THE CITY OF SAN DIEGO

REPORT TO THE CITY COUNCIL

DATE ISSUED: March 6, 2015 REPORT NO: 15-026

ATTENTION: Infrastructure Committee

SUBJECT: Street Pavement Repair Program

REQUESTED ACTION:

THIS IS AN INFORMATION ITEM REPORT ONLY. NO ACTION IS REQUIRED BY THE COMMITTEE OR THE CITY COUNCIL.

BACKGROUND:

In January 2015, the Infrastructure Committee requested that Street Division present a report on the condition of the City streets in 2015 and the plans to accomplish the Mayor's goal of performing 1,000 miles of street repairs in five years. This report will detail the resources required to deliver the Mayor's goal of performing 1,000 miles of street repairs in five years as well as to bring the overall street network to an average Overall Condition Index (OCI) to 70 in the next ten years. Detailed information on the following subjects will also be shared:

1. Overview of City Street Network
2. Condition of City Streets
3. Condition Benchmarking
4. Selection Criteria for Street Repair
5. Types of Street Repair
6. Historical Spending and Repairs

OVERVIEW OF CITY STREET NETWORK

As of 2015, the City of San Diego's current street network consists of approximately 2,800 miles of streets. This includes 2,659 miles of asphalt streets, 115 miles of concrete streets, and 203 miles of paved alleys.

CONDITION OF CITY STREETS

As a result of the 2009 performance audit of Street Division's functions, the Office of the City Auditor recommended a complete citywide street assessment survey be performed at least every four years. The goal of these assessments is to provide City leaders and asset managers with a representative condition of the City's street network for maintenance and budgeting purposes. Following the industry standards for measuring pavement distress originally developed by the Army Corps of Engineers, and also incorporating surface roughness, the Street Division rates and monitors the condition of streets using an Overall Condition Index (OCI) indicator. The OCI rating is based on a scale from 0 to 100 using many road attribute condition factors. These factors include: type of street, age, oxidation, rate of deterioration, average daily traffic, types and size of cracks, number of potholes, previous maintenance, and quality of ride. Streets are placed in one of three categories based on the OCI: Good, Fair, or Poor.

Good - A street in the good condition category has little or no cracking, potholes, or other distresses, has excellent drivability, and does not need maintenance. A street in good condition has an OCI rating between 70 and 100.

Fair - A street in the fair condition category has moderate cracking, some minor potholes, has adequate drivability, and is typically in need of remedial repairs and a slurry seal, or a minor asphalt overlay which may include remedial repairs. A street in fair condition has an OCI rating between 40 and 69.

Poor - A street in the poor condition category has severe cracking, numerous areas of failed pavement with possible sub base failure, exhibits a rough ride and qualifies for a comprehensive asphalt overlay or a total reconstruction. A street in poor condition has an OCI rating between 0 and 39.

Data from the last survey in 2011 revealed that 35% of the streets were in good condition, 40% were in fair condition, and 25% were in poor condition. The following chart compares the results of the 2011 Citywide pavement survey with previous partial-network assessment surveys conducted.

Table 1: Historical Pavement OCI

Year	2001	2003	2007	2011	2015
Average OCI	67	62	63	54.6	Pending

Since the condition assessment performed in 2011, 252 miles of streets have been paved and 475 miles have been slurry sealed. A new survey of pavement conditions is currently being conducted, and the results of this survey will be available in the fall of 2015.

CONDITION BENCHMARKING

Municipalities target different goals for their street networks depending on availability of funding, size of the street network, and other needs and priorities. Any condition goal should be specific to the needs of San Diego as there are no defined national industry standards for average OCI.

Table 2: Condition Index Comparison

California City	Street Network	Average Condition*	Assessment Year
San Diego	2,574 centerline miles	54.6	2011
Los Angeles	6,500 centerline miles	61.52	2011
San Jose	2,400 centerline miles	63	2014
San Francisco	2,112 lane miles	67	2014
Oakland	1,964 lane miles	55	2009

* *Methodology for calculation of condition index may vary by City*
Sources: 2011 City of Los Angeles State of the Streets Report
Metropolitan Transportation Commission, "Pavement Condition of Bay Area Jurisdictions 2009"
Press Release, "San Francisco Street Pavement Condition Improves for Third Straight Year"

