

Deerfield Retirement Complex Clive, Iowa

Geopier® Rammed Aggregate Piers™

Project Team

Geotechnical Engineer: Allender Butzke Engineers, Inc.

Structural Engineer: Datum Engineers

Owner: Deerfield Retirement Community

General Contractor: Weitz Company

Geopier Installer: Peterson Contractors, Inc.

Geopier Designer: GFC – Midwest

The Geopier Intermediate Foundation System provided a versatile solution to support high capacity footing in some areas and a combination of 14 feet of fill and low capacity footings in other areas.

Project Overview

Description:

Construction of a new retirement facility including an interconnected complex of 1 to 3 story, wood-frame structures sectioned off into seven sectors. Site grades required cuts of up to 15 feet and fills of up to 14 feet to achieve the different proposed floor elevations.

Subsurface Conditions:

Very soft to stiff sandy clay and loose sand alluvial soils extending 10 to 19 feet below grade underlain by medium stiff to stiff sandy clay glacial till. Groundwater varied from 2 feet to 17 feet below grade across the site.

Geopier Solution:

The geotechnical engineer specified a solution consisting of high capacity Geopier Rammed Aggregate Pier (RAPs) supported foundations in the cut areas and footings bearing in the new engineered fill supported by a grid of RAPs. Peterson Contractors, Inc. installed a total of 825 RAPs with lengths of 10 to 12 feet. For footing bearing on RAPs, an increased bearing pressure of 6,200 psf was used for design. For the support of the new fill and foundation loads, a grid of RAPs were installed at ten feet on-center. Additional RAPs were



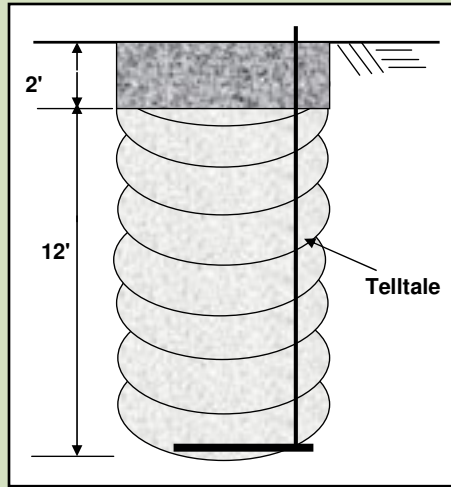
installed for foundation load support. The RAPs were installed using open-graded stone to provide accelerated drainage times through radial drainage. After a short delay period, settlement monitoring revealed the settlement from the fill was complete and the site was ready for foundation construction. The Geopier Intermediate Foundation System provided both cost and time savings compared to overexcavation and replacement and surcharge/preload options.



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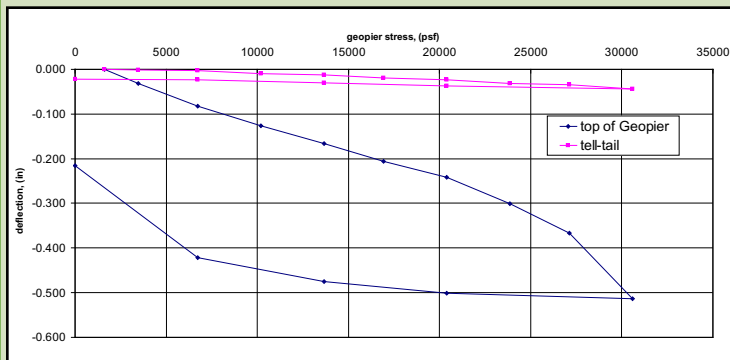
Modulus Test Pier Setup



The non-production Geopier RAP used for modulus testing was installed through the new silt fill and existing silty sand fill to tag the underlying glacial till by one foot. A steel telltale plate with sleeved rods extending to the ground surface was installed at a depth of two feet above the bottom of the RAP. Deflection measurements of the telltale assembly located at a depth of six feet in the RAP were taken during the modulus test. The results of the telltale deflection provided an indication of the amount of stress dissipation within the RAP. A two foot thick concrete cap was poured over the top of the RAP for testing purposes.

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Modulus Test Results



The results of the modulus test indicate that a deflection of 0.22 inches was observed at the maximum top-of-RAP design stress of 10,800 psf. The corresponding Geopier stiffness modulus of 345 pci exceeded the assumed design stiffness of 150 pci by more than double. At the 150% design stress level of 16,200 psf, a deflection of 0.35 inches was noted. The corresponding Geopier stiffness value was 320 pci. Only negligible telltale deflections were observed during the performance of the test, indicating negligible transfer of stresses to the bottom portion of the RAP.

FOR MORE INFORMATION

Contact Geopier Foundation Company at **800-371-7470**

or at **www.geopier.com**



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The Intermediate Foundation System