

GEOPIER® SOLUTIONS

LIQUEFACTION MITIGATION

COST-EFFECTIVE FOUNDATION SUPPORT

Geopier® ground improvement systems provide economical liquefaction mitigation solutions. The installation of Geopier elements within liquefiable soils replaces loose soil with dense (dilantent) Geopier elements and increases the density of granular soils. Geopier ground improvement solutions reduce the potential for liquefaction by:

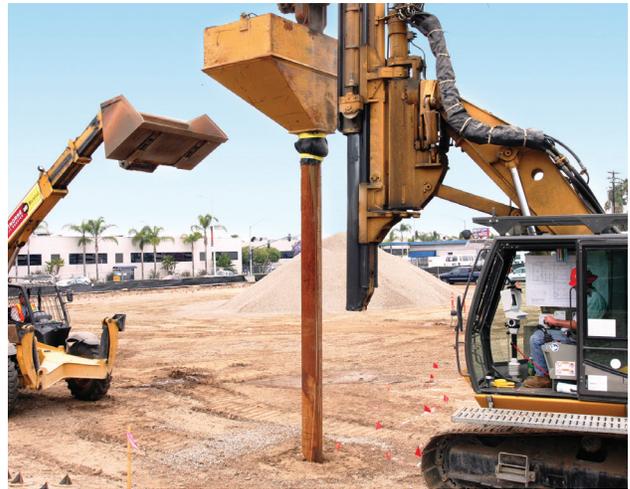
1. providing a stiff, non-liquefiable inclusion in the liquefiable soils,
2. improving the matrix soil between the piers by increased lateral stress and soil densification,
3. providing drainage elements for rapid drainage of excess pore water pressures that develop during seismic shaking, and
4. reducing shear stresses in the matrix soil.

EARTHQUAKE-INDUCED LIQUEFACTION

Engineers estimate the potential for liquefaction triggering by measuring the penetration resistance of the on-site soil, and using a database of historical liquefaction observations to determine liquefaction susceptibility. Geopier solutions densify clean granular soils, measured by an increase in post-installation penetration resistance values. Penetration resistance values in soils with more than approximately 20% fines are typically unaffected by densification techniques requiring design solutions to rely on other mechanisms. Geopier ground improvement reinforces soils at higher fine content to reduce liquefaction potential.

LIQUEFACTION-INDUCED SETTLEMENTS

Engineers commonly use a post-liquefaction settlement criteria for determining liquefaction mitigation design. The



A-1 Storage, San Diego, California

allowable magnitude of liquefaction-induced settlement depends on the type of structure and consequence of damage. Geopier ground improvement solutions are tailored for specific sites to provide acceptable levels of static and dynamic settlement through a combination of densification and reinforcement.

GEOPIER® EXPERIENCE

Geopier has successfully completed hundreds of liquefaction-mitigation projects across the globe, including project sites in California, the Pacific Northwest, Charleston SC, Memphis, the Middle East, South America, and New Zealand. Geopier liquefaction-mitigation may be used in conjunction with foundation systems to support a variety of applications.



*Casino Queen Hotel & Casino
East St. Louis, Illinois*



*Bay Area Rapid Transit Parking Garage
Walnut Creek, California*



*Bogazici Shipyard
Altinova, Turkey*



*Talison Row Apartments
Daniel Island, South Carolina*

Work with regional engineers worldwide to solve your ground improvement challenges.

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