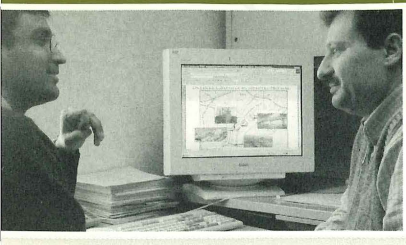
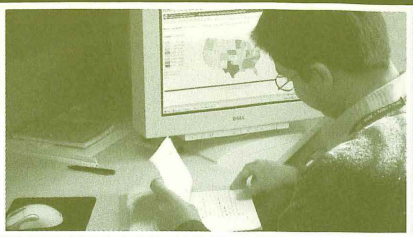
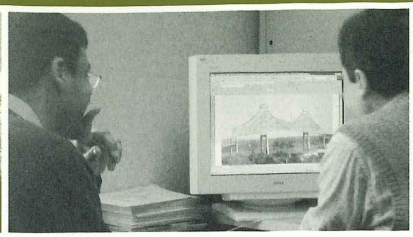


BRIDGE MANAGEMENT INFORMATION SYSTEMS LABORATORY

Research that is Essential, Indispensable, and Connected to our Customers.

PURPOSE

The Bridge Management Information Systems (BMIS) Laboratory identifies and analyzes the causes and trends of deficiencies in the Nation's bridge inventory and develops methods to enhance bridge management practices. Using the National Bridge Inventory (NBI), BMIS provides the Federal Highway Administration (FHWA) and its customers with applications that enhance and supplement the data collected and maintained in the NBI.

DESCRIPTION

BMIS houses the time-series NBI, climatological data distributions, seismic point-source information and strong-motion data, hydraulic and hydrologic information, geotechnical distributions, transportation network coverage, and base political data sets. The facility also contains three high-level, dual-processing Windows® NT workstations and tools that support sophisticated analytical research on existing disparate data sources, including a Geographical Information System platform combined with relational database management systems software, and advanced mathematical and statistical software.

SPECIAL CAPABILITIES

This combination of data and advanced tools is not available at any other facility in the world. The available bridge inventory and inspection data sources are being integrated with climate data, hydraulic and hydrologic information, geotechnical data, and earthquake information to help researchers study the relationships between bridge conditions and external environmental factors.

With such capabilities, researchers can identify spatial deterioration patterns, document deficiency causes and magnitudes, and correlate such information with environmental variables. Results provide significant insight into the problems faced by transportation agencies, and identifying problem areas helps bridge owners target resources effectively. Researchers are studying bridge management systems, inspection, maintenance, and life-cycle costs to enhance bridge management system decision-support models.

ACCOMPLISHMENTS

BMIS staff created WebNBI, a Web-based system that accesses and analyzes NBI data. WebNBI helps researchers examine the relationship between conditions, capabilities, and performance of bridges in the national transportation system. WebNBI users can:

- Download NBI files for any State in Microsoft® Access or text format.
- Generate bar charts from the NBI or from query results.
- Browse or download commonly requested queries, graphs, and maps.
- Retrieve map bridge records from NBI queries and display significant features in the bridge environment such as roads, rivers, and rail lines.
- Generate structure inventory and appraisal reports and spatially display a given bridge for which a report has been generated.

CURRENT ACTIVITIES

- Developing new Internet technologies to enhance WebNBI, and exploring alternative, flexible data structures and applications for NBI and bridge management data analysis.
- Conducting research and development to provide enhancements to bridge management systems and Federal bridge program management. Results will help bridge owners assess life-cycle costs, apply risk management to bridge programs, and allocate limited Federal Highway Bridge Replacement and Rehabilitation Program funds to target resources effectively.
- Conducting ongoing research studies in exploratory NBI data analysis and data mining. Results will enhance the ability to establish relationships between bridge condition, capacity, and performance and causal factors such as loadings and the environment;

The Turner-Fairbank Highway Research Center (TFHRC) has more than 24 laboratories for research in the following areas: safety; operations, including intelligent transportation systems; materials technology; pavements; structures; and human centered systems. The expertise of TFHRC scientists and engineers covers more than 20 transportation-related disciplines. These laboratories are a vital resource for advancing this body of knowledge created and nurtured by our researchers. The Federal Highway Administration's Office of Research, Development, and Technology operates and manages TFHRC to conduct innovative research to provide solutions to transportation problems both nationwide and internationally. TFHRC is located in McLean, VA. Information on TFHRC is available on the Web at ***www.tfhrc.gov****.*

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This RD&T fact sheet provides concise information about a TFHRC facility.

and to relate events such as crashes and traffic congestion to bridge condition and geometric parameters.

- Providing offsite database and Web site technical support for the Innovative Bridge Research and Construction Program administered by FHWA's Office of Bridge Technology. The program helps local and county road agencies and State departments of transportation defray the cost of incorporating innovative materials and materials technologies in bridge repair, rehabilitation, replacement, and new construction.
- Developing methodologies, software tools, and procedures necessary to create road inventory program maps and strip maps of park roadway assets.

LAB PARTNERS

Our partners include other FHWA offices, the National Cooperative Highway Research Program, and the Transportation Research Board Committee A3C17 on Bridge Management Systems.

CONTACT

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