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TO: BOARD OF DIRECTORS

THROUGH: ROGER SNOBLE
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FROM: CAROL INGE
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SUBJECT: DEVELOPMENT OF NORMALIZED LOS ANGELES COUNTY
                PAVEMENT CONDITION INDEX

ISSUE

In September 2002, the Metro Board received the Los Angeles County Capacity Enhancement/System Preservation Needs Assessment. At that time, the Metro Board directed that work continue with the Assessment's Steering Committee, composed of a representative from each of the County's subregions and the City and County of Los Angeles, to identify the feasibility and cost of developing a standardized Los Angeles County Pavement Management System (PMS) to provide a regional Pavement Condition Index (PCI). This correlated index would allow the region to strongly advocate for additional federal and state dollars to address the System Preservation funding shortfall.

The local jurisdictions use different PMSs and a variety of criteria for determining pavement conditions. The lack of standardization in PMSs across the County means conditions and repair costs are not necessarily comparable. Based on discussions with the Steering Committee, it was recommended that conditions and needs should be measured consistently, but requiring all 88 jurisdictions with public roads to use the same PMS was not feasible.

Correlating or "normalizing" the various threshold PCIs, the value indicating the need for Rehabilitation, Reconstruction and Resurfacing (3R) work, would provide a consistent interpretation of Los Angeles County's needs, while not forcing all jurisdictions to use the same PMS. Work has been completed to translate the threshold ratings to a common PCI scale and normalize to the same threshold, the backlog cost of Arterial 3R repair work as reported in 2002. A PCI Correlation software tool was developed to normalize the data. This tool can be used as information updates are completed. An executive summary of the study is attached.

DISCUSSION

This latest effort included a brief survey of local jurisdictions to obtain data on the PMSs in use and the threshold pavement conditions (indicated by the PCI) triggering 3R work. The PCI typically uses a numeric scale, commonly 0-100, indicating the overall condition of the pavement. A PCI of 60 to 70 or less generally indicates conditions requiring 3R work. Given the survey data, the consultant team determined which PCIs could be normalized, and those for which a "surrogate" pavement condition threshold needed to be provided. Surrogates were provided for those jurisdictions without translatable PCIs based on the average thresholds of cities with similar traffic, soil, and topographic conditions. The analysis used the PCIs that were in place in 2002. Subsequently, some of the jurisdictions may have changed their systems.

Findings

The 2002 Needs Assessment data shows a normalized Los Angeles County average threshold PCI of 61 and a backlog cost of $815 million in 2002 dollars. This is an increase of $40 million over the un-normalized amount. If the most common PCI threshold value of 70 is used, the backlog increases to $936 million (2002 dollars). It should be noted that these figures do not account for increases in the cost of materials or other escalation. Additionally, they do not capture work that may have been performed to reduce the backlog.

PCI correlations are variable due to PMSs weighing pavement defects differently. It should be noted that these surrogate ratings do not represent actual pavement conditions for those jurisdictions. They are estimates for normalization purposes. Translations to the Countywide PCI at the local jurisdiction level may not be accurate and the correlation results should only be used at an aggregate county level of analysis. The normalized ratings are not intended to change the conditions or needs at the local jurisdiction level due to the reasons mentioned above.

NEXT STEPS

The normalized results from this effort will be used to support Los Angeles County's efforts to advocate at the State and Federal levels for additional funding for System Preservation needs. The Federal Highway Administration (FHWA) recommends that jurisdictions update their PCIs every three years. To keep Metro's data current, in FY 06, Metro will update the 2002 data for System Preservation 3R needs on Arterial streets. The data obtained in the survey will be normalized using the PCI Correlation tool.

ATTACHMENT

Executive Summary

Development of Los Angeles Countywide Pavement Condition Index

Executive Summary

This Project was undertaken by the Los Angeles County Metropolitan Transportation Authority (Metro) to standardize Pavement Condition Index (PCI) thresholds used by Los Angeles County's Local Jurisdictions. Data from a previous study, the Metro 2002 Capacity Enhancement/System Preservation Needs Assessment (2002 Needs Study) was used as the starting point for this study. The 2002 Needs Study provided data for each of the county's local jurisdictions with public streets (88) including, the backlog cost of rehabilitation, reconstruction, and resurfacing (3R) work on arterial streets. The threshold value, typically generated using a Pavement Management system (PMS), indicates the pavement condition at which 3R work should be initiated. The standardization process provides a method for "normalizing" the various PCI threshold values and subsequently for normalizing the 3R Backlog costs for the County's arterial streets as a whole. In other words, the normalization process provides a method for reporting needs of individual jurisdictions using a consistent measure.

