

## Congratulations, Eisenhower fellows

Two graduate research assistants working at CTRE have won three-year Dwight David Eisenhower Fellowships, which help fund graduate study in transportation-related fields. Justin Doornink and David Veneziano are both PhD students in Iowa State University's Department of Civil, Construction and Environmental Engineering.

Of the 78 students competing for the fellowships, Justin (BSCE '01 and MSCE '03, Iowa State University) was ranked number one. This is his second Eisenhower fellowship. Justin is specializing in structural engineering. He's currently working to develop a health-monitoring system that uses fiber optic sensors to evaluate the fatigue



*Justin Doornink (above, foreground) and David Veneziano (below)*

behavior of high-performance steel in bridges. This system will also be used to monitor and assess the degree and location of damage in fracture-critical bridges.



David (BS Management '00, St. Joseph's College; MS Transportation Planning '02, Iowa State University) is specializing in transportation. He recently completed work on the development of an intersection interface data collection system, which enables city, county, or state agencies to build, maintain, and share a comprehensive intersection database for their jurisdictions. He's currently working on the development of new strategies for locating safety improvement candidate locations (SICL), which will address changes in location methods for the Iowa crash database and the effects these changes will have on SICL development.

## Current research highlights

### Developing an Effective Construction Training Program for Hispanic Supervisors and Craft Workers, Ed Jaselskis (Sponsor: Iowa DOT)

The number of Hispanic workers in the U.S. construction industry has been estimated to be 18 percent of the workforce, 7.4 percent of Iowa's. Safety statistics reveal an increasing accident trend for Hispanic workers. While the overall construction fatalities dropped 3 percent, Hispanic fatalities jumped 24 percent. This project investigates ways of enhancing the productivity and safety of Hispanic workers through modified training programs suited specifically to meet their needs. Issues that will be investigated relate to workforce development needs such as language, training requirements, and how to best integrate the Hispanic workers into the U.S. construction workforce.

### Assessing the Effectiveness of Public Transportation Boards TCRP H24A, Steve Andrie (Sponsor: Transportation Research Board)

The purpose of this research is to develop a handbook that provides an objective self-assessment process and tools to measure the effectiveness of a public transportation board. The handbook will identify the charac-

teristics of public transportation boards that influence system performance, provide a self-assessment process and tools to measure public transportation board effectiveness, and provide guidance as to how board characteristics can be changed to improve effectiveness in the various areas of assessment.

### Innovative Solutions for Slope Stability Reinforcement and Characterization in Iowa Soils, TR489, David White (Sponsor: Iowa Highway Research Board)

This research will include in situ testing of 5-10 existing slope failures around the state. Field investigations will provide for a better understanding of the mode of failure associated with most stability problems in Iowa. Coincident with investigation of failures, remediation technologies will be investigated, and select pilot studies will be conducted as opportunities are presented.

### Evaluation of a Timber Bridge for the Secondary Road System Using FRP Reinforced Glulam Girders, Terry Wipf (Sponsor: Delaware County, Iowa)

Glued laminated wood (glulam) has been used significantly since 1942 for building and bridge construction, including both bridge girders and bridge decks. Glulam,

like reinforced concrete, can be reinforced in the tension regions to more effectively use the compressive strength of the wood, which allows lower grade wood to be used. Fiber reinforced polymers (FRP) have been shown to be effective in reinforcing the tension regions of glulam girders. With falling costs for the FRP material and the development of efficient manufacturing techniques, the FRP reinforced glulam has the potential to be an economically viable bridge alternative.

A single span bridge 64 feet long and 30 feet wide will be constructed in Delaware County, Iowa. The bridge will be comprised of FRP reinforced glulam girders and will use a transverse timber deck. The design will be based on recommendations and performance data supplied by the eventual manufacturer. Researchers are documenting the design, construction, and performance of this bridge.

See details of these and other current projects online at [www.ctre.iastate.edu/research/iprogress.cfm](http://www.ctre.iastate.edu/research/iprogress.cfm).