PAVEMENT CONDITION DATA SETS & IMPROVEMENTS

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Introduction

The Public Works and Engineering Department moved from a manual street assessment system to a computerized van data collection system in 2010. Initially the Street Surface Assessment Van allowed the City of Houston to objectively collect pavement specific data to better rank streets for future programming. Since then additional uses of the pavement data include, but are not limited to, providing a better understanding of the street pavement condition, designing pavement treatment programs to extend pavement life and provide better rideability, and targeting isolated pavement areas for improvement and better utilization of funding.

Objectives

Use of collected data sets to:

- Report and track quality of road infrastructure network.
- Prioritize and program road projects.
- Determine functional and structural conditions for purposes of routine monitoring/maintenance or planned corrective treatment.
- Serve as a qualitative indicator of overall condition.
- Quantify pavement system's funding needs.
- Develop performance indicators for pavement projects.

Methodology

The Street Surface Assessment Van (SSAV) utilizes computerized components such as a crack scope, a profiler, a 360 degree camera, and GPS to rate the condition of each road segment traveled over. Each component provides a piece of information relative to pavement cracks, pavement rutting, ride roughness, and video that can be reviewed for further pavement assessment. Data is collected, processed and stored in a database software to be used for analysis of pavement condition, both specific to the pavement for treatment that improves asset life and overall within the street infrastructure system to rank for larger street reconstruction projects.
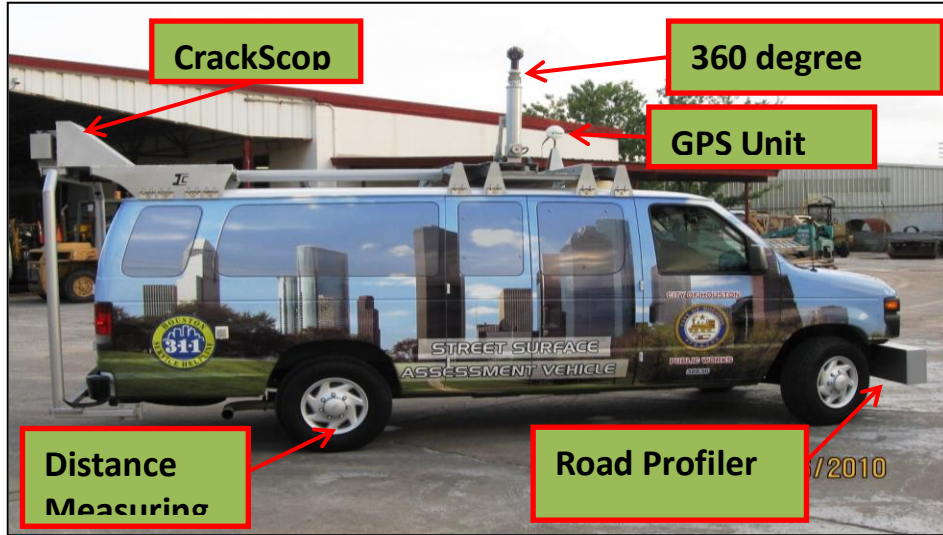
Improved Data Usage

Since 2010 the uses for the data collected with the SSAV has broadened to include design of pavement projects, recommendations for pavement improvements, identification for routine maintenance programs, and analysis of the overall street infrastructure system. Both the data sets and methods of data analysis align with industry standards including American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), and American Society for Testing and Materials (ASTM).

