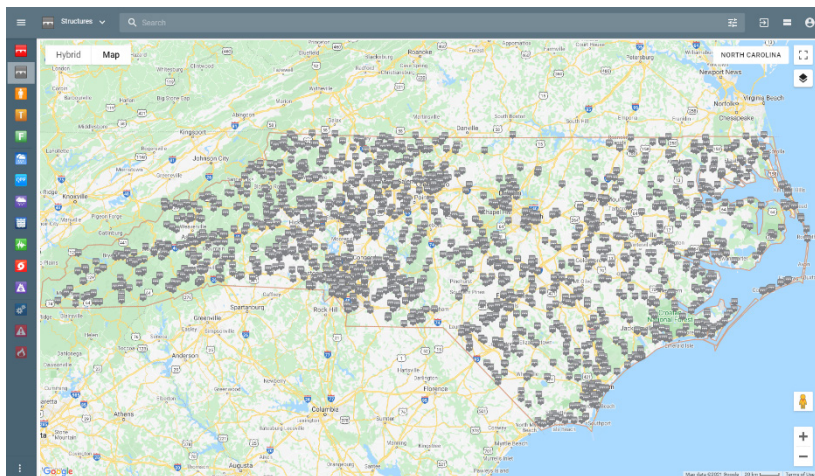


BridgeWatch

Public Safety Through Real-time Structure Monitoring



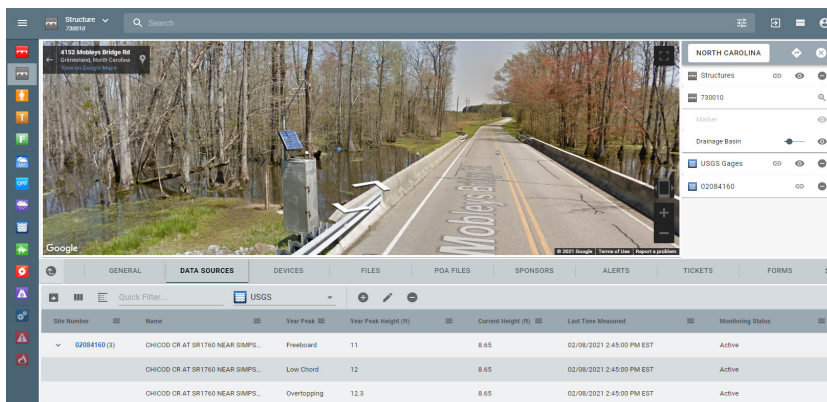
Program: North Carolina Transportation professionals are charged with the formidable task of protecting, maintaining, and replacing over 15,000 bridges along over 80,000 miles of roadway statewide. To help meet this challenge, The North Carolina Department of Transportation has implemented a 3-year pilot using BridgeWatch by UEngineering Solutions. BridgeWatch is an online bridge-monitoring application service to enable transportation professionals to proactively monitor, in real-time, valuable infrastructure to prevent and protect against hazardous conditions for private, public, and commercial transportation.



The initial implementation of BridgeWatch includes over 1,500 high-risk bridges.

How It Works: BridgeWatch collects and processes real-time data at regular intervals from meteorologic, hydrologic, oceanographic, and seismologic sources, gauges, and other sensing devices. Data comparisons are then performed with internal NCDOT bridge parameters such as flood impact (floodwaters reaching structure levels) or roadway overtopping. NCDOT officials and Emergency managers can customize alerts, when appropriate, via any electronic medium (cell phones, email, application dashboard, etc.) when bridges are experiencing a dangerous or critical condition.

Leveraging NC's Data Investments: The North Carolina Floodplain Mapping Program and NC DOT have partnered to share and leverage data for years. This partnership continues with the BridgeWatch implementation. North Carolina is leveraging detailed river modeling and high-resolution LIDAR datasets to refine bridge elevations statewide for more accurate alerts. These datasets are being used to implement the first in the nation thresholds for the following:



BridgeWatch links over 300 sites (stream gauges) statewide to monitor bridge performance and roadway overtopping.

- **Rainfall Alerts:** The system actively monitors NEXRAD and other forecasts for thousands of bridge drainage areas statewide. Officials are notified if rainfalls (actual or forecasted) trigger predetermined thresholds.
- **Storm Surge Alerts:** National Hurricane Center advisories are monitored comparing forecasted storm surge levels to bridge elevations. Custom alerts are available for when forecasted storm surge may impact bridges.
- **Freeboard Alerts:** Officials are notified when a stream levels rise close to a critical level at a bridge.
- **Low Chord Alerts:** The low chord is typically the lowest structure member (beam) above the stream or river. Officials are notified when flood waters reach these critical levels. Alerts can be used to prioritize inspections and possible road closures during a flood.
- **Road Overtopping:** Officials are also notified as sensors in the field detect water levels that could indicate that the roadway is overtopped either at the bridge or bridge approaches. This valuable information can be used for road closure, emergency response and post event inspection prioritization.

Joseph Scannell – CEO, UEngineering Solutions

“North Carolina has one of the most comprehensive data investments in the United States. North Carolina DOT is well positioned to fully leverage our technology”