ARMORPACT®

JBS Automated Freezer Warehouse

Marshalltown, Iowa

A combination Geopier® system, consisting of Armorpact® and Rampact® elements provided a cost-effective ground improvement solution

Description: Construction of a 108,000 square foot freezer warehouse with 80 foot tall rack storage shelves featuring an automated retrieval system consisted of column loads of 50 to 290 kips and required and total differential settlement to be 1-inch and 0.5-inches respectively. Floor slab pressures varied throughout the warehouse from 200 in office areas to 2,100 psf as a result of heavy rack loads.

Subsurface Conditions: Geotechnical investigation reported five to ten feet of soft silty clay alluvium underlain by medium dense glacial outwash sand.

Geopier Solution: The geotechnical engineer considered deep foundations, but ultimately recommended a Geopier Rammed Aggregate Pier™ system to provide a cost-effective ground improvement solution. A combination of 1256 Armorpact™ and 380 Rampact® elements were installed. Armorpact elements were designed specifically for support of foundations and moderate to heavy slab pressures, using the confining sleeve to provide settlement control in the soft clay. Rampact elements were used in lightly loaded slab areas.

PROJECT TEAM

Owner:
JBS USA, LLC

Geotechnical Engineer:
Braun Intertec

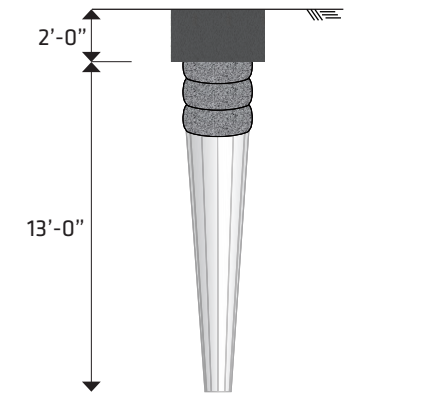
Structural Engineer:
Gleeson Constructors & Engineers, LLC

General Contractor:
Gleeson Constructors & Engineers, LLC

Geopier Designer:
Ground Improvement Engineering

Geopier Installer:
Peterson Contractors, Inc.

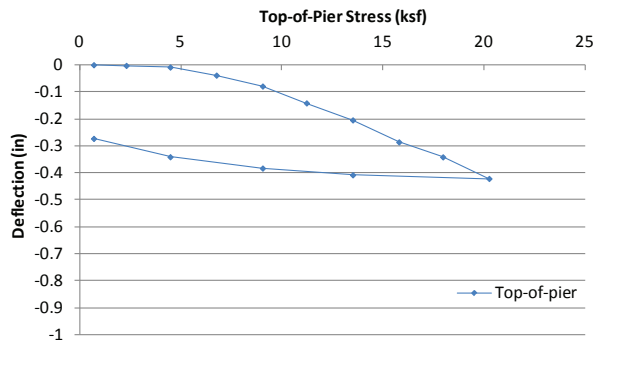
MODULUS TEST PIER SETUP



The non-production RAP used for modulus testing was installed through soft clay and loose sand. Deflection measurements were taken during the modulus test. A two foot thick concrete cap was poured over the top of the RAP for testing purposes.

Modulus test results showed 0.20 inches of deflection at top-of-pier stress level of 13,500 psf.

MODULUS TEST RESULTS



The results of the modulus test indicate that a deflection of 0.20 inches was observed at the maximum top-of-RAP design stress of 13,500 psf, with corresponding RAP stiffness modulus at 469 pci.

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