

# Topgolf Burlingame Golf Center

**Client**

ARCO/Murray National Construction Company, Inc.

**Timeframe**

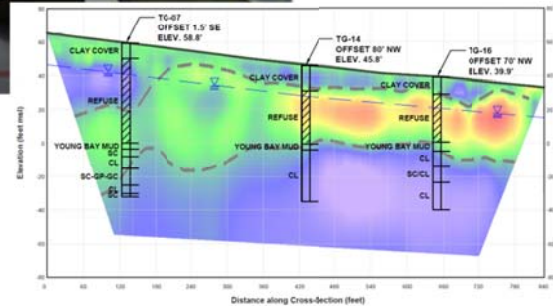
2018-2019

**Contract Amount**

\$150,000

**Personnel**

Richard Mitchell, PG, CEG (Proj. Mgr.)  
Neven Matasovic, Ph.D., PE, GE  
Beeson Liang, GE  
Alan Witthoef, PE, GE



## Geotechnical Exploration and Site Response Analysis

The proposed Topgolf USA Burlingame Golf Center Redevelopment Project is planned to be constructed on the closed Burlingame Landfill in Burlingame, California. The landfill, closed in 1987, had accepted construction debris, concrete rubble, roofing shingles, gardening debris, wood, metal, cloth, plastic, and anaerobic digester sludge. Existing improvements on the closed landfill include a baseball field, driving range and putting area, soccer field, clubhouse, parking area, and access roads. The proposed redevelopment will cover an area of approximately 15 acres and will incorporate a two-story building with restaurant, bar, event spaces, meeting rooms, and hitting bays, as well as targets, net poles, and netting downrange of the building.

Potential geotechnical or geologic hazards for the site include slope instability, surface fault rupture, strong earthquake shaking, soil liquefaction and lateral spreading, and differential settlement. To address these potential concerns, GLA performed a phased field exploration program, including geophysical measurements, geotechnical borings, and seismic cone penetration test (SCPT) sounding, and performed geotechnical evaluations of pile capacity, and settlement. Seismic site response analysis was warranted because this site was classified as NEHRP Site Class F.

The results GLA's field investigations revealed that the waste thickness within the footprint of the closed landfill varied from approximately 30 to 60 feet, which was significantly greater than previous documentation had suggested. GLA was also able to measure shear wave velocity in the upper 35 feet of the waste materials. In addition, to address special California Building Code (CBC) requirements applicable for the waste fill in the subgrade, GLA performed a seismic site response analysis to develop a site-specific Design Acceleration Response Spectrum for structural evaluations.

- County boring permitting
- Geotechnical field investigation (sonic drilling)
- Geophysical in-situ testing (electrical resistivity)
- Geotechnical in-situ testing (Seismic CPT)
- Waste Settlement Evaluation
- Evaluation of down-drag on piles due to waste settlement
- Laterally loaded piles analysis
- Seismic hazard analysis
- Development of design ground motions
- Site response analysis
- Development of MCE<sub>R</sub> spectra
- Reporting