Solving Subsurface Challenges with Comprehensive Concrete Scanning and Imaging

Overview

- Trinity Subsurface, LLC needed to solve some complex challenges involving large and complex subsurface utility systems.
- Several NDT methods were used including ground penetrating radar (GPR), Ultrasound and Eddy-current to gain the most complete picture.
- The team were able to conduct faster assessment of large areas with all data seamless integrated with intelligent software for comprehensive reports.

Trinity Subsurface, LLC (headquartered in Delaware, USA) solves complex problems related to underground utility systems. This includes utility detection, excavation and pipe repair services. Trinity Subsurface also provide concrete scanning and imaging services.

Challenge

Trinity Subsurface engage in many subsurface mapping projects, often covering large areas. The company were one of the first and most enthusiastic users of the Proceq GP8000 GPR for concrete scanning and imaging. After the success of using the GP8000, they wanted to scale their business even further with subsurface utility scanning and complete structural assessment.

A multi-technology approach is always recommended to gain the most complete picture of any structure or the subsurface. However, the team wanted to ensure that they could not only collect clear data from the different technologies needed, but that the data could be managed efficiently. In the past, this has been extremely challenging, since most non-destructive testing methods are not connected or related in anyway, making it harder to centralize the data for analysis and reporting.

Solution
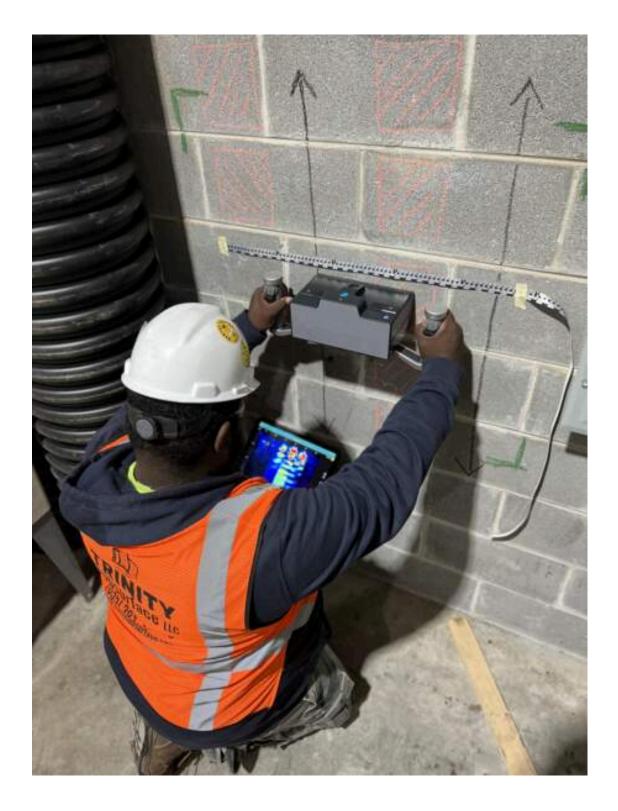
For their multi-technology approach, they chose:

Proceq GPRs for object detection such as rebar - **GP8800** (for concrete imaging in tight spaces) **GP8100** (for large areas) and **GS8000 Pro** (for subsurface scanning).

Pundit Ultrasonics - **PD8050** for structural imaging and measuring thickness and uniformity of concrete.

Profometer PM8000 Pro to assess concrete cover and rebar diameter for quality control of new structures, plus durability & structural resistance assessment of exisiting concrete structures.

Asset management software - **Screening Eagle Inspect** is used as the central 'hub' for all project data, reporting and asset management.

When it comes to concrete scanning and imaging projects, Trinity Subsurface begin by performing a GPR scan to map the reinforcements and to mark out any suspected anomalies e.g. voids. They then use Pundit PD8050 to scan the anomalies and get better insights into what the problem might be. They also use Screening Eagle's Pundit Vision post-processing desktop software for additional visualization and processing.

For large areas of different shapes, the team make good use of the Proceq GS8000 Pro's 'free path' feature which allows them to scan the subsurface as they walk freely, unconstrained by a grid.

Result

Mr Randy Clinton, an experience team leader at Trinity Subsurface says, "One of our favourite features of the Proceq GPRs is the ability to visualize clear 3D results immediately on the field and show them to our clients"

Their clients have various challenging subsurface demands, so this immediate and convincing visualization is extremely valuable.

Trinity Subsurface pride themselves on not only observing subsurface features but *documenting* the findings with precision. Screening Eagle's inspection management platform, INSPECT, allowed the team to do this more efficiently than ever before. The team used the 'Capture' feature of INSPECT for automated photo documentation, saving them time on this visit and future inspections.

Mr Clinton also mentions, "We value how the GPR data can be seamlessly transferred into the INSPECT app for a comprehensive, formal reporting."

Trinity Subsurface are an excellent example of a business that appreciates the value of harnessing mobile computing for onsite subsurface visualization and the value of the multi-technology approach for the most thorough inspection and documentation.

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