

Concrete imaging: How the multi-technology approach facilitates world-class inspection

Overview

- The Forensics practice at [Thornton Tomasetti](#) relies on advanced analysis and visualization tools to investigate and resolve complicated structural engineering problems.
- Proceq GPR and Pundit UPE are used to gather different types of structural data.
- Using the equipment, the team is able to generate ultra-clear 3D visualizations and achieve a thorough understanding of large, complex concrete structures.

Thornton Tomasetti is a scientific and engineering consulting firm, founded in 1949 and headquartered in New York City in the United States of America. In addition to designing the world's tallest towers and longest spans, the firm has been involved in headline forensics work including the World Trade Center disaster response and investigation in 2001 and, more recently, the investigation into the collapse of the famed Arecibo Telescope in Puerto Rico, USA.

The Forensics team at Thornton Tomasetti are true 'intelligent users' of the Screening Eagle portfolio of inspection technology.

Challenge

By its nature, forensic engineering rarely involves simple, routine inspections. It entails thorough analysis, documentation, and testing to determine why a structure has failed and to identify a solution. The structures tend to be large and constructed of a variety of materials, including concrete, timber, steel, and masonry and sometimes are badly deteriorated or damaged. It requires critical thinking and advanced technology to solve these complex challenges.

Solution

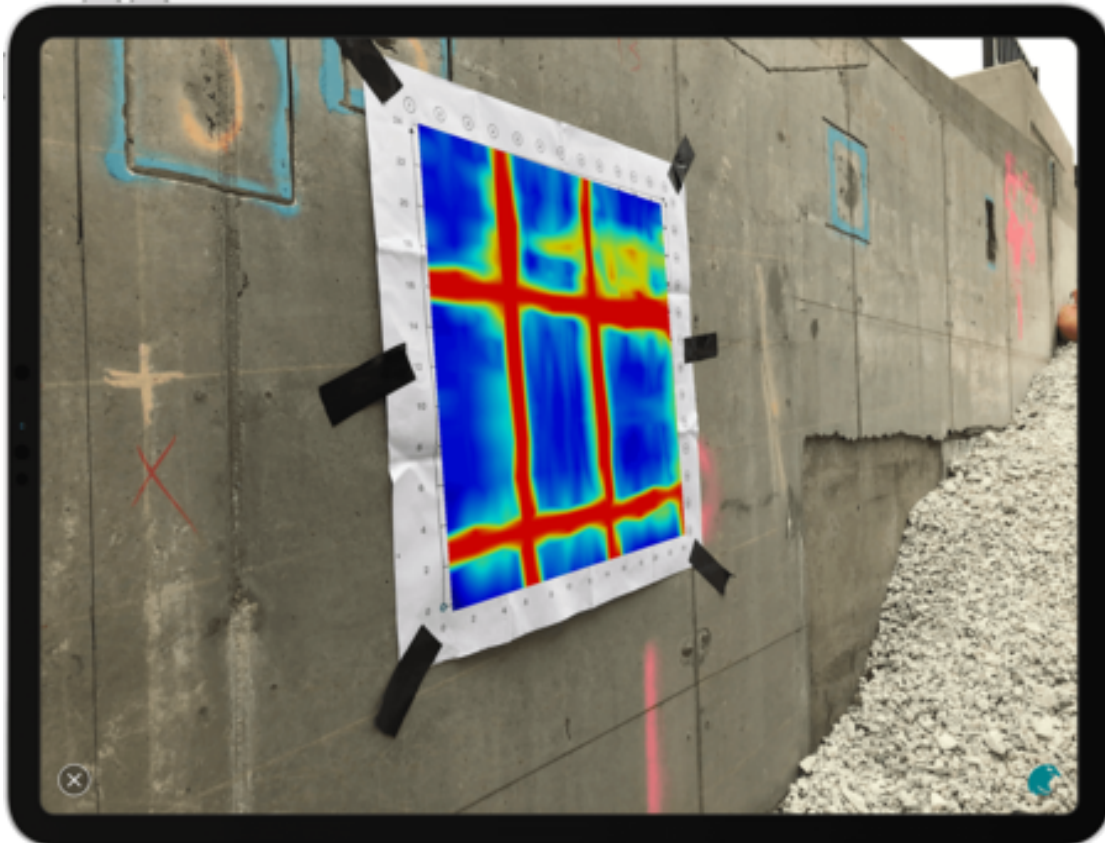
The Forensics practice at Thornton Tomasetti is the proud owner of several Screening Eagle Technologies sensors and software. It recently shifted from engaging contractors to conducting inspections in-house. The team values being able to determine which technologies to use and having control during the inspection. As users of several of our products, Thornton Tomasetti appreciates the common interface across our apps and a connected ecosystem of technologies, which increases efficiency.

The team often uses ground penetrating radar (GPR) and ultrasonic pulse-echo (UP) sensors in tandem to investigate concrete structures. First, they employ [Proceq_GP8000_GPR](#) for a quick scan of the rebar layout, any other objects, and defects. Then they use [Pundit_PD8050_UP](#) for detailed analysis of the concrete uniformity, thickness measurements and detecting deeper internal defects. With both imaging devices, they appreciate the ability to obtain clear raw data and crisp 3D images.

Results

Thornton Tomasetti's Forensics practice is an excellent example of advanced users who appreciate and implement the multi-technology approach, with Screening Eagle Workspace as the central 'hub' for a centralized overview of all their inspection data.

The team use the [Proceq GPR \(GP\)](#) and [Pundit Array \(PD\)](#) apps to process and visualize the data immediately on site, and to look at the data side-by-side before deciding how to proceed.



Proceq GP8000 results showing rebar and a large void (top right). The concrete was cored and the void was confirmed. It is an example of a consolidation void.



For particularly challenging projects, an offsite and more experienced team view the results in real-time - this 'elevates the game' and enables complex challenges to be solved more efficiently.

See more customer case studies for concrete imaging, how-to's, and much more on our [Tech Hub](#).



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