



PierTech Systems
Driven by Innovation



BETHEL REGIONAL HIGH SCHOOL ADDITION

HELICAL FOUNDATION SOLUTION FOR
PERMAFROST CONDITIONS

PROJECT OVERVIEW

The Bethel Regional High School in Bethel, Alaska, needed to expand its campus with a 5,000-square-foot cafeteria and event space—a critical addition for the school community, which had been operating without a cafeteria since its original construction.

The site presented significant foundation challenges, including silty sand soils and permafrost located 26 feet below grade. To ensure long-term stability and protect the permafrost layer, the project required a foundation system that could handle the load while minimizing disturbance to the surrounding soil. PierTech's helical pile system was selected as the ideal solution.



Installation

Piles were advanced to an average depth of 35 feet and torqued out at approximately 50,000 ft-lbs. Installation was completed using PierTech's 70K and 100K drive heads.

The 62-pile installation was completed in roughly six weeks, after which thermosyphons and monitoring tubes were drilled and placed to maintain frozen ground and prevent long-term settlement.

Foundation Design

The foundation utilized a total of 62 helical piles, including:

- 31 piles at 8.675" OD with 14" and 18" helices ($\frac{3}{4}$ " thick)
- 31 piles at 12.75" OD with 20" and 24" helices ($\frac{3}{4}$ " thick)

Each pile was designed for an allowable compression capacity of 120 kips, ensuring the structure could be fully supported on the challenging soils.



RESULTS

Results

120-kip allowable capacity per pile, meeting all engineering requirements.

Minimal impact on permafrost and soil stability, aided by thermosyphon installation.

Efficient installation, completing all 62 piles within six weeks despite remote and challenging conditions.

A proven, long-term foundation system capable of supporting the cafeteria and event space without risk of settlement.

Why PierTech Piles Were the Right Choice

In permafrost regions like Bethel, traditional foundation methods can threaten soil stability and increase costs. PierTech's helical pile system allowed for a non-invasive, efficient installation that preserved the integrity of the permafrost while meeting the project's capacity needs.

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