

Technical Report Documentation Page

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16. Abstract (Limit: 250 words) Base stabilization additives are used to increase the strength and stiffness of road foundations on weak and susceptible soils. The Minnesota Department of Transportation (MnDOT) quantifies the structural contribution of pavement layers by introducing granular equivalency (GE) factors. While numerous additives exist for improving the performance of aggregate base layers, this study focuses on proprietary additives including Base One, Claycrete, EMC SQUARED, PennzSuppress and Roadbond EN1. The laboratory study revealed that EMC SQUARED was the superior stabilizer , with an optimum dosage set 15% higher than the manufacturer recommended dosage (MRD). The long-term performance of proprietary additives was monitored by considering full-scale field implementation with optimum additive dosages obtained from laboratory investigation. Controlled sections without stabilization exhibited higher values in the California Bearing Ratio (CBR) and composite elastic modulus right after construction, while the impact of stabilizers on the increasing strength of the full depth reclaimed (FDR) base was revealed after two years of construction. Falling-Weight Deflectometer (FWD) tests demonstrated a progressive increase in the stiffness of stabilized sections over time, surpassing the control section's stiffness after two years. The economic analysis utilizing Life Cycle Cost Analysis (LCCA) indicated that stabilized sections, particularly those treated with EMC SQUARED, offered lower Equivalent Uniform Annual Cost (EUAC) values across various maintenance scenarios. These findings suggested potential cost savings over a pavement's life cycle with higher GE factors of recycled asphalt pavement base aggregate treated with proprietary additives. The findings will contribute to a comprehensive understanding of the benefits, feasibility, and design considerations associated with using commercial stabilizers in FDR base layers.		13. Type of Report and Period Covered Final Report	
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