



## Geopier X1® system reinforced soft fat soils to support column loads of up to 530 kips.

### CLIENT'S CHALLENGE

The new high school will have a footprint area of about 92,000 sq. ft. The facility contains several three-story classroom wings, along with high-bay spaces for gymnasium, swimming pool and performing arts auditorium.

### SUBSURFACE CONDITIONS

The subsurface conditions consist of up to 6 feet of existing clay fill underlain by medium stiff fat clay and elastic silt followed by very soft fat clay (Lake Agassiz deposit). Groundwater was encountered at approximately 15 feet.

### GEOPIER® SOLUTION

The site challenge for this project is the new high school is being constructed in two phases at the site of the existing high school. Phase I of the project is adjacent to the existing school. Phase II of the project will be constructed after demolition of a significant portion of the existing school building.

The geotechnical challenge for this project is the relatively high foundation loads and the soft fat clay deposits that extend very deep into the subsurface profile. The geotechnical engineer recommended using a ground improvement system to reinforce the soft fat clay soils to support the heavy foundation loads in order to limit total settlement within the project criterion. The design team and owner selected the ground improvement approach as a cost-effective alternative to an expensive deep foundation system.

The Geopier X1® system was used to reinforce the soft fat soils to support column loads of up to 530 kips and wall loads of up to 20 kips per lineal foot. Over 80 Geopier Rammed Aggregate Pier® elements were installed per day with shaft lengths varying from 10 to 26 feet. The fast installation allowed the construction crew to expedite their construction schedule and complete installation in half the time that was allocated in the project schedule.



## Moorhead High School

 Moorhead, Minnesota

### Moorhead Area Public School District

Owner

### Gehrtz Construction Services

General Contractor

### American Engineering Testing

Geotechnical Engineer

### Heyer Engineering

Structural Engineer

### GEOPIER IS GROUND IMPROVEMENT®

[www.geopier.com](http://www.geopier.com) | (800) 371-7470

