



## 105' Diameter Grain Bin

Clarksville, Iowa

### Geopier Densipact™ solution proves more cost-effective than traditional foundation support options

**Description:** The project involved support of a new, 105-foot diameter, 73.5-foot eave high steel grain bin, to expand grain storage at an existing feed mill. The bin was founded on a ring foundation with an above-ground tunnel. The grain bin pressure for design was 4,500 psf plus up to 8' granular fill within the stemwall for a total of 5,500 psf. A total settlement tolerance of 4.5-inches with less than 2-inches of differential settlement was required.

**Subsurface Conditions:** Soil conditions consisted of approximately 3 to 4 feet of topsoil underlain by loose to medium dense sand to approximately 40 feet underlain by glacial till to 63 feet underlain by weathered limestone. Groundwater was encountered during drilling at approximately 13 feet.

**Geotechnical Challenges and Options:** The concern for settlement and bearing capacity of the loose sand under the design pressures resulted in the need for ground improvement. Overexcavation and deep foundations were considered, but the Geopier Densipact™ system proved to be the most efficient and cost-effective solution.



**Geopier Solution:** The Rammed Compaction® solution using the Geopier Densipact™ system was selected as the most cost-effective option for the project compared with the other traditional options. The upper topsoil was removed and replaced with compacted granular fill. 200 Rammed Compaction Points were installed to depths of 10 feet beneath the entire footprint of the tank and the ringwall foundation in three days to accomplish densification of the site.

### PROJECT TEAM

**Owner:**

Schmadeke Feed Mill

**Geotechnical Engineer:**

Terracon

**Structural Engineer:**

Buresh Building Systems

**General Contractor:**

Blue Moon Hauling

**Geopier Designer:**

Ground Improvement Engineering

**Geopier Installer:**

Peterson Contractors, Inc.

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