



Solhaus East Bank Apartment Building

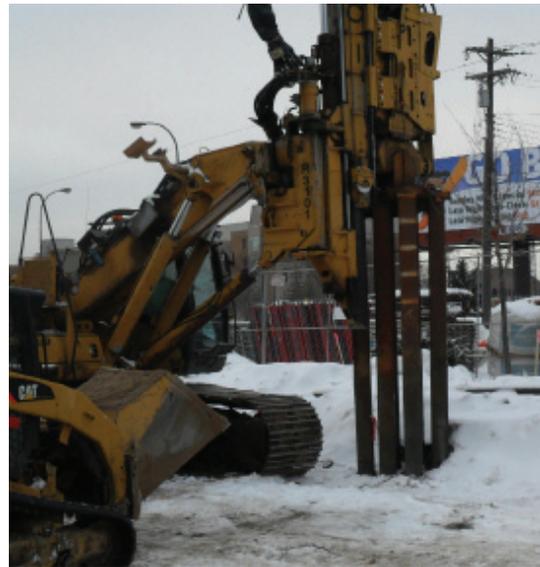
Minneapolis, Minnesota

Inclement weather not enough to stop the Geopier Densipact™ system from densifying loose granular fill in Minneapolis' metropolitan area

Description: Contaminated soils were encountered at the project site. Removal of the contaminated soil and replacement with engineered sand fill required temporary shoring and working inside an excavation. The geotechnical consultant proposed an alternative to save the owner time in earthwork by proposing a solution where the fill was placed in the excavation with minimal compaction effort followed by a densification technique from the ground surface to densify the entire loosely-placed sand back fill. The proposed structure consisted of a six-story building with wall loads of 8 kips per linear foot.

Subsurface Conditions: Contaminated sand fill was encountered to depths of 15 to 20 feet underlain by native loose to dense sand and silty sand. Groundwater table was encountered at the interface between the fill layer and native sand at 15 to 18 feet.

Options: As an alternative to time-consuming earthwork and working inside an excavation during the long snowy season in Minnesota, the geotechnical consultant recommended the Geopier Densipact™ system to densify in-place the newly-placed loose sand.



Geopier Solution: Rammed Compaction® Points were installed along the centerline of the wall footings to reinforce the loose sand fill to depths of 15 to 20 feet and control settlement to less than 1-inch. No delays were reported during installations because of snow.

PROJECT TEAM

Geotechnical Engineer:

Solhaus

Geotechnical Engineer:

American Engineering Testing Inc.

Structural Engineer:

Hanushack Consulting

General Contractor:

Blanchard Construction

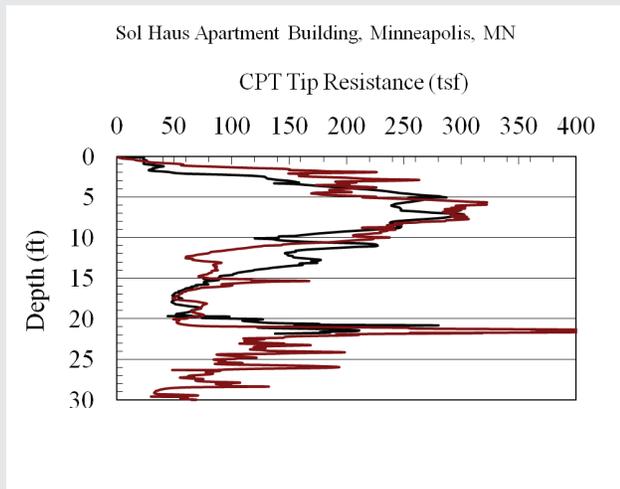
Geopier Designer:

Ground Improvement Engineering

Geopier Installer:

Peterson Contractors, Inc.

DESIGN VERIFICATION



Performance: The effectiveness of the Densipact system was verified by performing Cone Penetration Tests (CPTs) prior to reinforcement and after reinforcement. The results of the post-installation CPTs indicated that the sand fill was effectively densified, attaining tip resistance values of over 300 tons per square foot after densification, equivalent to N-values of more than 30 blows per foot. Results of tip resistance with depth for representative postinstallation conditions are included.