



LIFE TIME FITNESS CENTERS • Suburban Chicago, Illinois

CHALLENGES

- Undocumented, potentially unstable fill soils

SOLUTIONS

- Provide two cost-effective foundation design options for the undocumented soils: belled concrete piers or Geopiers

SERVICES

- Geotechnical engineering
- Geotechnical testing
- Construction engineering services

G2 designs foundation options for Life Time Fitness Center

G2 Consulting Group provided geotechnical and construction engineering services for a new Life Time Fitness center that is being considered near St. Charles, Ill.

The northern half of the fitness center's proposed 76,500-square-foot footprint included an area of undocumented, potentially unstable fill soils with underlying organic soils. G2's suburban Chicago office recommended two cost-effective foundation design options for the two-story building: belled drilled concrete piers or Geopiers.

Both alternatives would support the fitness center's foundation on vertical piers extending 20 to 25 feet deep, passing through the unsuitable fill and organic soils to an underlying stiff, hard silty clay layer capable of bearing the building's load.

A belled pier is a straight shaft that bells into a much wider base in cohesive soils at its deepest end, distributing the foundation's load over a broader area. To create the pier, contractors drill a shaft, reinforce it with steel and fill it with concrete.

Geopiers are constructed by densely compacting successive thin lifts of high-quality crushed rock into a straight shaft using patented ramming equipment. The vertical ramming action increases the lateral stress and improves the soils surrounding the cavity, which results in foundation settlement control and greater bearing pressures for design.