of street maintenance projects over the next five fiscal years. Damaged street segments, where reported by the public and staff, were also assessed for inclusion into the list. The list was used as the foundation for developing the Plan which was further refined as follows:

- Coordination with project stakeholders – Staff coordinated the Plan with other City departments and utility agencies to eliminate project overlaps and minimize construction impacts. In the event of project overlaps, the schedule was modified for the street maintenance to follow the completion of utility upgrades. Street segments with overlapping improvements by other agencies will be considered as candidates for cost sharing.
- Maximize the City's overall PCI – Staff used StreetSaver to draft a list of projects based on a desired PCI of 80 over five years and revised the list to account for available budget, overlaps with other projects, and urgency of repair. Additionally, most street maintenance work is scheduled from late spring to early fall due to favorable weather conditions. Staff estimates that a maximum of 40 streets for slurry seal, or 20 streets for overlay, can be constructed in this timeframe. These constraints were used to fine-tune the number of streets that could be included on an annual basis. Ultimately, the City's PCI will be maintained at 76 should the City adhere to the Plan's recommendations.
- Achieve geographic distribution to service streets in most need of repair – Staff utilized StreetSaver to calculate average PCIs for each City Council district which yielded average PCIs in the "Good" classification ranging from 74 to 80 in each district per Table 3.

Table 3: Average PCI by District

District	Average PCI
1	76
2	80
3	75
4	75
5	74

The results indicate that, on average, streets within all five districts generally have similar pavement conditions. When developing the Plan, staff gave priority to street segments determined to be in most need of repair based on the above metrics.

- Public input and engagement – While staff tracks public questions and concerns regarding street conditions for evaluation and incorporation into the street resurfacing projects, there has been no formalized process for engagement. Before finalizing the list of street segments for resurfacing each fall, staff will make the information available on the City's website and solicit feedback. Public input will be used to finalize the planned work for the upcoming year, and for the selection of segments considered in future years.

The Plan

The Plan proposes to treat a total of 102 street segments totaling 22.9 centerline miles, representing approximately 24% of the City's roadway network over five years. From this total, 97 street segments will be part of the annual Street Resurfacing Project while five streets are proposed to be resurfaced as separate CIP projects due to their complexity and coordination needs. Since the Plan is a dynamic document, the proposed project list may vary if conditions change.

The Plan also provides an opportunity to implement a number of City transportation priorities as identified in

the Transportation Master Plan, Vision Zero Action Plan (in development), and upcoming revisions to the Neighborhood Traffic Management Program. Where these plans or programs recommend minor striping changes to enhance safety or provide compete streets features, staff will work to integrate these into maintenance projects.

Street Resurfacing Project

The annual street maintenance effort alternates between slurry seal and overlay projects each fiscal year. Table 4 provides a summary of proposed projects under the Plan as categorized between base bid and bid alternates. The base bid segments represent streets in need of repair for which there is sufficient funding for (discussed in further detail in the Impact on City Resources section). Depending on budget availability, bid alternates are also included for the projects in each fiscal year. If the market conditions and/or funding revenues are favorable during construction bidding, staff will consider the addition of these street segments as part of the bid alternate process. If there is insufficient funding, these segments will need to be deferred until future years. A map of proposed base bid street maintenance projects over the five-year period is included as Attachment A. A map of the proposed bid alternate street maintenance projects over the five-year period is included as Attachment B.

Note that the proposed list of streets identified in the Plan will be reviewed during the annual planning phase to account for new or unforeseen conditions, and therefore, may change before construction. In addition, small areas of isolated pavement damage, as reported by roadway users or staff, are addressed separately from the Plan. These areas often need to be repaired quickly and are typically completed by Public Works maintenance staff or the City's on-call contractor for asphalt repair.

Table 4: Summary of proposed annual street maintenance projects

	Base bid		Bid alternate	
Fiscal year	**Streets treated**	**Miles treated**	**Streets treated**	**Miles treated**
Street Slurry Seal Project 2023 – 24	28	5.5	8	1.5
Street Overlay Project 2024 – 25	17	3.7	2	0.2
Street Slurry Seal Project 2025 – 26	21	4.9	17	4.6
Street Slurry Seal Project 2026 – 27	17	3.8	16	2.3
Street Overlay Project 2027 – 28	14	2.7	3	0.3
Separate CIP projects	5	2.3		
TOTAL	**102**	**22.9**	**46**	**8.9**

Separate CIP Projects

The Plan also includes five CIP resurfacing projects. These projects typically have more complex design, funding, or coordination needs and are summarized in Table 5.

