MarTREC
Maritime Transportation Research & Education Center

MarTREC Tier 1 UTC Project Request Form
MarTREC Project 7025

Submission Date: December 2, 2024
Lead Recipient/Grant Number: University of Arkansas / 69A3552348331
Principal Investigator Institution: Texas A&M Transportation Institute
Center Name: Maritime Transportation Research and Education Center
USDOT Research Priority: Preserving the Existing Transportation System
Primary USDOT Strategic Goal (*select drop down*): Safety
Principal Investigator(s) with ORCID(s) and Contact Information: Vincente Mantero (ORCID ID 0009-0004-2252-5593)— V-Mantero@tti.tamu.edu — 917-374-7267 Mary Beth Hueste (ORCID ID 0000-0002-6259-6298)— mhueste@civil.tamu.edu — 979-845-1940 Stefan Hurlebaus (ORCID ID 0000-0002-1720-4208) — shurlebaus@civil.tamu.edu — 979-845-9570
Project Partners: *N/A*
Project Type (*select drop down*): Applied Research
Project Research Topic Type (*select drop down*): Resilient Maritime Infrastructure
Transportation Modes Involved (*check all that apply*): ☒Waterway ☒Road ☐Rail ☐Pipeline ☐Other
Research Project Funding: $71,500 will come from MarTREC funds and $61,000 will be matching funds, for a total of $132,500.
Project Start and End Dates (Format month/day/year to month/day/year): 01/01/2025 to 5/31/2026.
Project Title: Vulnerability Assessment of Bridges Crossing Major US Rivers in Support of a Safe and Resilient Transportation System
Project Abstract (Brief Description): This project will assess and evaluate the vulnerability of bridges on major inland waterways to allisions. The project will compile and synthesize the inventory of vehicle bridges across the Mississippi, Columbia, and Ohio Rivers. A list of allision incidents from 2003-2024 will be compiled using Coast Guard marine casualty reports. Based on the latest requirements for design of bridges to withstand allisions, the project will identify the bridges that are most vulnerable. The project will review options for bridge protection, considering bridge strengthening versus replacement. An estimate of annual barge traffic passing under the bridges will be used to indicate criticality.
USDOT Priorities: Ensuring the safety of the national transportation network requires an understanding of the vulnerabilities that may disrupt transport both in waterways and within the infrastructure that interacts with these systems. Several major allisions with bridges have happened over the last 2 decades. These allisions have resulted in fatalities, substantial economic impact, and inconveniences to the traveling public. it is essential to assess and understand the vulnerabilities of bridges to allisions to reduce the risk of allisions and promote a safer and more resilient transportation network that supports multimodal supply chains.

Outputs (results of the work performed):
Planned deliverables in include: 1. Inventory of bridges on the three rivers being studied 2. Listing of bridge allisions on these rivers from 2003-2024. 3. Listing of bridges most vulnerable to allisions. 4. Discussion of potential bridge protection options. 5. Final Project Report documenting the work performed, methodologies, outcomes, and suggested next steps.

Outcomes/Impacts:
This project will provide information that is currently lacking in the evaluation of potential bridge strikes. This will allow the Coast Guard, US Army Corps of Engineers, and local governments to target and work on the highest priority bridges.

Technology Transfer Activities:
An executive summary will be provided. The Transportation Research Board will be consulted regarding opportunities to present the project findings through webinars, presentations at the annual meeting, or conferences throughout the year. We plan to spend 10% of the budget on technology transfer activities.

Final Research Report: Upon completion of the project, provide a URL link to final report will be provided

Project Deliverables: ☒ PI agrees to submit all deliverables within 4 weeks after the project end date.

Data Management Plan (DMP): ☒ PI has reviewed and agrees to adhere to MarTREC DMP. Proposed project DMP must be attached to the submission email along with this form.

Center Director Approval Signature and Date:  01.02.25