DATE ISSUED: November 10, 2011 REPORT NO: 11-153

ATTENTION: Land Use & Housing Committee
Agenda of November 16, 2011

SUBJECT: 2011 Street Condition Pavement Report

REFERENCE: Performance Audit of the City's Street Maintenance Functions, October 2009 and Resolution R-306521

SUMMARY

THIS IS AN INFORMATION ITEM ONLY. NO ACTION IS REQUIRED ON THE PART OF THE COMMITTEE OR THE CITY COUNCIL.

BACKGROUND:

The Land Use and Housing Committee requested the Transportation & Storm Water Department to provide an update report on the most recent street condition assessment activities. This report addresses that request and provides:

1. An Overview of the City's street network
2. Current conditions of City streets
3. Information about the types of street maintenance activities
4. Selection criteria for street maintenance
5. An overview of the California street network conditions

1. OVERVIEW OF CITY STREET NETWORK

The City of San Diego's 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 and 37 miles of unpaved alleys.

The Street Division's goal is to conduct pavement assessment surveys of its streets network once every four years. Since 2001, the Division has retained specialized pavement engineering consultants to perform street pavement condition assessments for the City. These surveys have varied in scope though they have all provided enough information to guide condition assessments and the prioritization of street repair efforts. The most recent survey described in

this report was the most comprehensive to date and has allowed the Department to develop a more detailed analysis of current street conditions. The cost for the survey was $557,000 and took place from March through June of 2011.

The most recent survey included all streets and alleys in the City (37 miles of unpaved alleys were excluded) for the first time and collected three dimensional digital mobile mapping of all the City streets. Previous assessments in the past decade have only physically covered approximately 50% of the total street network. This was enough coverage to calculate reasonable needs assessments and budget requirements. The more thorough current survey has allowed City staff to specifically tailor the City's pavement management system to assess/review the current condition of any street section, predict the future street condition for various budget and service levels, set criteria for applying various treatment strategies to each pavement section, calculate costs associated with each maintenance strategy, and prioritize all maintenance work on a network-wide basis.

The current comprehensive survey also fulfills a recommendation of the City Auditor. The Auditor called for a comprehensive survey to be done in advance of any selection of streets for future resurfacing contracts. The 2011 survey meets that objective.

2. CONDITION OF CITY STREETS

As in previous surveys, the 2011 survey provides an overall, albeit more thorough, assessment for all City streets. In addition, it also provides detailed assessments of each street segment.

All of the assessments utilize a scoring system or "Overall Condition Index (OCI)." The OCI rates street segments on a 100 point scale with 100 representing a street in the best condition. The OCI is derived through a formula that considers the type of street, it's age, oxidation status, the rate of deterioration, average daily traffic volumes, the types and size of cracks, the number of potholes, previous maintenance history, and finally, the quality of ride when tested under typical driving conditions.

Streets are placed in one of three categories based on the OCI: Good, Fair or Poor.

Good – This ranking includes streets with little or no cracking, potholes, or other distresses having excellent drivability and not currently needing maintenance. A street in good condition has an OCI rating between 70 and 100.

Fair – This ranking includes streets with moderate cracking, minor potholes and 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 – Any 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

