

Condition of Road Pavement and Map

Background

At the January 19, 2018, Strategic Session Workshop, Vice-Mayor Klein and Council Members Griffith and Melton requested information on several aspects of the condition of the City's road pavement. The inquiries related to the methodology used to rate the condition of pavement, the reason for the drop off in the pavement condition index (PCI) and if this is a budget issue, the streets in the poorest condition, and the plan to achieve the City's PCI goal of 80.

Discussion

A. Pavement Condition Index

In the Bay Area the condition of asphalt concrete road pavement is measured by the Pavement Condition Index, or PCI. The PCI rating number is determined by the jurisdiction responsible for a roadway, and intermittently checked by the Metropolitan Transportation Commission (MTC).

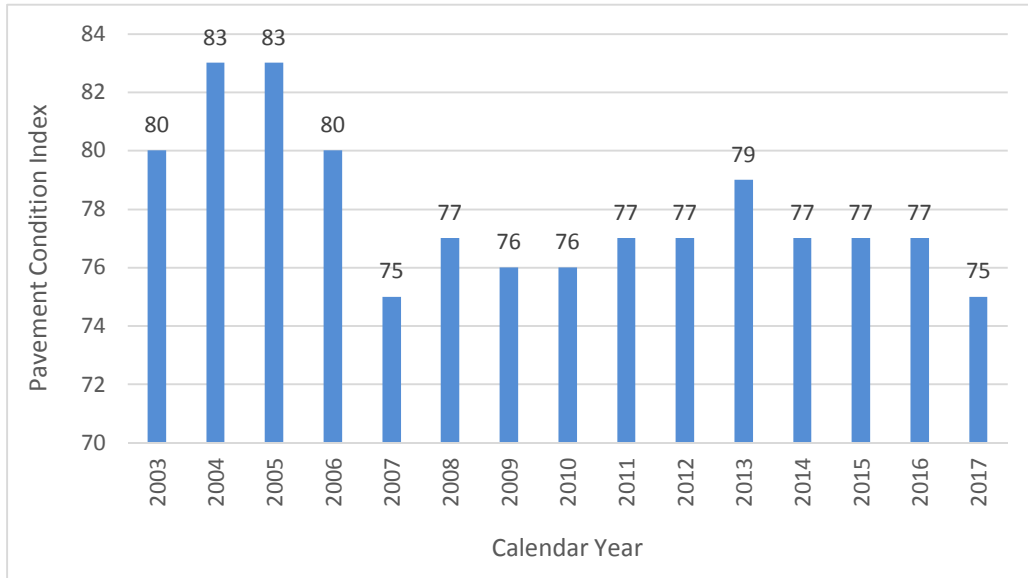
The rating scale of the PCI is from 0 to 100, with 100 equal to the condition of a newly constructed road. The rating of road segments is determined by experienced individuals who consider the signs of deterioration including alligator cracking, block cracking, pavement cuts (caused by utilities or roadway patching), rutting, depressions, weathering (discoloration) and raveling (exposure of aggregates). The assessment is analytically based, and competent raters will have very similar results. Approximately one-half of the City's roads are surveyed by City staff annually. MTC inspects City streets as resources and time permits.

The below chart shows the MTC qualitative definitions for various PCI thresholds. Some of the definitions and thresholds have changed since the Pavement System Maintenance Study Final Report was considered by the City Council in 2013.

MTC Definitions			
100			100
95			95
90			90
85	Good to Excellent	Very Good	85
80			80
75			75
70			70
65	Fair	Good	65
60			60
55			55
50			50
45	Poor	Poor	45
40			40
35			35
30			30
25	Very Poor / Failed	Very Poor	25
20			20
15			15
10			10
5			5
0			0
2013		Current	

