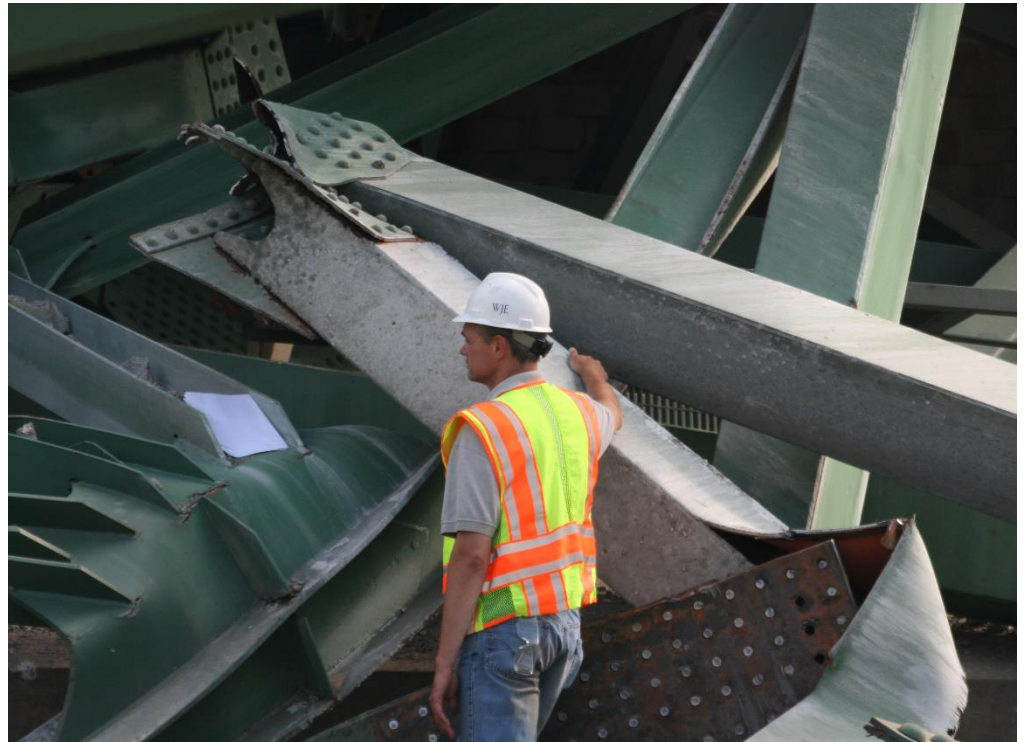


Failure and Damage Investigation



- Cause and origin studies
- Stabilization design
- Damage assessment and documentation
- Failure simulation modeling
- Load testing
- Repair and rehabilitation design
- Structural analyses
- Fracture mechanics assessment and fitness for service
- Nonlinear finite element analysis
- Failure prevention
- Expert witness testimony and litigation support

We have participated in the engineering or architectural investigation of many of the United States' most significant major failures and natural disasters and has assisted in many investigations globally. Thousands of clients have relied on us to accurately determine the cause and extent of damage and repairs needed to restore their facilities to operation. Our experienced structural engineers, architects, and materials scientists have earned a reputation for quickly responding to catastrophic events, frequently arriving on-site the same day as a disaster.

We offer a full range of investigative, analytical, and laboratory techniques to determine the cause and extent of damage. Our extensive in-house laboratories and diagnostic field capabilities include a wide range of equipment and services for structural, architectural component, and materials testing. These resources enable our engineers and architects to better understand how structures and architectural systems respond to extreme events and to develop repairs and replacement systems that meet future performance expectations. We can also assist clients with recovery by providing temporary solutions that quickly return damaged structures to service.



Failure and Damage Investigation

REPRESENTATIVE PROJECTS

- Ghent Generating Station Cooling Tower - Ghent, KY: Investigation of fiber-reinforced plastic column failures
- Hurricane Katrina - Gulf Coast, United States: Structural, building envelope, and roofing assessment of more than 3,000 structures
- I-35W Mississippi River Bridge - Minneapolis, MN: Collapse investigation
- Joplin School District - Joplin, MO: Tornado damage structural assessment
- K+S Potash Canada's Legacy Project - Bethune, Saskatchewan: CR-430 crystallizer collapse investigation
- Liberty Bridge - Pittsburgh, PA: Fire damage investigation and retrofit work
- Snow Load Failure Investigations - ID, OR, and WA: Investigation of approximately 110 structural failures
- TWA Flight 800 - Long Island, NY: Aircraft reconstruction
- Washington Monument - Washington, D.C.: Earthquake damage evaluation, repair design, and seismic assessment