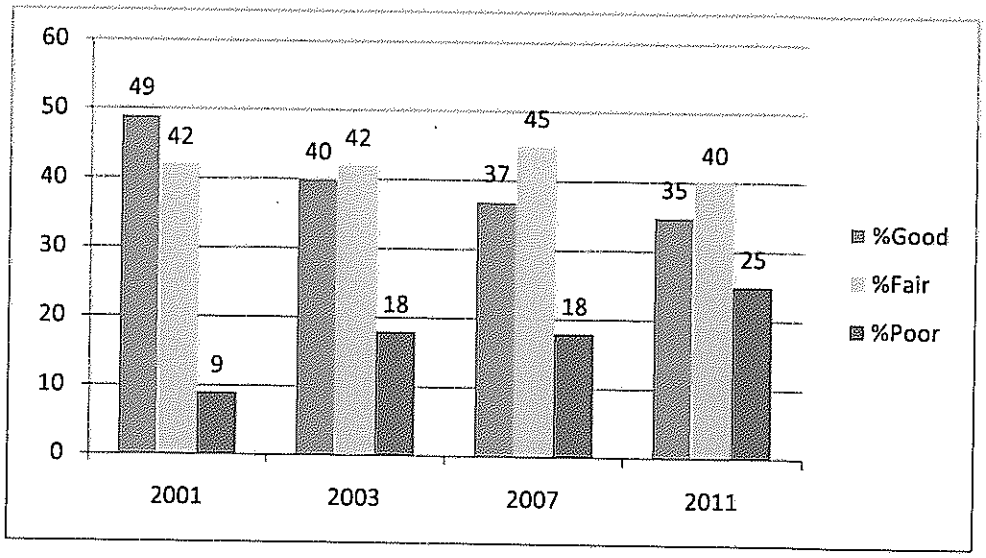
comprehensive asphalt overlay or a total reconstruction. A street in poor condition has an OCI rating below 40.

The table below compares overall assessments of the 2011Citywide survey OCI value with previous assessment surveys conducted in 2001, 2003 and 2007. In addition, the table shows the projected citywide OCI values following completion of all funded FY10, FY11 and FY12 resurfacing projects currently in construction or in planning stages. This table is for illustrative purposes only since comparing the 2011 data to previous years does not provide a strict apples to apples comparison, however, when comparing average OCI for only the streets which were originally surveyed in 2007 with the average OCI for the same streets surveyed in 2011taking into consideration all the resurfacing projects in the pipeline (FY10, 11, &12 projects), it appears that the average OCI would drop only by 0.8. This can be attributed mostly to the fact that the 2007 survey included a majority of Prime, Major, and Collector streets. Approximately 15% of the streets surveyed in 2007 are currently on our resurfacing contracts. Previous condition assessments were not as comprehensive and thus the 2011 results, although not favorable, are not unexpected. Much work remains to be done to bring our City's streets back up to an acceptable level and our ongoing "catch up" efforts with deferred capital bond and other financing are designed to do just that, as represented in the last two columns.

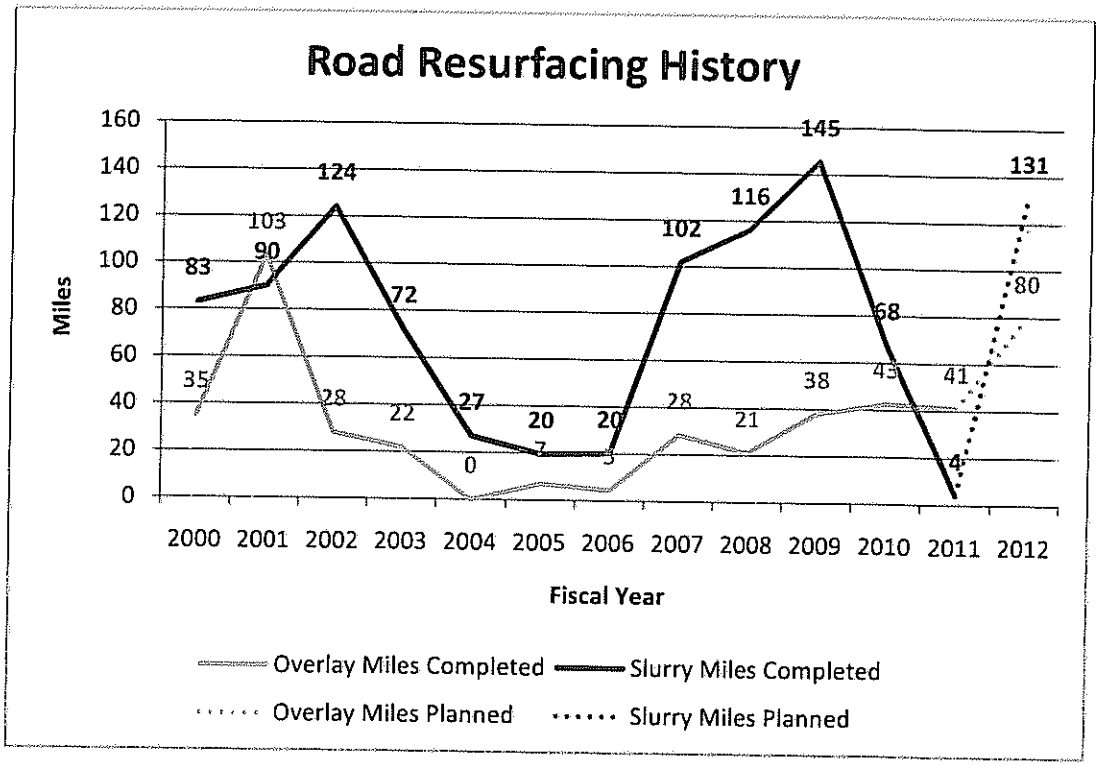
2001 OCI	2003 OCI	2007 OCI	2011 OCI	(Adjusted)* OCI	(Adjusted)** OCI
67	62	63	54.6	57.6	58.9

