



# RESEARCH NEED STATEMENT

*Call for Projects 2015*

Project Research Title: Improving Rigid Pavement Smoothness using PolyLevel

TDOT Sponsor Director: Jennifer Lloyd

List TDOT Research Team Lead: Sampson Udeh

List TDOT Research Team Members: Ataur Rahman, Darrell Bridges, Victor Weddle

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

Pavement concrete slabs drop off (settle) after a number of years in operation, this increases pavement roughness and reduces pavement smoothness and comfortability to road users. Leveling concrete slabs using either concrete or injected asphalt has been proven to be costly, time consuming and requires lane closures for longer times. PolyLEVEL is a high-density polyurethane compound that offers concrete leveling solutions for both commercial and residential projects. TDOT seeks proposals to evaluate the usage of Polylevel materials to level pavement concrete slabs, and monitor its performance and longevity.

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.

Traffic management and traffic delays is one of the challengers TDOT faces in pavement maintenance projects. Leveling concrete slabs using concrete requires lane closures of at least 3 days if expedited curing methods and additives are used. With Polylevel, only one lane can be closed and the road is open to use 30 minutes after application. This project is expected to provide TDOT with short and long term performance of polylevel materials in terms of International Roughness Index (IRI).

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

24 months (May be with phase 2)

5. List the anticipated tasks for this research.

Evaluate the best practices and performance of Polylevel from other states. Collect and analyse IRI data on sections where Polylevel is applied. Analyse the immediate and long term performance improvements.

6. Describe how the project results will be implemented?

The recommendation will provide benefits and performance of Polylevel materials as alternative materials for leveling pavement concrete slabs.

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:

Do you need the team to buy a profilometer if TDOT can run the test and give results?

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:

TDOT invest heavily in construction of rigid pavement, mostly on interstates. Slab drop off is one of the most common problems which reduces pavement smoothness. The use of Polylevel has been proven to be less time consuming and cost effective. TDOT should continue to research on alternative methods that will provide longer lasting pavements at reduced construction cost and lane closures (delays).

For additional information, please contact:

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