



# RESEARCH NEED STATEMENT

Call for Projects 2015

Project Research Title: Structural Evaluation of Low Volume Roads Using Ground Penetrating Radar (GPR)

TDOT Sponsor Director: Jerry Hatcher

List TDOT Research Team Lead: James Maxwell

List TDOT Research Team Members: Mark Woods, Sampson Udeh

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

Since 1983, TDOT has absorbed approximately 3500 miles of former county roads into its system. The composition and structural capacity of a large portion of these is unknown, except for any overlays that have been conducted since that time. Such information would be of great value to much of the Department, including the Pavement Management System, Pavement Design Office, and the Division of Materials and Tests.

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.

3. Describe anticipated benefits/expected deliverables.

The benefits of this project would be an inventory (database) of current thickness and structural capacity of low volume state routes, overall condition evaluation of pavements (as required by MAP-21), and it would allow improved pavement treatment models to be derived by the inclusion of structural information in the process.

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

2 years

5. List the anticipated tasks for this research.

Obtain Ground Penetrating Radar information for all low volume state routes acquired from the counties since 1983.

Provide a database of calculated pavement thickness and structural capacity of each roadway.

6. Describe how the project results will be implemented?

This information will be entered into the Pavement Management System and the results used to obtain improved pavement deterioration models. These models are used to predict pavement behavior over time. Improved models will allow the PMS to provide better condition data and cost projections for the Regional resurfacing personnel and upper management. It will also provide information useful in overlay design for the subject roads.

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:

A ground penetrating radar receiver with dual antennae will be required.

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:

This research will provide useful information about pavement sufficiency which will allow better planning and resource allocation in the future. It will allow resurfacing personnel to better understand the condition of their roads and address any safety concerns that may come to light.

For additional information, please contact:

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