UTC PROJECT DESCRIPTION

PROJECT NUMBER:
99101

PROJECT TITLE:
Development of a Bridge Replacement Guide for County Engineers

PRINCIPAL INVESTIGATORS:
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PROJECT OBJECTIVES:
This project is intended to provide information to county engineers about common types of bridges and the cost-effectiveness of each type. In addition, economic design concepts and alternatives to typical bridge structures will be presented. Material selection, substructure and superstructure types, and other design and construction options will be presented. Current ALDOT policies and procedures regarding bridge replacement will also be included.

PROJECT ABSTRACT:
Over one-third of bridges on county roads in Alabama are structurally deficient or functionally obsolete, and bridge replacement funds are scarce. Research is needed to increase longevity and to increase cost-effectiveness. Guidelines are needed to help in the selection of a particular bridge design based upon span length, terrain, hydraulic considerations and similar factors. This study is aimed at providing such information to county engineers in the form of a bridge replacement guide document. It will be developed by a team of researchers from the University of Alabama based a literature survey and surveys of transportation engineers across the State. ALDOT officials will also be involved in selecting and organizing the content of the guide.

PROJECT TASK DESCRIPTIONS, MILESTONES AND DATES:
1) Form Advisory Committee (Oct 1, 1999)
2) Obtain Preliminary data (Dec 31, 1999)
3) Review bridge replacement policies and procedures (Dec 31, 1999)
4) Design prototype of Bridge Replacement Guide (Feb 28, 2000)
5) Advisory Committee reviews Guide (Mar 31, 2000)
6) College bridge lifecycle cost data (Aug 31, 2000) (End phase 1 of project 99101)
7) Analyze bridge cost data (Dec 31, 2000) (begin phase 2 of project 99101)
8) Write first draft of Guide (Apr 30, 2001)
9) Draft reviewed by Advisory Committee (Apr 30, 2001)
10) Subsequent drafts until approved by Advisory Committee (Aug 31, 2001)

TOTAL BUDGET:
Phase One is a one-year project: UTCA $44,334; total budget $94,554.

STUDENT INVOLVEMENT:
Two graduate student research assistants and several undergraduate students will work on this project.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project can be viewed as a stand-alone project as it does not tie into any other UTCA projects.

TECHNOLOGY TRANSFER ACTIVITIES:
The final report will be a publication, “Bridge Replacement Guide for County Engineers,” which will be provided to the Alabama County Engineers Association (ACEA). A presentation will be made at the ACEA Annual Meeting to explain the content of the Guide, and it is anticipated that some of the findings will be presented at other technical meetings and published in the ASCE Bridge Journal.

POTENTIAL BENEFITS OF THE PROJECT:
The difficult problem faced by county engineers is that there are too many bridges to fix and too few funds to fix them all immediately. The best approach appears to be in optimizing resources, i.e., devote resources to those bridges that serve the highest need, and select bridge types and materials that represent the very best lifetime cost-effectiveness. The Bridge Replacement Guide for County Engineers will go a long way toward meeting the part of that statement.

TRB KEYWORDS:
Bridge management, bridge maintenance, bridge selection.