National Center for INFRASTRUCTURE TRANSFORMATION
Led by: Prairie View A&M University

P.O. Box 519, MS 2535 | Prairie View, Texas 77446 | (936) 261-1655 | ncit.pvamu.edu

# NCIT Problem Statement Form - EXAMPLE

**1. Project Type:**
_X__Research ___EWD ___T2C

**2. Title of Project:** Optimizing the Design and Construction of Long-Life Pavements

**3. Principal Investigator and e-mail:** Dr. N, w-name@tti.tamu.edu

**4. Co-Principal Investigator (if any) and e-mail:** Dr. Who, wwho@pvamu.edu

**5. Institution(s) Involved:**

| **Lead Institution** | **Partner Institutions** |
|---|---|
| ___ Arizona State University | ___ Arizona State University |
| ___ Blinn College District | ___ Blinn College District |
| ___ Michigan State University | ___ Michigan State University |
| ___ Prairie View A&M University | _X__ Prairie View A&M University |
| ___ Rutgers University | ___ Rutgers University |
| __X_ Texas A&M Transportation Institute | ___ Texas A&M Transportation Institute |
| ___ Texas A&M University | ___ Texas A&M University |

**6. Project Description:**
Several state departments of transportation (DOTs) have recently constructed long-life pavements developed from previous TTI research. These pavements, with lower life cycle and user costs, are projected to save millions in maintenance, rehabilitation, and minimized traffic disruptions over their life span. Recent technological advancements offer the potential to further enhance design and construction methods for these pavements.

In this project, Dr. N, in partnership with Dr. Who, will explore new technologies to advance state-of-the-art techniques for improving the durability, crack resistance, and fatigue resistance of long-life pavements. The research will investigate the use of XYZ technologies to develop innovative methods for incorporating recycled materials, while factoring in environmental impacts and fatigue in design methodology.

This work has the potential to transform pavement design and construction, making infrastructure more cost-effective, long-lasting, and resilient. Additionally, there is potential for commercializing XYZ technology in this application, furthering its impact in the industry.

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**7. Topical Research Pillar:**
_1__ Infrastructure Durability and Reliability
_2_ Technology
___ Policy
___ Not Applicable

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**8. Funding Information:**

| Budget Item | Description / Instructions | Lead Inst. Amount ($) | Partner 1 Amt ($) | Partner 2 Amt ($) | Partner 3 Amt ($) |
|---|---|---|---|---|---|
| Requested Direct Federal Funds (excluding IDC) | Funds requested from the federal sponsor for direct project costs | 75,000 | 75,000 | | |
| Cash Matching Funds Provided | Cash from industry or other sources applied directly to the project operating budget | 10,000 | 0 | | |
| In-Kind Matching Funds Provided | Contributions such as monetized datasets, student fellowships, use of facilities, or other in-kind resources | 65,000 | 75,000 | | |
| **TOTAL Direct Project Cost (for duration of project)** | Sum of Direct Federal + Matching Funds | 150,000 | 150,000 | | |
| Duration of Project | Maximum 18 months | | 1 year | | |
| Proposed Start Date | Fall 2026 or Spring 2027 | | Fall 2026 | | |



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**9. Potential Sources of Match Funding:**
ABC Industries is providing cash resources for match, and XYZ Technology is providing equipment for the analysis as an in-kind contribution.

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**11. Budget Justification:**
The project will begin with a detailed literature review to determine the state of practice in this area and provide additional context for the research. Subsequently, potential new technologies

will be tested in a laboratory environment and then in the field for verification. Innovative methodologies identified for long-life pavement design and construction will then be documented and dispersed to practitioners through our stakeholder contacts in industry and state and local agencies, including AASHTO RAC and XYZ Technology, among others. Outreach will include Design Manuals and seminars/webinars for users. *(Note to researchers: feel free to go into more detail as space allows)*

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**12. Stakeholder Involvement:**
This project concept was developed in collaboration with the GQ and DT state departments of transportation, which have already implemented long-life pavements and are interested in improving design and construction using new technologies. Additionally, XYZ Technology, a key partner, will collaborate with the research team to investigate the use of its technology in this application.

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**13. Signatures of Associate Directors at the PI's Institution and any Collaborating Institutions**

X *Melissa Tooley,* TTI X *Md Jobair Bin Alam,* PVAMU