



## Nucor Steel Plant

Norfolk, Nebraska

**The Geopier GP3® System was chosen to rectify the unique design challenge of bearing capacity failure in shallow foundations supporting a steel mill facility**

**Description:** The steel columns are typically supported by 15-30 ft. wide spread footings, embedded to a depth of up to 10 ft. The rotated foundations are located in an area of the mill being used to stage large stacks of steel billets that exert pressures of up to 17,200 psf.

**Subsurface Conditions:** Subsurface conditions consist of slag fill underlain by weak native clay and medium dense silty sand. Groundwater was encountered at a depth of approximately 25 feet below grade.

**Geopier Solution:** The Geopier GP3® system was selected to remedy the unique design challenge presented by the rotating foundations. An effective and quick solution was imperative as the functional integrity of the steel mill was at risk. The piers were installed at spacings of 6 ft. on-center adjacent to the existing footings and extending beneath the billet loading area so as to improve the bearing capacity and settlement performance. Use of Geopier elements successfully supported the steel billets and arrested the rotational shearing displacements, all while allowing plant production to continue during



installation with only brief interruptions. The Geopier approach provided significant cost savings and schedule advantages as compared to the alternative option of replacing the existing footings and supporting them on deep foundations.

### PROJECT TEAM

**Owner:**

Nucor Steel

**Geotechnical Engineer:**

Hall, Blake & Associates, Inc.

**Geopier Installer:**

Peterson Contractors, Inc.

**Geopier Designer:**

GFC-Midsouth