Northwestern developed and deployed technology to evaluate the impact of riverbed erosion on a bridge. This measurement system has been adopted by CalTrans for use throughout the state.

Acoustic emission monitoring was used to evaluate the effectiveness of repairs to a heavily cracked area of an Interstate highway bridge. Our tests helped CalTrans choose the best repair for use throughout the bridge.

Multiple testing methods are being used to assess the effects of overloaded logging trucks on the bridge, a critical link in east-west truck routes across Michigan’s Upper Peninsula.

This century-old Chicago Transit Authority overpass is crossed by thousands of ‘L’ commuters daily. Northwestern is monitoring a recent retrofit to evaluate its integrity.

Northwestern is currently monitoring the performance of a key structural element on this major Ohio river crossing to guide retrofit designs.

The reconstruction of Washington’s Pennsylvania Avenue raised concerns about impacts on the Blair House, the President’s guest house. Our instrumentation showed that the effects were negligible, allowing construction to continue safely.

A sinkhole formed in the middle of this important regional trucking route. Sensors were deployed to monitor ground movement, increasing confidence in the repairs.

The Infrastructure Technology Institute (ITI) at Northwestern University develops advanced methods for monitoring infrastructure condition and performance to assist owners and operators with critical decisions concerning structural integrity, renewal, and rehabilitation.

Supported by a grant from the US Department of Transportation’s Research and Innovative Technology Administration, ITI brings theory, experience with transportation structures, knowledge of structural health sensors and wireless communications, and creative problem-solving to bear on the protection and renewal of the nation’s transportation infrastructure.
Research achievements have pushed our understanding of infrastructure performance in response to manmade and environmental stresses to unprecedented levels. Yet the practice of structural design sometimes lags these advances, and instead relies on outdated rules and procedures imbedded in U.S. structural design codes. **Researchers at Northwestern’s ITI are bridging the gap between academic research and engineering practice.** Based on studies of major infrastructure failures, they have identified critical issues in structural codes, and they are actively engaged in efforts to improve those codes to ensure the safety and efficiency of transportation infrastructure.

**With the support of ITI and the Illinois Department of Transportation, Northwestern materials researchers are developing a family of new, high-strength, corrosion resistant steels.** These materials do not require specialized manufacturing processes or additional preparations for welding, and because of their corrosion resistance, they do not require painting. This reduces costs throughout the life-cycle of structures. These steels are being used for bridges and bridge repair, and our materials development efforts continue.

Northwestern’s ITI is committed to solving transportation infrastructure problems through advances in research, deployment of new technologies, and development of advanced materials. We partner with public and private entities to accomplish this mission.

**ITI engages graduate and undergraduate students in Northwestern’s McCormick school of engineering through hands-on exposure to research projects and field work. This draws qualified young people into productive and rewarding careers in the field of transportation infrastructure.**