PROJECT NUMBER:
07406

PROJECT TITLE:
Alabama Bridge Management System Plus, Phase 2

PRINCIPAL INVESTIGATOR
Daniel S. Turner, Ph.D.
Professor and Director
University Transportation Center for Alabama
The University of Alabama
Voice: 205.348.9925 Email: dturner@coe.eng.ua.edu

SENIOR FACULTY
David P. Hale, Ph.D.
Director, Enterprise Integration Lab and MIS Programs
The University of Alabama
Voice: 205.348.8909 Email: dhale@cba.ua.edu

Shane Sharpe, Ph.D.
Associate Professor and the Thomas Endowed Fellow
Area of Management Information Systems
The University of Alabama
Voice: 205.348.9851 Email: ssharpe@cba.ua.edu

PROJECT OBJECTIVE:
The objective of this project to enhance the Alabama Bridge Information Management System (ABIMS) to assist the Alabama Department of Transportation (ALDOT) in formulating its bridge preservation strategy by providing budget and network-level rating forecasts given specified rehabilitation and/or replacement actions. This continues a series of projects to enhance ALDOT bridge management.

PROJECT ABSTRACT:
The goal of this project is to produce the design for an extension to the existing Alabama Bridge Management Information System Plus (ABIMS+). This project will extend the usefulness of ABIMS+ to allow bridge maintenance analysts to examine alternative future bridge replacement decisions by assessing the potential impact of varying annual maintenance budgets and annual maintenance costs. Thus, this project will provide data intensive modeling to support:

- Quantitative decision planning through the use of alternative rating systems (Sufficiency, Deficiency, and GASB metrics),
- Analysis of bridge sets based on an extensive set of filters (funding limits, route type, geographic location, division, type of maintenance action, and other exclusionary constraints),
• Report generation for network-level maintenance assessments, and
• Predicted bridge network ratings and improvements costs.

Moreover, with an annual bridge maintenance budget that is significantly below Alabama’s annual needs, effective use of maintenance dollars is paramount to manage safety, congestion, internal ALDOT resources, as well as eligibility for federal funds.

TASK DESCRIPTIONS

Task 1) Project Kickoff Meeting – The UA research team will meet with the ALDOT Project Advisory Committee to review project work steps, data sources, expectations and deliverables.

Task 2) Prototype Development – The proposed project will develop a prototype system for developing two reports: the Automatic Network Simulation Report (ANSR) and the Manual Network Simulation Report (MNSR).

Task 3) Beta Test – This task has three primary components, which follow the traditional and accepted procedures for development of new systems and new software.

Task 4) Application Development – This will include a training plan and information technology installation plans for data migration, code walkthrough, server specification, and acceptance.

Task 5) Final Report – This task will involve development of project documentation, and preparation and delivery of the final report.

MILESTONE DATES:

Task 1: Jan 08
Task 2: Jan-May 08
Task 3: Jun-Aug 08
Task 4: Sep-Nov 08
Task 5: Dec 08

PROJECT BUDGET:

One-year project, ALDOT State Planning & Research funds, $128,850.

RELATIONSHIP TO OTHER PROJECTS:

This project builds on a series of projects that have dealt with asset management and bridge management systems: 02114 – GASB 34 and Asset Management, 02411 – Phase II: GASB-34 Compliance, 03417 – GASB 34 Compliance-Phase III (Bridges), 02114 – GIS Resource Allocation Visualization, 03112 – Management of Bridge Decay/Maintenance Forecasting, 04111 – Web-Enabled Bridge Sufficiency Calculator; 5109 – Risk-based Bridge Inspect Management, and 06402 – ABIMS +. Some of these projects have been funded by ALDOT and some by UTCA.

POTENTIAL BENEFITS

This project will improve information to manage the bridge maintenance backlog through the development and application of the standardized repeatable process for identifying and prioritizing bridge in need of maintenance. It will also enhance support for budget
allocation decisions among preventative maintenance, replacement, and rehabilitation alternatives.

TRB KEYWORDS
Bridge management system, bridge deterioration, bridge maintenance, bridge rehabilitation