Plotting the resulting PCR's obtained from the SSAV over several runs provides a picture of a City of Houston street that can be more easily understood. Graphing illustrates where the pavement has degraded over time and also where a portion of the pavement has received an improvement treatment. Where gaps in data exist, it provides a quick guide to direct the SSAV to areas that require rerunning.
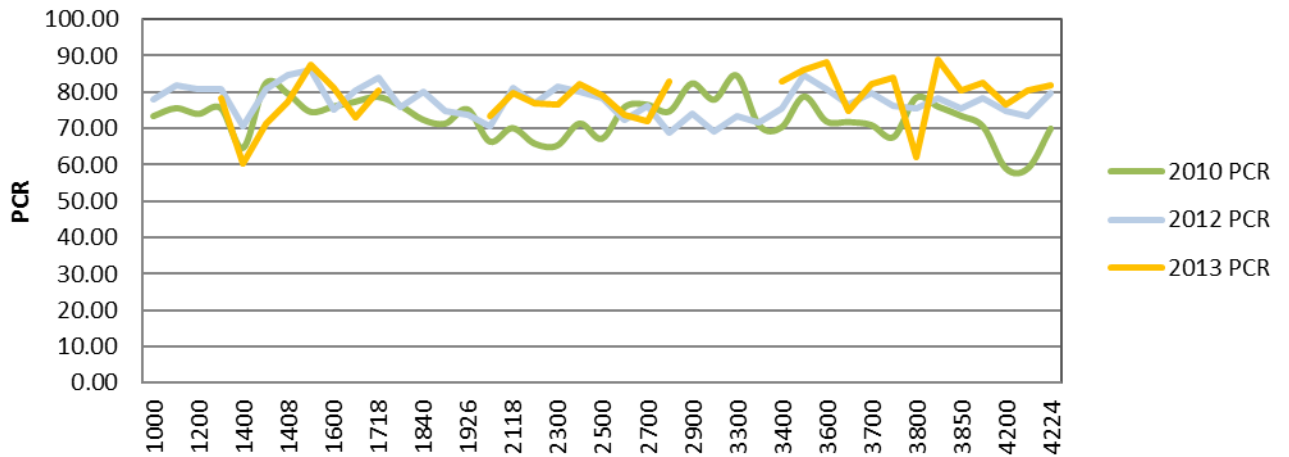
In addition to the resulting PCR from the SSAV collection, the individual van components provide opportunity to further understand how well a pavement is performing. The profiler gathers data for an International Roughness Index (IRI). This ride quality rating, measures the cumulative deviation from a smooth surface in inches per mile. The Federal Highway Administration (FHWA) adopted the IRI for the higher functional classifications because it is an objective measurement and is generally accepted worldwide as a pavement roughness measurement. The IRI system results in more consistent data for trend analyses and cross jurisdiction comparisons. Additionally, recent studies are indicating the IRI can be linked to the PCR and help make better pavement project decisions. However, challenges in applying the IRI to urban streets have led the City of Houston to engage the Texas Transportation Institute in further discussion to explore the City's possibilities.
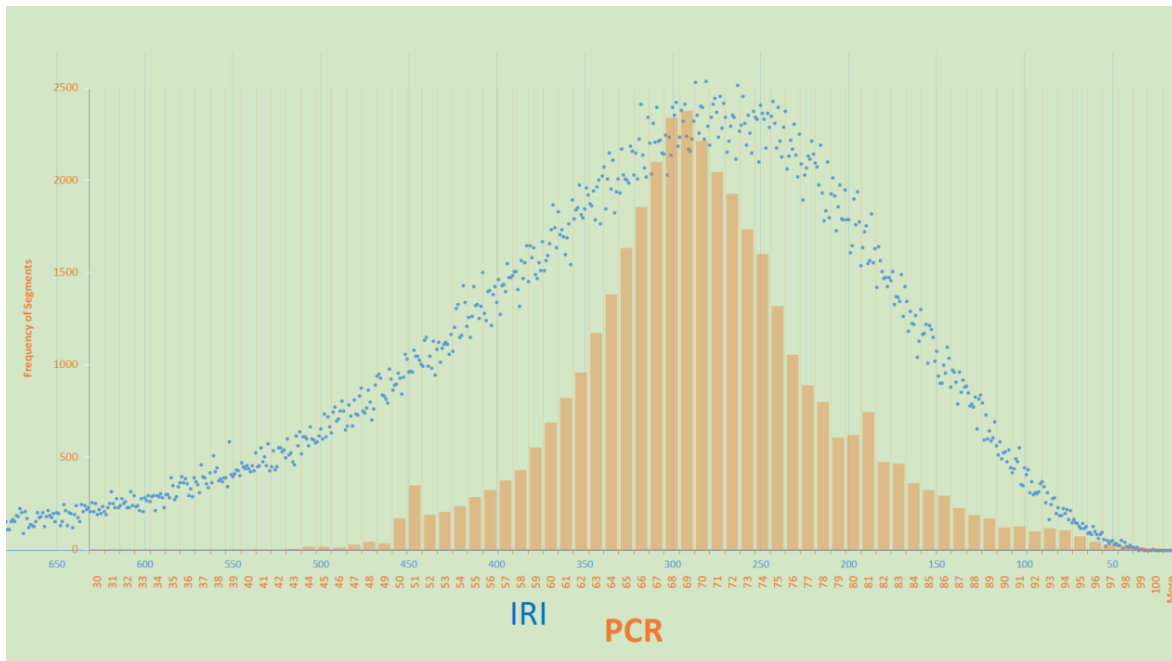
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