

Research Project Title

Phase II Highway Construction Sediment Basins: Engineering Design Procedures and Standard Drawings

Purpose of the Project

The purpose of the project is to collect field data at constructed sediment basins at TDOT highway construction site to collect flow and sediment inputs/outputs to estimate performance as % reductions in sediment. The data collected will also be used to compare with the preliminary design criteria developed from the Phase I modeling effort to confirm and/or improve upon basin sediment treatment models, and evaluate existing TDOT standard design criteria and drawings (EC-STR-16,17, and 18).

Scope and Significance

The scope of the research project includes Phase IIb of the project consisting of monitoring flow and sediment inputs/outputs at constructed sediment basins at two TDOT highway construction sites, one in Middle Tennessee and the other in West Tennessee. This proposed research builds on Phase I work developing design criteria and sediment basin performance estimates from unverified hydrological and sediment models, and Phase IIa work in which field monitoring was completed at collected at highway construction sites in Morgan, Knox, and Bedford counties. This research follows the same field and data analysis procedures as used in Phase IIa of the project. Additional monitoring of basins is needed because the Phase IIa data were found to be highly variable based on site conditions. More data are also needed to confirm basin treatment model and assess the existing basin design standards.

Expected Outcomes

Expected outcomes and benefits to TDOT include: 1) improving design criteria and guidelines for construction of sediment basins meeting regulatory effluent limits for construction site runoff, and 2) reducing design costs by increased efficiency utilizing design tables rather than having to use hydrologic and sediment models for each site design, and sizing of basins for optimal performance. Reductions in cost include: 1) the decreased time for design by TDOT staff, 2) direct decreased costs to TDOT on projects designed by consultants, and 3) providing guidance on identifying the most cost effective design to implement during construction.

Time Period

The time period for the project is from August 2019 through November 2022.

Contact Information

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