*Includes FY10 Street Division contracts
**Includes FY11 & FY12 Street Division contracts

Data from the 2011 survey reveals that currently 35% of City streets are in good condition, 40% are in fair condition and 25% are in poor condition. The chart below compares the percentage of each condition category of the 2011 survey with previous surveys conducted in 2001, 2003, and 2007. Street deterioration could be the result of many things, including more vehicle miles driven, larger and heavier buses and more frequent stops, heavier and more garbage, recycling, and green waste trucks, more street sweeping, and more freight and delivery trucks. Since we are in the midst of a major road repair program, the department believes this assessment represents the low point and that the next streets condition assessment will reflect the upward movement we all expect and desire and that our citizens demand and deserve.



The following chart shows the street resurfacing effort from 2000 through 2012. This chart also includes planned and funded resurfacing miles anticipated to be completed by 2012. It is important to note that this decade represents a time period of significant financial challenges in the City and illustrates the ups and downs the department must deal with as street repair needs compete with other priorities with limited resources during each year's budget cycle. This chart also illustrates a time period when the City was unable to access the bond markets for capital needs.

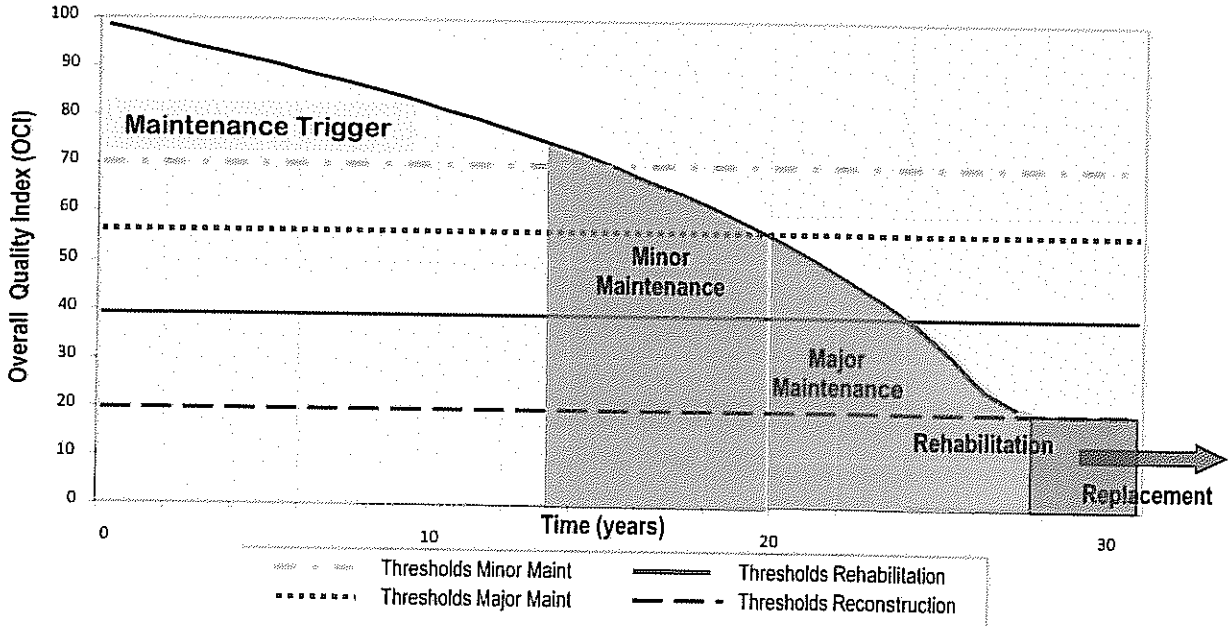


3. SELECTION CRITERIA FOR STREET MAINTENANCE

Current methods of maintenance utilized within the City's Street Resurfacing Program include asphalt overlays and slurry seal surface treatments. The primary determinant used for selecting street segments for a specific type of maintenance is the scoring under the Overall Condition Index. The City's computerized Pavement Management 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 information added about 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 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 less extensive major maintenance activities such as asphalt overlays. On the other hand streets with lower OCI values require major work and therefore higher maintenance cost and ultimately may require a capital expense.



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

4. TYPES OF STREET MAINTENANCE ACTIVITIES

Concrete Pavement – Repairs to concrete streets range from patching with asphalt to removal and replacement of isolated concrete panels to complete reconstruction of the entire roadway. All concrete repairs are performed by city forces.