SELECTION CRITERIA FOR STREET REPAIR

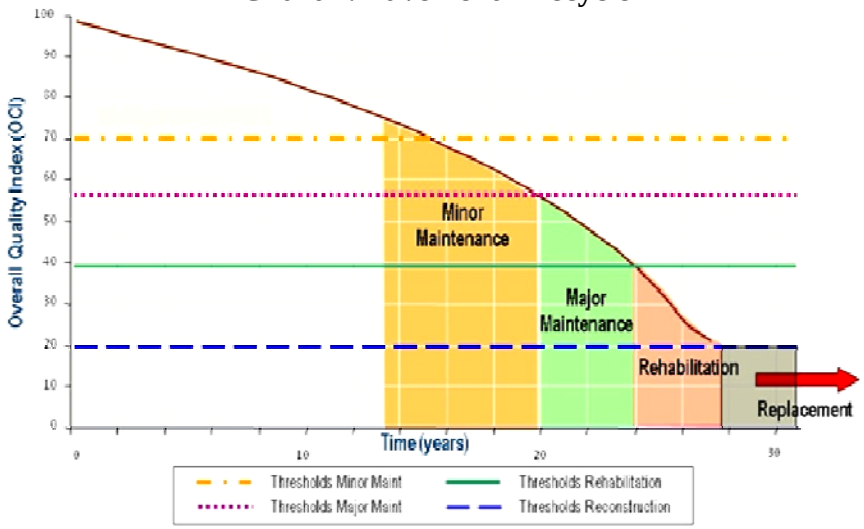
Current methods of maintenance utilized within the City's Street Resurfacing Program include asphalt overlays and slurry seal surface treatments. Streets are selected for overlay or slurry sealing based on established criteria. These criteria are:

- Overall Condition Index (OCI)
- Maintenance History
- Functional Classification
- Proximity to Emergency Facility/School/Tourist Attraction
- Community Input
- Mayor/Council Input

The primary criterion used in the street selection process is the Overall Condition Index (OCI) of a particular street segment. The OCI data from pavement assessment surveys is contained in the Pavement Management System. This system stores current and historical OCI data. This data includes the frequency and severity of various pavement distresses such as potholes and cracking, as well as ride quality. The Pavement Management System assists staff in the decision-making process of which streets are in need of specific maintenance activities. The software then determines the best method to maintain each section of street and analyzes the entire city street system to find the most cost effective maintenance plan given specific budget constraints.

The following chart is a typical street deterioration curve from the Pavement Management System. This deterioration curve illustrates that streets which are successfully maintained at an OCI of approximately 60 or higher require much less extensive major maintenance activities such as asphalt overlays.

Chart 1: Pavement Lifecycle



The most cost effective way to extend a street's service life is to perform minor maintenance, typically surface treatments such as slurry seal, before it reaches the critical deterioration drop-off point referred to on Chart 1 as 'Major Maintenance'.

TYPES OF STREET REPAIR

Asphalt Paving / Overlay - Asphalt paving is the placement of a new layer of asphalt at a thickness of 1 to 3 inches over an old worn out street surface. On streets for which the existing surface has only deteriorated slightly, but beyond the point of applying a slurry seal, asphalt is placed directly on top after a bond coating is applied. For more heavily deteriorated surfaces, approximately 2 inches of existing pavement is removed and new asphalt is then placed on top, providing a new driving surface and keeping the existing roadway profile. These types of capital repairs are contracted out to private paving companies.

Slurry Sealing - Slurry Sealing is a seal coat treatment which consists of sand, emulsion, and water applied in a thin layer up to a 3/8 of an inch thick across the street surface. A slurry seal coating is used to preserve the state of asphalt pavements in 'fair' to 'good' condition. As part of this process, crack sealing and occasional surface repairs can be recommended by pavement specialists prior to sealing. Since 1998, Street Division has utilized a rubberized slurry seal. This material incorporates rubber from recycled tires, retains a darker finish longer and is a more resilient coating product. Since beginning the rubberized slurry seal program, rubber from over 750,000 tires has been used. All slurry seal projects are contracted out to private paving contractors.

Concrete Replacement – Unlike asphalt, concrete streets cannot be resurfaced and need to be completely reconstructed. Repairs to concrete streets range from patching with asphalt to removal and replacement of isolated concrete panels or complete reconstruction of the entire roadway. Large scale concrete pavement replacement is contracted out to private companies.