B. Sunnyvale PCI

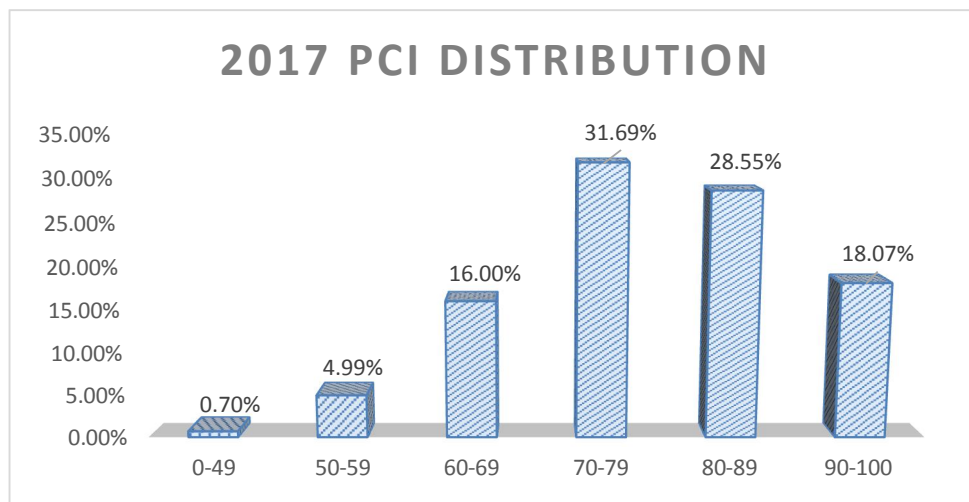
The City's goal is to achieve and maintain an average PCI rating of 80. To determine the average PCI, the 260 miles of City streets (center line miles) have been divided into nearly 1800 sections. Each section is rated and given a PCI number. Annually the current PCI ratings for the road sections are totaled and the average is calculated. The average PCI ratings for the past 15 years are shown in the following chart.



The dip in the PCI rating in 2017 reflected the suspension of the City's normal chip sealing program due to the need to upgrade a key piece of equipment. The new equipment, a self-propelled chip spreader, will be deployed beginning with the 2018 pavement maintenance season. Another factor that may have contributed to the dip in PCI rating was the anomaly that MTC, versus City staff, conducted the PCI ratings in 2017.

C. Existing Condition of Sunnyvale Streets

The current PCI ratings for the City's street sections ranges from 29 to 100. 47% of all street sections have a PCI equal to or higher than 80. The majority (53%) of the street sections are less than 80. The below chart shows the percentage of street sections by PCI.



There are 27 street sections in Sunnyvale with a PCI rating of less than 50. These streets fall into the category of “poor condition” and represent less than 1% of all City streets. These street sections are shown in the attached map. It is noteworthy that half of the streets are residential cul-de-sacs. These streets are particularly impacted by the stopping, starting and the turning movements of large trucks.

D. Plan to Move Forward

Over the next 3 years, the average PCI is projected to increase from 75 to 80, with the budget assumptions as shown in the following chart.

FUNDING (millions) No adjustment for cost-of-living					
Fiscal Year	Status	Operating Budget	Capital Budget	SB 1	Total
2017-18	Adopted	\$3.8	\$3.0	\$0.8	\$7.6
2018/19	Assumed	\$3.8	\$3.0	\$2.5	\$9.3
2019/20	Assumed	\$3.8	\$3.0	\$2.5	\$9.3
2020/21	Assumed	\$3.8	\$3.0	\$2.5	\$9.3

A key to the improvement in PCI is the application of a very cost/effective method of pavement treatment. The City uses an “enhanced” type of sealing the pavement surface that includes two applications of gravel (chips) and a follow-up placement of crushed granite and oil (slurry seal). This treatment is costlier than a single application of either chips or slurry, but much less costly than the placement of an asphalt concrete overlay, or the reconstruction of a street.

E. Pavement Condition Metric

The average PCI is a commonly used metric by Bay Area cities. It allows cities and MTC to easily compare the condition of pavements between jurisdictions and to monitor changes.

In addition to the average PCI, the City of Sunnyvale maintains another metric that is reported in its Adopted Budget. The metric is the percentage of street segments rated in good or better condition. The threshold for this rating is a PCI of 70 or higher, which is consistent with the MTC definition that existed at the time the metric was established. The performance data for this metric is shown in the following chart.

Type of Street	FY 2014/15 Actual	FY 2015/16 Actual	FY 2016/17 Actual	FY 2017/18 Target	FY 2018/19 Target
Local > PCI 70	76%	75%	74%	80%	86%
Arterial > PCI 70	84%	80%	85%	85%	85%

The above targets for fiscal years 2017/18 and 2018/19 reflect the budget assumptions shown in section D above.

Attachment - Map of Streets Rated in “Poor” Condition

