



### GEODAQ DELIVERED:

- ▶ 96 strain gauges and 48 GST modules, installed on eight soil nails using one cable.
- ▶ 100 percent of strain gauges survived installation and were functioning after soil-nail bar insertion and grouting.
- ▶ Monitoring station with GCM controller module and wireless internet modem in protective casing, installed at the top of the soil nail wall.
- ▶ Dedicated server, secure database, and redundant backup for data storage of a total of 213,258 readings, without a single missed reading.
- ▶ Frequent sampling for clear indication of strain changes at the initiation of each lift excavation.
- ▶ Password-protected web interface for real-time data monitoring and analysis.

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## Berkeley, California

# UC BERKELEY SOIL-NAIL WALL MONITORING

### OVERVIEW

The Stanley Biosciences and Bioengineering Facility is the largest research building on the campus of University of California Berkeley, with three basement levels and eight above-ground levels. Construction required an excavation up to 83 feet deep through clayey shale, greywacke, and a groundwater table about 10 feet below ground. The Hayward fault runs about 600 feet away. MACTEC, the geotechnical engineer, designed a soil-nail wall earth-retention system to accomplish the excavation. They needed to monitor forces in the soil nails during construction.

### SOLUTION

Geodaq installed 48 GST modules at different locations along the length of eight soil nails, connecting a total of 96 strain gauges. During construction, strain gauge readings were acquired from the embedded GST modules using a single cable. A traditional approach would have required connecting over 380 instrumentation wires to a data logging system, but Geodaq's sensor network eliminated potential sensor to logger errors and greatly simplified field installation, thus reducing costs.

