

PROJECT DESCRIPTION

PROJECT: Polaris Distribution Center
LOCATION: Vermillion, South Dakota
DESIGN-BUILDER: OPUS Corporation
OWNER: Polaris Industries



DESCRIPTION:

- 35-foot high, steel-framed, pre-cast concrete wall construction
- Isolated column loads ranging from 56 to 140 kips, wall loads from 4 to 5.6 kips per lineal foot
- Design floor load is 500 psf

Site soils consist of approximately 14 to 20 feet of loose silt and clayey silt (ML), to firm silty clay (CL) materials. These loose soils were underlain by firm to stiff clay (CL). Groundwater was located between 3 and 6 feet below ground surface. Preliminary geotechnical recommendations proposed two options:

1. install wick drains and surcharge the building pad with 10 to 12 feet of fill to pre-consolidate soils
2. use auger-cast piles to support building walls and columns, and a structural floor slab.

An inquiry was made by the prospective design-builder about the feasibility of using the Geopier® system to support footings and improve the floor subgrade modulus. Cost for the resulting Geopier system was about 25 to 30 percent of the costs projected for the other options, and installation involved weeks rather than months for completion. Geopier system was instrumental in making this a viable site for the owner.

Thirty-inch diameter aggregate piers, with drilled lengths of 7 and 10 feet, respectively, were used to stiffen floor slab subgrades and support footings. Piers for floor slab support were spaced on a 13' 4" center-to-center pattern. Soil bearing pressure for Geopier-supported isolated footings was 3 ksf. Installation of 3400 aggregate piers was completed in about 6 weeks, one week ahead of schedule.

REFERENCE: OPUS Corporation
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