In 2021, the City Council held a study session to review rubberized asphalt concrete and hot mix asphalt pavement resurfacing options for upcoming capital projects. Rubberized asphalt is composed of recycled tires, reduces vehicle noise and has a 20-year typical life expectancy compared to 15 years for hot mix asphalt. However, rubberized asphalt costs 20 to 25% more than hot mix asphalt and is generally more labor intensive to install. The City Council directed staff to use rubberized asphalt concrete as a bid alternate to hot mix asphalt for:

- Projects proposing a 1.2 to 2.4-inch top lift overlay
- Projects along arterial or collector streets
- Projects planned for summer construction

The streets identified in Table 5 meet the above criteria, therefore, rubberized asphalt will be included as a bid alternate on these projects.

Table 5: Summary of separate CIP projects

Street	From	To	PCI	Tentative schedule
Bay Road	Van Buren Road	Ringwood Avenue	32	FY 2025 – 26
Middle Avenue	San Mateo Drive	El Camino Real	68	FY 2025 – 26
Sand Hill Circle	Sand Hill Road	End of Loop	27	FY 2026 – 27
Sand Hill Road	Sand Hill Circle	City Limit (adjacent to I-280 ramp)	46	FY 2026 – 27
Middlefield Road	Willow Road	City Limit	48	FY 2027 – 28

Notes:
1. Fiscal yes (FY)
2. Sand Hill Circle has a PCI of 27. Although this road is not an arterial or collector street, its current pavement condition qualifies it for a deep overlay. Rubberized asphalt will be considered for this project, because it will be constructed as part of the same project as Sand Hill Road. Using two different types of asphalt concrete during a single project would not be cost effective.

Streets not in the Plan

Although the Plan is comprehensive, 25 street segments with a PCI lower than 50 could not be included for resurfacing due to budget constraints. This is included as Attachment C. As these are shorter segments and experience lower traffic, staff will assess if spot repairs can be made through the City's on-call asphalt repair contract to improve these roads. If the streets require more extensive rehabilitation, they will be monitored and evaluated as part of the annual updates to the Plan, but given the overall budget constraints for the project, other streets may be displaced to accommodate this work unless other funding sources are identified. Given the extensive and costly rehabilitation needed for streets in poor condition, staff expects that repairing all these remaining streets will take more than the five-year planning horizon of this Plan. If more resources were allocated to repair more streets in poor condition, less preventative maintenance would be done and the overall pavement condition would be expected to worsen significantly over the next 10 years.

Impact on City Resources

The proposed Plan was developed to utilize the funding sources anticipated over the next five years. No additional appropriations or resources are requested at the present time. The Plan would be funded through a combination of the highway user's (gas) tax, construction street impact fees, Measure W, Senate Bill 1 (SB-1), and the General Capital Fund (a nominal carry-over amount that was appropriated in prior fiscal years). Collectively, the City anticipates $3,300,000 per fiscal year from these funding sources. Measure W, a countywide sales tax measure that provides funding for paving or transportation projects, may be applied toward transportation safety improvements (e.g., striping changes, traffic calming, closing small sidewalk gaps, etc.) which often accompany street maintenance projects. Staff anticipates programming Measure W funds into the street resurfacing projects starting in fiscal year 2024-25 to supplement the funding for pavement maintenance, and support the ability to achieve safety improvements as part of street

maintenance.

There is approximately $5,100,000 remaining in available funding for the Plan this fiscal year. Per Table 6, staff anticipate that there will be sufficient funding for the Plan, however, available funds will be reviewed annually during the development of the CIP and as projects are planned to account for annual revenue fluctuations. The estimated costs include consultant services, staff administration fees, construction costs and contingencies. Staff also utilized an annual inflation factor of 5% for construction costs. Depending on bids and pricing, proposed street segments may be eliminated in the event of a funding shortfall. As described above, staff has outlined base bid and bid alternate street segments to reduce the likelihood of unanticipated funding shortfalls.

The Plan identifies five separate CIP projects which may include extensive scopes of work beyond street maintenance (such as intersection, traffic calming, sidewalks and utility upgrades). These projects may also draw from other funding sources, such as Measure A countywide sales tax measure for transportation, impact fees or grants. The City also uses a portion of the annual street maintenance budget for its on-call asphalt repair contract (typically used for small pavement damage in addition to the streets identified in the Plan).