Overlay - Asphalt Overlay is the placement of a new layer of asphalt at a thickness of 1-3 inches over an old worn out street surface. Overlaying also includes the repair of isolated base failures, and grinding at the gutter line to retain proper drainage characteristics. The overlay resurfacing program is contracted out to private paving companies. Minor street repairs and pothole patching are handled by City forces.

Surface Treatments - Slurry Sealing is a seal coat treatment which consists of sand, emulsion, and water applied in a thin layer up to a 1/4 of an inch thick across the street surface. A slurry seal coating is used to preserve the state of asphalt pavements in 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 550,000 tires has been used. All slurry seal projects are contracted out to private paving contractors.

5. CALIFORNIA STREET NETWORK CONDITION

In 2010, the League of California Cities tasked Nichols Consulting Engineers with performing a comprehensive study of the current statewide pavement condition. It was concluded that two-thirds of California's local streets have an OCI of less than 70. Based on the results of the survey, the 2010 pavement condition statewide was 66. A sampling of the pavement condition for various California cities is shown below.

JURISDICTION	CENTER LINE MILES	2010 OCI
City of Oakland	820	58
City of San Diego	2,774	58*
City of Los Angeles	6,500	62
City of San Jose	1,744	63
City of San Francisco	850	64

*Adjusted OCI based on completed FY'10 Projects

CONCLUSION

The result of the 2011 pavement assessment survey shows a drop in the overall condition of the City's street network as a result of years of deferred maintenance and the need for a multi-year effort to bring our streets back. The recent considerable commitment of additional funding should help on that front. In addition, as has been widely reported, until recently, the city has struggled to surmount a wide variety of hurdles for awarding and initiating the contracts necessary to accelerate street repair efforts and it is our hope that Council adopts the needed reforms to that process expeditiously, so that critical road repairs can continue and the condition of our streets improve. Assuming Council moves forward with the Mayor's proposed reforms, the department should be able to move ahead with a far more aggressive program of repairs over the next year.

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