Velsicol Chemical Corporation Superfund Remediation

Challenge:

The Velsicol Chemical Corporation in St. Louis, Michigan underwent a Superfund Remediation Program initiated in 1999 to address environmental concerns. Issues of contamination in surrounding soil and the Pine River led to remediation. Once river sediment and soil contamination were addressed, it was determined that a downgradient vertical barrier wall would be installed around the perimeter of the former plant site. The barrier wall was designed as a combination wall, composed of steel sheet pile sections and cylindrical king piles. GRL Engineers provided Thermal Integrity Profiling (TIP) to assess the concrete integrity inside the king piles.

Method:

A king pile wall was constructed as part of the downgradient vertical barrier wall. The individual king piles included a steel pipe pile backfilled with concrete. The concrete sections were reported to be 36 inches in diameter and ranged in lengths of approximately 27 – 49 feet. To assess the concrete integrity, four Thermal Wire® cables were installed along the full length of the reinforcing cage. After concrete placement, a TAP-Edge or TAG data logger was connected to each wire to begin data acquisition. Readings were sampled every 15 minutes and sent to ATLAS™ a secure cloud management system. GRL Engineers accessed the data remotely and provided real-time results to the site personnel. Thermal Integrity Profiling data analysis was provided for all 167 piles.

Results:

All 167 piles were instrumented by the contractor, with GRL providing remote monitoring. Data transmission and wire survivability resulted in 100% of the designated piles being analyzed and less than 2% of the wires having any issues with damage or data loss from installation techniques.

The temperature profile for the installed piles indicated fairly constant temperatures throughout the pile length with a small temperature reduction in the hard clay below the casing, where the diameter was reduced to 30 inches. Another temperature drop was evident in all wires below the top of concrete as was expected due to the presence of water around the pile. A sample of TIP data can be reviewed in **Figure 1**.

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Project Details

Client: AECOM

Location: St. Louis, Michigan

GRL Office: Ohio

GRL Services

- Thermal Integrity Profiling (TIP)

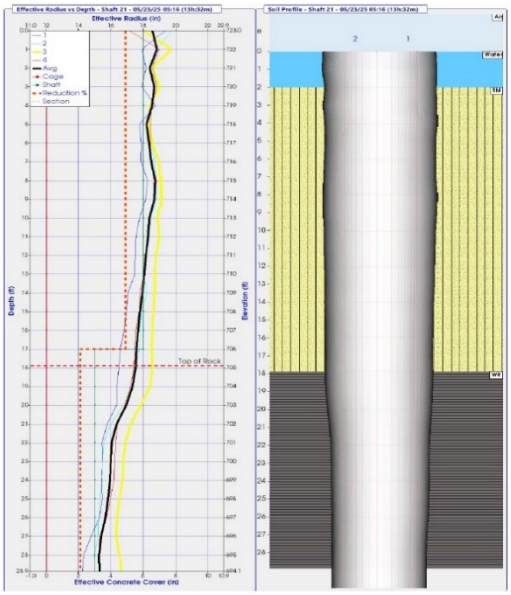

Figure 1. Thermal Integrity Profile of drilled pile installed as part of the vertical barrier combination wall