Table 6: Estimated funding and project costs (base bid)

	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	FY 2027-28	5 Year Total
Funding						
Highway User's Tax (Gas Tax)	$1,680,000	$890,000	$920,000	$980,000	$950,000	$5,420,000
Construction Impact Fees	$2,360,000	$1,300,000	$1,300,000	$1,300,000	$1,300,000	$7,560,000
Measure W	$50,000	$565,000	$290,000	$310,000	$300,000	$1,515,000
SB-1 (HUT Repair and Maintenance)	$840,000	$720,000	$740,000	$785,000	$760,000	$3,845,000
General Fund	$165,000					$165,000
Cal-Rec Grants	-	-	$250,000	-	-	$250,000
Estimated funding total	**$5,100,000**	**$3,475,000**	**$3,500,000**	**$3,375,000**	**$3,310,000**	**$18,760,000**
Proposed projects						
Street Resurfacing Project	$1,848,000	$3,517,000	$1,365,000	$1,418,000	$3,626,000	$11,837,000
Separate CIP Projects						$4,253,000
On-Call Asphalt Repair Contract	$420,000	$420,000	$420,000	$420,000	$420,000	$2,100,000
Estimated project costs						**$18,190,000**

Notes:
1. The estimated project costs do not include the rehabilitation of street segments included as part of a bid alternate.

For the separate CIP projects, the estimates do not include the costs of rubberized asphalt concrete due to insufficient funding at this time. The projects will be bid with the use of rubberized asphalt as a bid alternate in order to preserve options for the City Council.
In summary, the Plan will maintain the City's PCI in the good category at the end of five fiscal years. The approach is proactive and addresses pavement deterioration to minimize more costly and invasive

treatment options associated with deferred maintenance.

Environmental Review

This action is not a project within the meaning of the California Environmental Quality Act (CEQA) Guidelines §§ 15378 and 15061(b)(3) as it will not result in any direct or indirect physical change in the environment.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

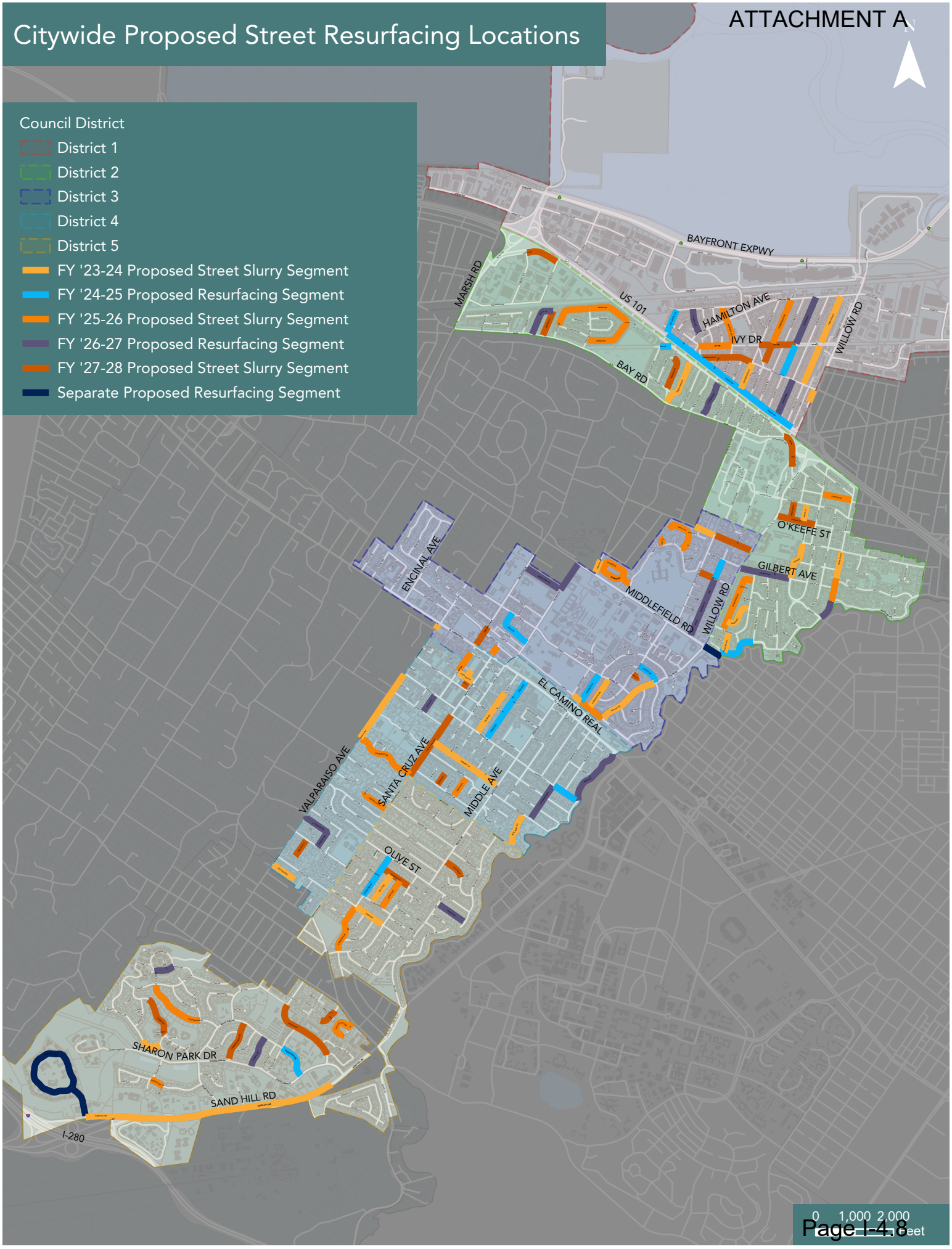
A. Map of base bid street segments included in the Plan
B. Map of bid alternate street segments that are included in the Plan
C. Map of the street segments under 50 PCI, not included in the Plan

