CTRE en route

SUMMER 2003

INSIDE

MTC Asset Inside

Bridge Engineering Center: an introduction

The Bridge Engineering Center (BEC) at Iowa State University was established in 1988. Since 2000, the BEC has been housed at CTRE.

The BEC's staff includes Terry Wipf, manager; Brent Phares, associate manager; Doug Wood, senior engineering specialist; and F. Wayne Klaiber, faculty affiliate. Working closely with the Iowa DOT's Office of Bridges and Structures, the BEC conducts research in

- structural health monitoring of bridges
- strengthening and field testing of bridges
- structural dynamic behavior of bridges
- forensic engineering/ failure investigation
- nondestructive evaluation

For more information, see the BEC's website: www.ctre.iastate.edu/bec/.

Bridge Center's expertise tapped for forest products coalition

As one of the leading research institutions in timber bridges, the Bridge Engineering Center (BEC) has been invited to lead transportation related research for the Coalition for Advanced Housing and Forest Products Research (CAHFPR).

CAHFPR is an advisory group that makes recommendations to the Advanced Housing Research Center at the USDA Forest Products Laboratory in Madison, Wisconsin. The coalition is working to increase the use of timber in structures while responsibly maintaining forests.

The BEC will train bridge owners to use current timber technology efficiently, evaluate in-service timber bridges, and research new methods and technologies for applying timber technologies. Brent Phares, BEC associate manager, says, "There's a real need for this type of research and training, and we're excited about this opportunity."

First ultra-high-performance concrete bridge

The Bridge Engineering Center (BEC) has begun work on what will likely be the first ultra-high-performance concrete (UHPC) bridge in the nation. The BEC and Wapello County, Iowa, along with the Iowa DOT's Office of Bridges and Structures and Office of Materials Research are building this bridge in Wapello County on 100th Avenue near the Davis County line. The project is supported through the Federal Highway Administration's Innovative Bridge Research and Construction program.

UHPC improves the technology used in high-performance concrete (HPC). UHPC is more durable and less permeable, which results in less susceptibility to corrosion of embedded steel. It also reaches full design strength in only four days, compared to several weeks for other types of concretes. UHPC bridges should cost less money for materials, labor, and transportation.

"UHPC has never been used for a complete bridge in the U.S. before. We're glad to be working with our colleagues at the Iowa DOT and Wapello County to advance the state-of-the-art of this technology," says Brent Phares, associate manager for the BEC.

The BEC will fill a variety of roles but will primarily monitor and evaluate the bridge, perform lab testing, and provide general design guidance for the project.

As part of its commitment to training, the BEC hosted a preliminary engineering workshop that included representatives from the Iowa DOT, the Federal Highway Administration, local precaster companies, and experts on UHPC.

CTRE en route highlights transportation research, education, and outreach at the Center for Transportation Research and Education at Iowa State University.

It is published online at www.ctre.iastate.edu/pubs/en_route/.

CTRE
Center for Transportation Research and Education

IOWA STATE UNIVERSITY