ABSTRACT

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Title: Assessment of Pavement Surface Evaluations Used in Local Agency Pavement Management Plans
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With the increasing popularity and use of the pavement surface evaluation and rating (PASER) method by local agencies throughout the U.S., the variability inherent in manual condition assessments, and the lack of research pertaining to the PASER method, there is a need to better understand the PASER method and its use by local agencies. This research consisted of three research phases.

Phase 1 investigated relationships between common pavement condition indices and PASER, specifically the relationship between the pavement condition index (PCI) and PASER. Corresponding PCI and PASER data for asphalt and concrete pavement segments on local roads were collected and both a general linear regression model and an ordered probability model were developed to describe the relationship between PCI and PASER. While the data exhibited a generally increasing trend, there were many pavement segments with high PCI values and low PASER ratings. This discrepancy can be attributed to methodological differences in the condition assessment method. Since the ordered probability model performed equally well in predictive ability for asphalt pavements and significantly better in predictive ability for concrete pavements than the general linear regression model, the ordered probability model is recommended for use in converting from PCI to PASER.

Phase 2 assessed the accuracy of statewide PASER data collected by local agencies, identified PASER values that are difficult to rate and proposed a standard tolerance to be used in

statewide quality control evaluations. Statewide PASER condition data collected by local agencies in Indiana was statistically subsampled and rated by PASER-certified Indiana Local Technical Assistance Program (LTAP) personnel. The local agency ratings were then compared to the LTAP ratings using four agreement tolerances 1) complete agreement, 2) within 1 rating agreement, 3) within 2 ratings agreement, and 4) “good/fair/poor” maintenance category agreement. Local agencies tended to over-rate the middle-to-low PASER values (1-6) and slightly under-rated the upper PASER values (7-10). Pavements in poor condition (PASER 1-4), particularly PASER 4, were assigned the correct “good/fair/poor” maintenance category the least often. Since the “good/fair/poor” maintenance category agreement tolerance 1) was the most rigorous after complete agreement, 2) was significantly different from the remaining two agreement tolerances, and 3) has the potential to capture significant funding differences appropriate to each maintenance category, it is recommended for use as a statewide quality control standard.

Phase 3 identified factors influencing the accuracy and variability of PASER ratings. Survey and PASER rating data were collected from participants attending PASER training workshops in Indiana. Pavement in “good” condition (PASER 8, 9, 10) was rated more accurately while pavement on the “poor/fair” condition boundary (PASER 3, 4, 5) was rated less accurately. Participants were more accurate in assigning PASER ratings after receiving PASER-specific training additionally, raters that were more accurate were also more consistent in performing PASER ratings. Conversely, raters that were less accurate were also more variable. Participants with engineering roles, such as engineer, engineer technician, or engineer assistant, were more accurate in assigning PASER ratings. In contrast, participants with leadership roles, such as supervisor, manager/foreman, or team leader/elected official, or less than one year of PASER

rating experience were less accurate in assigning PASER ratings. Considering the results of this research, attendance at PASER-specific training workshops is recommended for all PASER raters and, if possible, those with engineering roles should perform PASER ratings. These practices will encourage more accurate and less variable pavement surface evaluations.