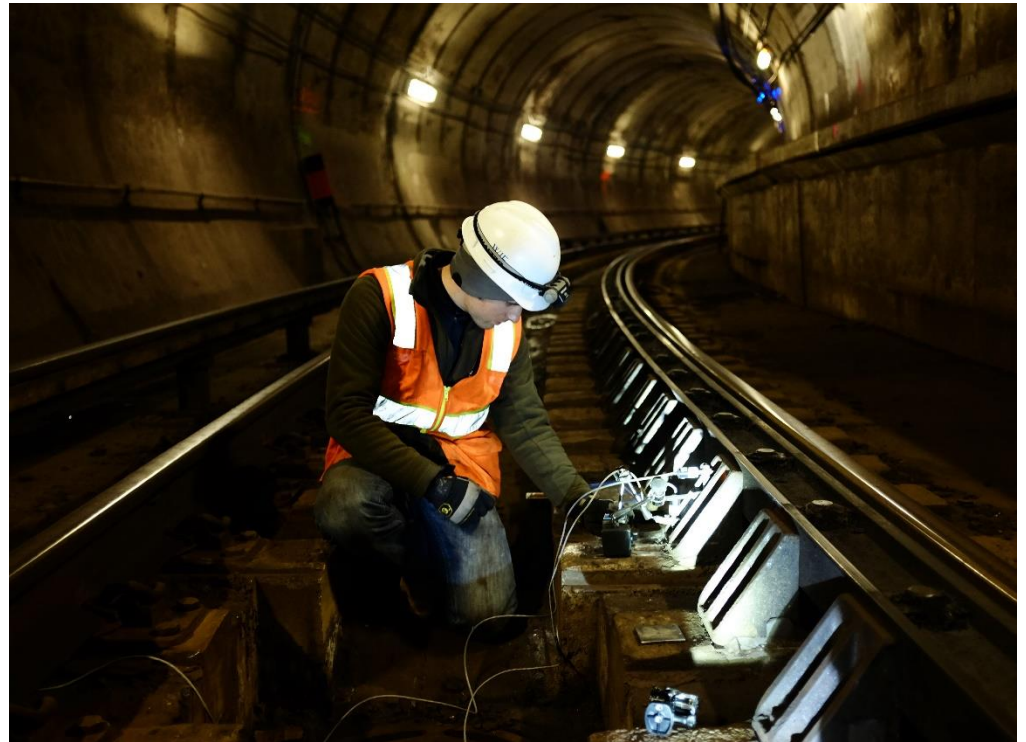


Instrumentation and Monitoring

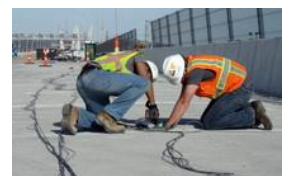


- Modal and dynamic structural analysis
- Long-term structural health monitoring
- Structural load testing
- Vibration, blast, and noise monitoring
- Strain, displacement, load, and pressure monitoring
- Acoustic emission monitoring
- Building envelope monitoring
- Air/water infiltration testing
- Temperature, relative humidity, solar radiation, and wind speed monitoring
- Structural tilt monitoring
- Subsurface inclinometer testing
- Constructability testing
- Digital Image Correlation

Distress and deterioration are not always visible to the naked eye. Conversely, visible damage does not always correlate to more serious, widespread issues. Knowing the internal condition or long-term performance of a structure or component is vital to developing appropriate maintenance plans and repair strategies. We engage a full suite of state-of-the-art instrumentation and monitoring capabilities to test and measure structures over time and from the inside out.

Our engineers and architects have instrumented and measured thousands of structures in our Janney Technical Center laboratory and in the field with strain gages, displacement instrumentation, accelerometers, environmental monitors, and other sensors. We've developed, installed, and maintained large continuous monitoring systems, featuring wireless networks, interactive web and video feeds, database archival systems, and automated alarm systems. These techniques and tools provide the detailed information we need to evaluate structural behavior and measure the performance of repairs and retrofits.

By using a data-driven approach to investigating deterioration and distress conditions, our engineers and architects give clients a fuller understanding of their structures and can work with them to achieve improved performance and increased service life.



Instrumentation and Monitoring

REPRESENTATIVE PROJECTS

- Barnes Foundation - Philadelphia, PA: Lightbox monitoring services
- Benicia-Martinez Bridge - Benicia, CA: Long-term health monitoring system
- Caltrans - Statewide, CA: Investigation of early-age cracking of concrete bridge decks
- Cape Hatteras Lighthouse - Buxton, NC: Instrumentation engineering for 2,900-foot move
- CTA Wilson Transfer Station - Chicago, IL: Inclinometer monitoring at relief sewer
- Glass Dome Building - Chicago, IL: Evaluation of ultraviolet and light transmission
- Macy's State Street - Chicago, IL: Tiffany ceiling vibration monitoring
- Rock Creek Terminal - Joliet, IL: Monitoring of blast vibrations relative to concrete strength
- Sam Houston Ship Channel Bridge - Houston, TX: Displacement monitoring of bridge girders
- University of Chicago, Smart Museum of Art - Chicago, IL: Vibration monitoring during installation of chilled water lines
- University of Phoenix Stadium - Glendale, AZ: Instrumentation and monitoring of long-span supertrusses during erection
- Washington Monument - Washington, D.C.: Instrumentation and monitoring of stone monument
- Wrigley Field - Chicago, IL: Vibration monitoring and structural analysis

