Research Need for Pavement Technical Advisory Group

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ISSUE: Impact of Stabilized Subbase on Performance of Jointed Plain Concrete Pavement

SUMMARY OF PROBLEM: Illinois design policy requires the use of stabilized subbase under jointed plain concrete pavements (JPCP) to address concerns with erodibility of the improved subgrade. The only exceptions are low volume routes or curb and gutter sections in which the stabilized subbase may be omitted. Reclaimed asphalt pavement (RAP) has been incorporated into aggregate improved subgrade which may have reduced the erodibility potential. Districts have raised concerns about long-term performance when omitting the stabilized subbase in curb and gutter sections with heavy truck volumes.

Additionally, several types of stabilized subbases are currently allowed for use with JPCP: hot-mix asphalt (HMA), cement aggregate mixture (CAM), cement aggregate mixture II (CAM II), and pozzolanic aggregate mixture (PAM). Continuously reinforced concrete pavements (CRCP) require HMA stabilized subbase. District have commented on JPCP projects with poor performance that used CAM or CAM II and wonder why HMA wouldn’t also be required for JPCP.

This study aims to assess the performance of JPCP constructed in Illinois in the last 20 years with respect to the following two areas: (1) omission of stabilized subbase under curb and gutter sections with heavy truck volumes, and (2) type of material used for stabilized subbase.

DESIRED RESULTS/OUTCOME: Based on the findings of the study IDOT can update policy to ensure use of the most appropriate subbase type so as to realize longer lasting pavements with lower life-cycle costs. Better performing pavements with little signs of deterioration provide the traveling public with a smoother, safer, and better quality ride. Appropriate choice of subbase type can lead to cost savings and environmental benefits without compromising the structural integrity of the pavement.