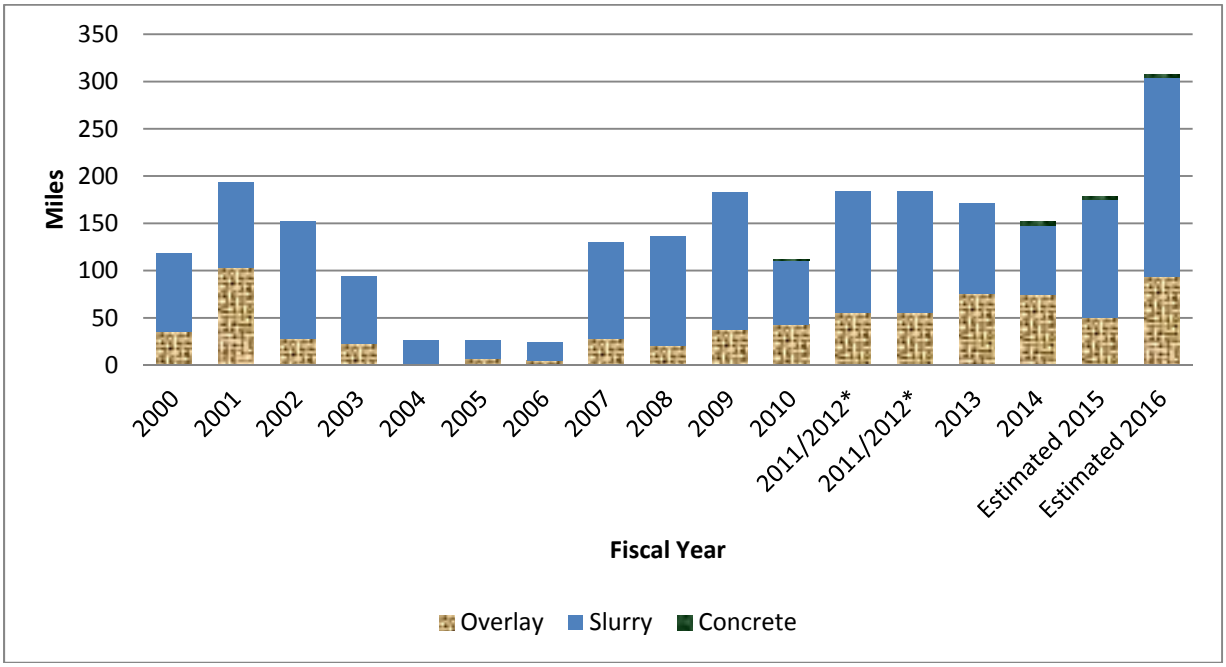
Street Reconstruction – Once a street's asphalt pavement exhibits visible signs of several distresses and its OCI has fallen below 25, the street most likely requires reconstruction. This is fundamentally because the base layers under the asphalt need to be replaced and re-compacted before new asphalt can be applied. A majority of the streets in the 'poor' category require this type of repair. Reconstruction is more costly than asphalt paving.

Minor Asphalt and Concrete Repair - These types of street repairs are usually less than one city block in length and width and are performed by City maintenance staff. Examples of repairs in this category are pothole patching, small asphalt paving (100 to 5,000 square feet), concrete alley repairs, and concrete cross-gutter repairs.

HISTORICAL SPENDING AND REPAIRS

For many years, the funding allocated to pavement preservation was well below the funding required to prevent network-wide deterioration. The graph below shows the miles of street repairs completed in each fiscal year since 2000.

Chart 2: Street Division Pavement Repairs Fiscal Years 2000-2016



* There were contract delays in Fiscal Year 2011 and as a result the majority of the programmed Fiscal Year 2011 repairs were executed in Fiscal Year 2012. The average miles completed in Fiscal Years 2011 and 2012 is displayed.

Given tight financial constraints and competing priorities for funds, the City Council adopted a Five-Year Deferred Capital Program Funding Plan on March 20, 2012, known as Enhanced Option B. Through the appropriation of bond funds, the utilization of Proposition 42 Replacement and TransNet funding, and with additional General Fund budget support for maintenance and repair efforts, the City intensified efforts to address the condition of city streets. This funding plan was intended to slow the deterioration of City assets, including the street network.

The table below shows the amount of paving, slurry sealing, and concrete street replacement that has occurred since Fiscal Year 2010. The number of total miles of street pavement estimated to be repaired in Fiscal Year 2016 is double the number of miles repaired in Fiscal Year 2014.

Table 3: Street Division Pavement Repairs and Expenditures Fiscal Years 2010-2016

Fiscal Year	Asphalt Paving Miles	Slurry Seal Miles	Concrete Repair Miles	Total Miles	Expenditures (in millions)
2010	43	68	1	112	$24.7
2011/2012*	55	129	0	184	$31.6
2011/2012*	55	129	0	184	$31.6
2013	76	95	0	171	$41.1
2014	74	74	4	152	$37.7
2015**	50	125	4	179	$41.5
2016**	94	210	4	308	$73.6
OCI-70**	130	250	10	390	$108.2

* There were contract delays in Fiscal Year 2011, and as a result the majority of the programmed Fiscal Year 2011 repairs were executed in Fiscal Year 2012. The average miles completed in Fiscal Years 2011 and 2012 is displayed

** Estimated figures

On January 16, 2015, the City published the City of San Diego Fiscal Years 2016 - 2020 Consolidated Multi-Year Capital Planning Report, a five-year plan that included a higher service level standard for pavement condition. This report proposes a service level standard of an average OCI of 70 by Fiscal Year 2025. To reach this goal, based on assessment data from Fiscal Year 2011, the City will need to repair an average of 390 miles each year for the next 10 years. If the Street Division were to implement the entire effort, $108.2 million would be needed annually; however, the City has a large capital improvement program which includes projects that when completed include resurfacing of streets, such as water and sewer group jobs. In Fiscal Year 2014, these capital improvement projects repaired nearly 30 miles of streets. The required repairs to reach the goal will be updated upon completion of the 2015 pavement condition assessment later this year.

