



TELECOMMUNICATION TOWER GEOTECHNICAL & FOUNDATION MAPPING • nationwide

CHALLENGES

- Short project schedule
- Deploy staff nationwide
- Evaluate buried foundations
- Missing/incomplete documentation of existing sites

SOLUTIONS

- Perform low-strain integrity testing
- Perform precise excavations to evaluate existing foundations
- Use nationwide drilling network

SERVICES

- Geotechnical engineering
- Foundation investigation
- Foundation analysis

G2 tackles national telecom tower project on tight timeline

G2 Consulting Group evaluated the foundations of approximately 50 telecommunication towers across the United States for Semaan Engineering Solutions, Inc., a Nebraska-based structural engineering firm.

Semaan was evaluating the foundations of these existing monopole, freestanding and guyed towers to determine whether they can handle the installation of additional antennas and communication equipment. They required specific information about the existing subsurface conditions and the towers' foundation types and dimensions. At many of the sites, the original documentation – including geotechnical reports, foundation design and as-built plans or reports – was missing or incomplete.

Extensive experience in geotechnical and foundation mapping at telecommunication sites helped G2 quickly mobilize staff experts to the tower sites and coordinate with its network of drilling and excavation contractors to efficiently complete the geotechnical and mapping services. Many of the sites were located within difficult terrain and remote areas, requiring G2 to also coordinate with land owners and obtain specialized equipment.

G2's tower foundation mapping services included excavations adjacent to foundations and anchors to view the actual foundation dimensions. These required extreme care to avoid damage or undermining of existing foundations and anchors. A G2 staff member was always on site to supervise and document the required excavation operations.

For towers supported on drilled piers, G2 utilized low-strain pile integrity testing to estimate the pier length and to identify possible discontinuities in the piers. Low-strain integrity tests are performed by measuring the impedance of a compression wave applied through the pier. The time and distance traveled by the wave can be used to estimate the pier's contiguous length.

After analyzing a site's subsurface conditions and foundation information obtained during these field operations, G2 produced a final report providing the necessary soil parameters and foundation information that Semaan needed to complete its structural evaluation of the tower. G2 provided each report within 10 days of receiving the site's location from Semaan – a very efficient turnaround.