This latest effort included a brief survey of local jurisdictions to obtain data on the PMS in use and the threshold pavement conditions (indicated by the PCI) triggering 3R work. The PMS typically uses a numeric scale, commonly 0-100, indicating the overall condition of the pavement. A PCI of 60 to 70 or less generally indicates conditions requiring 3R work. Given the survey data, the consultant team determined which PMSs could be correlated to a countywide system, and those for which a "surrogate" pavement condition threshold needed to be provided. Surrogates were provided based on the average thresholds of similar cities – those having similar traffic, soil, and topographic conditions. Taken all together the correlated and surrogate PCIs are the normalized PCIs and are termed "Countywide PCIs" or "CPCIs." The analysis uses the PCI's that were in place in 2002. Subsequently some of the jurisdictions may have changed their systems.

Field verification of the CPCI results and correlations was not part of this study. PCI correlations were variable as expected. In some instances, correlated ratings were significantly less than the jurisdiction's system rating. This does not imply that the street condition in that particular city is below average, rather, that the rating systems weigh defects differently. Similarly, surrogate ratings represent an estimate of the threshold ratings for cities with out correlatable PCIs. The surrogate ratings assigned are not intended to represent actual conditions for those jurisdictions. Thus, translations to the CPCI at the jurisdiction level may not be accurate and the correlation results should only be used at an aggregate county level of analysis.

For five of the systems in use, the PCIs could be directly translated to the CPCI. In six others, correlation curves were developed to translate individual system PCIs to the CPCI. For the remaining systems – or for jurisdictions without a PMS, surrogate ratings were applied. A "user-friendly" Correlation Tool (spreadsheet with drop down menus) was developed to facilitate conversion of PCI thresholds to the CPCI (normalized) threshold. Initially, the County average correlated threshold of 61 was used for the Countywide threshold. Other thresholds, such as the most commonly used value of 70 were also evaluated.

Development of Los Angeles Countywide Pavement Condition Index

After converting the PCIs to the countywide system, reported backlog costs from the 2002 Needs Study were normalized by multiplying the 2002 backlog cost by the ratio of the jurisdictions CPCI over the average. When the normalized threshold is applied, the countywide backlog increases from $775 million to $815 million, in 2002 dollars, an increase of $40.1 million over the total reported in 2002. Using the most common threshold value of 70, the backlog increases to $936 million, in 2002 dollars or $160.7 million over the 2002 backlog. It should be noted that these figures do not account for increases in the cost of materials or other escalation. Additionally, they do not capture work that may have been performed to reduce the backlog.

On an on-going basis, a Steering Committee composed of representatives from each of the County's sub-regions, as well as the City and County of Los Angeles was consulted as needed to provide review and technical input for the project.

Recommendations:

For future analysis Metro needs to be able to collect updated data from each jurisdiction in the county including updated backlog needs by jurisdiction. For the Correlation tool to be most effective, elements should be kept current. Each jurisdiction typically updates its PMS inventory on a 3 year cycle for arterials, according to GASB 34 and FHWA recommendations. Thus, the Correlation tool should be updated accordingly to reflect changes in PMSs in use and threshold PCIs. A routinely updated data base of each jurisdiction's contact person who has data on the PMS, threshold PCI and current average PCI for the jurisdiction and backlog costs should be maintained. Metro will need to establish a correlation approach for any new PMSs that are developed and used in the county. Although this project did not use lane mile data for the final analysis, it appears that the use of lane mile data with unit costs may provide an additional degree of refinement to projecting normalized backlogs. Future survey data would need to include the number of lane miles requiring backlog work. Field sampling of each jurisdiction's pavement condition inventory data would add a significant degree of accuracy to the normalization process.