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| **Title** | *Optimum AC Overlay thickness for FDR of Existing AC Pavements* |
| **Lead State or FHWA Program Area**  | *Kansas* |
| **Lead State or FHWA Contact** | *Greg Schieber* |
| **Study Objectives:** | (i) To find out the optimum cement and fly ash content for full depth reclamation (FDR) of existing asphalt concrete (AC) pavements; (ii) to mechanistically design AC overlays of a stabilized FDR base found in (i); and (iii) construct and evaluate thin AC overlays on FDR base to find optimum thickness. |
| **Background:** |  Most states are looking for optimum rehabilitation strategies of pavements in terms of cost and service life. Kansas is no exception. Thus a rehabilitation strategy of AC pavements that uses a stabilized base should result in thinner AC layers and satisfactory performance life. However, such a strategy that will fully reclaim the existing AC pavements in-situ (with some soil materials in it) with the help of a stabilizer consisting of Portland cement and fly ash has not been studied mechanistically. This study will fill the gap in the knowledge and develop practical mix designs for the stabilized layer and AC layer thickness for optimum performance at a reasonable cost. |
| **Scope of Work** | The study will consist of two parts – (i) Laboratory Experimentation, and (ii) Full-Scale Accelerated Pavement Testing (APT). ***Laboratory Experimentation:*** In the firstpart, withAC millings from typical lower volume AC pavements and maximum 2% soil (A-7-6 and A-4), optimum mixture designs will be developed for a stabilized base using Portland cement and Class C fly ash. Cement and fly ash contents will be varied to achieve a minimum 7-day unconfined compressive strength of 250 psi and 400 psi. The freeze-thaw durability of the stabilized mixtures will be evaluated following AASHTO T136. Also the shrinkage characteristics of the stabilized mixtures will also be evaluated. Moisture-density relationships per AASHTO T99/134 will be developed. Finally MEPDG analysis of AC pavements with the stabilized base from FDR with varying AC overlay thickness will be done to find the optimum AC overlay thickness. ***Full-Scale Accelerated Pavement Testing (APT):*** For APT, three pavements with six test sections will be constructed for this experiment:*From the results, a design catalog will be developed for the design of AC overlays on FDR to provide pavement design engineers with more guidance in designing and specifying this rehabilitation strategy.* |
| **\*Commitments Required(total cost of study):** | *$389,109* |
| **Comments:** | *We are requesting 4 states to commit $32,500/year for 3 years.* |
| **Number of Months Study Will Last(estimate):** | *30* |