

Grain Storage Bins and Rail Facility Northgate, North Dakota



Description: Six 49-foot diameter, 59 foot tall Behlen metal grain bins with 488,000 bushel storage capacity. Maximum mat loading of 2,925 psf and ring wall loading of 12 kips per foot.

Subsurface Conditions: Medium stiff, sandy lean clay to a depth of about 18 feet, underlain by stiff to very stiff clay.

Design Details: The use of *Geopier*® soil reinforcement was selected to avoid overexcavation and replacement of up to 9 feet of soil. The installation of *Geopier* elements provided an increase in allowable bearing pressure from 2,000 psf to at least 3,000 psf and provide positive total and differential settlement control of the mat foundation. A total of 242 *Geopier* elements were installed 8 feet on center to depths of 8 to 13 feet below the ring wall and slab. The *Geopier* system was installed in only 7 working days on site.

Geopier Licensee: Geopier Foundation Company - West

Geotechnical Engineers: Zeltinger Geotechnical
Budinger & Associates

Structural Engineer: SCAFCP

General Contractor: The Haskins Company

References: Mr. Sterling Haskins, The Haskins Company, 509-535-2978
Mr. John Finnegan, P. E., Budinger & Associates, 509-535-8841