RECOMMENDATIONS

To improve service levels and to minimize future pavement management costs, it is recommended that the average OCI for the street network be increased to 70. The table below shows the estimated average annual cost required to reach an average OCI rating of 70 by Fiscal Year 2025 based on the City's current OCI rating of 54.

Table 4: Funding Estimates for OCI of 70
(in millions of dollars)

	Status Quo of 2011 OCI		Additional for OCI=70		Total for OCI=70	
	Cost	**Miles**	**Cost**	**Miles**	**Cost**	**Miles**
Asphalt Overlay	$47.0	94	$16.8	31	$63.8	125
Asphalt Reconstruction			$5.2	5	$5.2	5
Concrete	$3.6	3	$10.5	7	$14.1	10
Pavement CIP Subtotal	**$50.6**	**97**	**$32.5**	**43**	**$83.1**	**140**
Slurry	$20.8	208	$4.3	42	$25.1	250
Pavement Total	**$71.4**	**305**	**$36.8**	**85**	**$108.2**	**390**

Upon reaching an average OCI of 70, the ongoing effort to maintain the street network in the improved condition will cost less but will still require an ongoing funding commitment to perform maintenance.

The current cost estimates will change once the outstanding condition assessment is completed and the City's updated OCI rating is obtained. While it is difficult to predict, Street Division is anticipating a positive trend in OCI. The Fiscal Year 2016 proposed road repairs are a significant service level enhancement from the Council-approved deferred capital spending plan Enhanced Option B for street assets. Funding requirements and sources of funding, including cash, will be evaluated annually by the Financial Management Department. The proposed issuances for Fiscal Years 2015 through 2019 are shown below.

Table 5: FY2015-2019 Lease Revenue Bonds

FY2015	FY2016*	FY2017	FY2018	FY2019
$120M	-	$90M	$90M	$90M

* Due to the court case, San Diegans for Open Government v. City of San Diego, et al., the $120.0 million bond which was originally schedule for issuance in May 2014 was delayed until April 2015. With the new cash management process improvements, this bond will support Fiscal Year 2016 street repairs.

Previously, the City Council earmarked $43.5 million of the $120.0 million issuance for street repair and replacement. Beginning in Fiscal Year 2016, it is recommended that up to two-thirds of the Lease Revenue Bonds planned for Fiscal Years 2017 through 2019 will be used to support the prioritization of road repair. However, based upon the street annual work program and assessment of the work completed, as well as an analysis of the funds available in eligible fund sources, the proportion of funds recommended to be used via the proposed bonds may change. This is a modification to the Mayor's FY2016 – FY2020 Five-Year Financial Outlook released

on November 14, 2014 and the Lease Revenue Bond financing plan in the Enhanced Option B deferred capital funding plan.

Table 6, below, shows projected funding for street pavement repair for Fiscal Years 2016 through 2019.

Table 6: Projected Fiscal Year 2016 – 2019 Streets Funding (in millions)

	FY2016 Projection	FY2017 Projection	FY2018 Projection	FY2019 Projection
Cash - New	$15.8	$6.2	$24.8	$27.0
Cash - FY15 Continuing Appropriations	$13.4	$18.1	TBD	TBD
Debt - New	-	up to $60.0	up to $60.0	up to $60.0
Debt - FY15 Continuing Appropriations	$44.4	$5.0	-	-
Total	**$73.6**	**TBD**	**TBD**	**TBD**

For Fiscal Years 2016 through 2019, street pavement repair will be supported by cash from Gas Tax, Prop 42 Replacement, TransNet, and the General Fund as well as Lease Revenue Bonds (Debt). The new cash includes amounts identified to-date and will change in future years with continued cash management improvements and CIP efficiencies that will identify cash to be dedicated to street pavement repair. This funding plan will meet or exceed the funding plan in the Enhanced Option B deferred capital plan for maintenance and repair (M&R) as well as capital funding for City streets.

PREVIOUS COUNCIL and/or COMMITTEE ACTION:

March 20, 2012, City Council, "Five-Year Deferred Capital Program Funding Plan"
January 21, 2015, Infrastructure Committee, "City of San Diego Fiscal Years 2016 - 2020 Consolidated Multi-Year Capital Planning Report" (Report 15-008)

for

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