



RESEARCH NEED STATEMENT

Call for Projects 2015

Project Research Title: Engineering Design Procedures and Standard Drawings for Highway Construction Sediment Basins

TDOT Sponsor Director: Jennifer Lloyd

List TDOT Research Team Lead: Ali Hangu

List TDOT Research Team Members: Robert Braun, Aso Hawrami

1. Define the problem or research requested. What is the goal/objective of the research?

TDOT needs engineering design criteria, guidelines and standard drawings for sediment basins at highway construction sites to meet new U.S. Environmental Protection Agency (USEPA) rules on stormwater effluent quality.

The project objective is to provide TDOT road designers with design criteria and guidelines, and standard drawings for the highway design of construction site sediment basins. Benefits to TDOT by implementation of this project include: 1) having the design tools to construct sediment basins that can meet new USEPA and TDEC effluent standards for water turbidity from construction site discharges, and 2) reducing design costs by increased efficiency utilizing design tables rather than having to use hydrologic and sediment models for each site design. 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.

2. Is this research a continuation of a past or present project?

No Yes

If yes, provide current research project title, RES # and reason for the project continuation.

Engineering Design Procedures and Standard Drawings for Highway Construction Sediment Basins; RES2011-17.

3. Describe anticipated benefits/expected deliverables.

This is a one of a kind sediment basin design tool in the nation and will save time spent designing such devices.

4. What is your timeline for completion of the research?

2016

5. List the anticipated tasks for this research.

The overall plan is to implement the second of three phases for the project. This is the Phase II of the subject research for field testing/verification of the proposed design.

- Performance field testing of several basin and outlet design types for validation of model results from Phase I.

6. Describe how the project results will be implemented?

It will be implemented on every roadway design project that requires a sediment basin as outlined under the current TDEC Construction General Permit.

7. Will this study produce software, web page or other technology that will involve the Information Technology Division?

No Yes, please describe:

8. Will training be provided to employees as a result of this research?

No Yes, please describe:

9. Will this research involve equipment or materials purchase?

No Yes, please describe:

10. Research must support the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative. *(See attachments for additional information)*

Please indicate which categories the research will support:

Transportation Long Range Plan Policy Recommendations

(A) Accessibility

(B) Safety, Security, and Transportation Resilience

(C) Coordination, Cooperation, and Consultation

(D) Demographic and Employment Changes and Trends

(E) Freight Logistics and Planning

(F) Financial

(G) Mobility

(H) Travel Trends and System Performance

TDOT Operational Goals and/or Strategic Initiative

(A) Deliver transportation projects on schedule and within budget

(B) Maintain the state transportation system to protect the long term investment in our infrastructure assets

(C) Operate and manage Tennessee's transportation system to provide a high level of safety and service to our customers and workers

(D) Expanding mobility choices to maximize access

(E) Dramatically change the paradigm for delivery of transportation products and service to improve the efficiency and effectiveness of Tennessee's transportation network

11. Please explain how the research supports the Long Range Transportation Plan Policy Recommendations **and/or** TDOT Operational Goals and/or Strategic Initiative selected above:

The result of this research will dramatically reduce the engineering time and design cost of temporary sediment basins which is a permit requirement.

For additional information, please contact:

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