Report prepared by:
Michael Fu, Senior Civil Engineer

Report reviewed by:
Tanisha Werner, Assistant Public Works Director
Azalea Mitch, Public Works Director

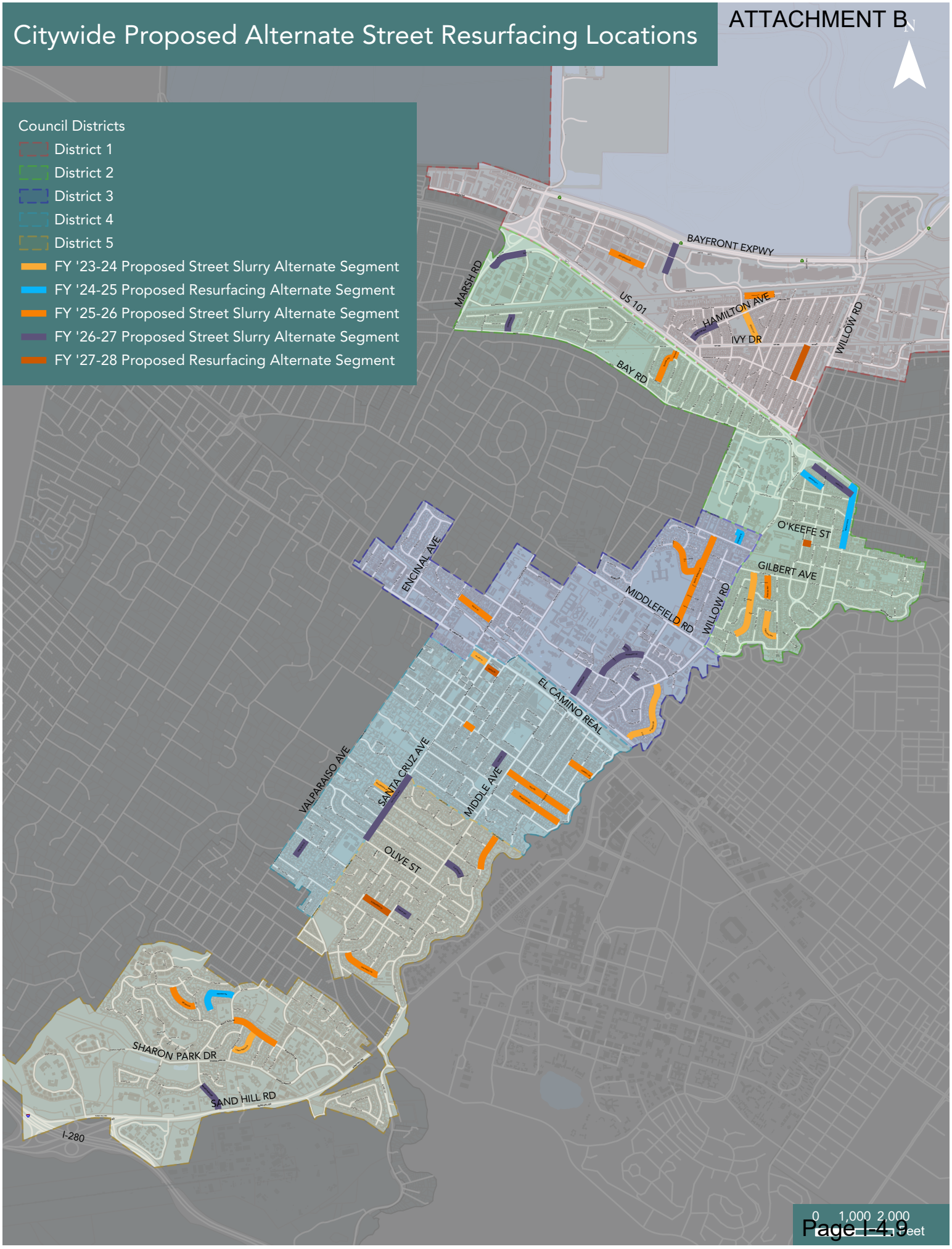
Citywide Proposed Street Resurfacing Locations

ATTACHMENT A



Citywide Proposed Alternate Street Resurfacing Locations

ATTACHMENT B



Citywide Proposed Street Resurfacing Locations (PCI < 50)