SPR PROJECT DESCRIPTION

PROJECT NUMBER:
00467

PROJECT TITLE:

PRINCIPAL INVESTIGATOR:
James S. Davidson, Ph.D.
Department of Civil and Environmental Engineering
The University of Alabama at Birmingham
1075 13th Street South (Hoehn Building)
Birmingham, AL 35294-4440
(205) 934-8435    fax: 934-9855
jsdavidso@eng.uab.edu

PROJECT EXTERNAL CONTACT:
Don Arkle
Design Engineer
Alabama Department of Transportation

PROJECT OBJECTIVES:
This objectives of this project are to develop easy-to-use computer-based design tools for the design of sign, luminaries and traffic signal supports that incorporates the latest adopted design guides and specifications, develop a set of design examples using these design tools, and transfer this technology to state and county engineers.

PROJECT ABSTRACT:
Highway sign support structures must be designed in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs (adopted in 1994). In recent years, the National Cooperative Highway Research Program (NCHRP) has supported projects to address specific problems associated with these structures. The Department of Civil and Environmental Engineering at UAB recently completed NCHRP Project 17-10, “Structural Supports for Highway Signs, Luminaries, and Traffic Signals” and is now conducting a follow-on project, Project 17-10(2), to enhance the proposed specification developed under project 17-10. Because of its involvement in sign support research and specification development over the years, UAB Civil Engineering is recognized as a leading center of expertise in sign and luminaries support design and research. The sign, luminaries, and traffic signal supports purchased by government entities are typically designed outside of the engineering departments of those entities. But state and county engineers still need an efficient and effective way to check the support structures being constructed in their districts that includes the latest developments in research and design practice. This project will result in (1) a series of easy-to-use computer-based design tools for the design of sign, luminaries and traffic signal supports that incorporates the latest adopted
design guides and specifications, (2) a set of design examples using these design tools, and (3) the transfer of this technology to state and county engineers.

PROJECT TASK DESCRIPTIONS:
1. Identify advisory committee (state and county engineers, engineers employed by sign support manufacturers). Identify specific needs of State and County engineers.
2. Develop detailed work plan using advisory committee input. Select types sign supports.
3. Literature review.
4. Identify computer-aided tools used by other state DOT's to design support structures.
5. Develop first sample set of 2 - 4 design tools and corresponding examples.
6. Provide set of 2 - 4 design tools and examples to advisory participants and solicit feedback.
7. Develop full set of computer-base design tools and design examples.
8. Develop instructions and documentation for using the tools for state and county engineers.
9. Technology transfer to engineers across the state, provide initial support, maybe including comprehensive web page where the software and examples can be downloaded.
10. Summarize the project and results into a comprehensive report.

MILESTONES AND DATES:
(Project initiated October 1, 2000; 18 month span)
1) Project advisors and needs identified - Nov 30, 2000
2) Detailed work plan developed - Dec 30, 2000
3) Pertinent publications and research results reviewed - Jan 30, 2001
4) Computer-aided tools used by other state DOT's identified- Jan 30, 2001
5) Sample set of design tools and corresponding examples developed - Mar 30, 2001
6) Feedback gathered on sample design tools and examples - May 30, 2001
7) Full set of computer-base design tools and examples developed - Nov 30, 2001
8) Instructions and documentation developed - Jan 30, 2002
9) Technology transfer complete - Feb 30, 2002
10) Final report developed - Mar 30, 2002

TOTAL BUDGET:
18-month project: ALDOT (SPR funds) $108,461; total budget $108,461.

STUDENT INVOLVEMENT:
Three graduate research assistants will work on this project.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
None known.

TECHNOLOGY TRANSFER ACTIVITIES:
Results from this project will be provided to end users in the form of instructions, examples, and research report. The advisory panel will provide guidance regarding effective means of dissemination.

POTENTIAL BENEFITS OF THE PROJECT:
This project directly addresses operational needs of state and county engineers. Direct input from these engineers will be used to achieve the most useful results possible. The products of the project can be translated into immediate practice. The anticipated results of this project can be summarized as follows:

- A series of easy-to-use computer-based design tools for the design of sign, luminaries and traffic signal supports that incorporates the latest adopted design guides and specifications;
- A set of design examples that demonstrate the use of these tools;
- The transfer of this technology to state and county engineers;
- A stronger relationship between academics and state and county engineers;
- The support of graduate students in transportation education and research;
- Safer, more consistent, and more economical, sign, luminaries, and traffic signal supports throughout the state.

TRB KEYWORDS:
Sign support, structural design, specifications.