Project Report

Prudhoe Bay, Alaska - Oil Drilling Platform

Location: Prudhoe Bay, Alaska
Product: Nilex MD-7407 Wick Drains
Contractor: Nilex Construction LLC

Figure 1

Due to a tight time-line and sub-zero temperatures, crews installed wick drains around the clock.

The Challenge:

During an oil exploration exercise in the Arctic Circle, a deposit was discovered four miles off the north shore of Alaska. To tap into this deposit - located four feet beneath water in the Sagavanirktok River delta - an artificial island would have to be built to provide a drilling platform. However, due to soft clay deposits in the river, there was a concern with long term settlement that would require expensive maintenance of the island and, potentially, cause dangerous differential settlement along pipelines leading back to the mainland.

The Solution:

After analysis it was determined that installation of wick drains to consolidate the clay would reduce drainage time to one summer season. The drains would be installed during the winter in temperatures of -40 degrees and 60 feet below the ice surface. This solution allowed the island and boat dock to be built before the spring thaw, making the island accessible throughout summer to complete construction.

Due to previous experience with cold weather projects, Nilex Construction was approached to determine the feasibility of installing wick drains during the Alaskan winter. After submitting the wick drain product (MD-7407) to cold weather testing and contacting manufacturers of the wick drain installation rig, Nilex determined the project could be accomplished.

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Figure 2:
Preaugered holes drilled through ice prior to wick drain installation.

Figure 3:
Installing wick drains on the wick drain pad.

Installation:

A sand layer 50 feet below the sea floor was determined capable of draining the water, eliminating the concern of ice capping on top of the wick drains, and allowing the drains to function throughout the winter months. Installation occurred in February of 2006. After several "class 3 blows", which shut down all operations on the north slope, Nilex crews were able to get the equipment operating, and worked 24 hour days to install 180,000 linear feet of MD-7407 wick drain in four days. While another weather event delayed project completion, the few remaining drains were installed the following week.

Performance:

Using wick drains to accelerate drainage of the site assisted in getting the project on schedule after a late fall delayed construction of the ice highway to the worksite. This process of consolidating the clay also helped to get the island and boat dock built before the spring thaw isolated the island.

Settlement will be monitored throughout the spring and summer. Due to the short time-frame for project construction, plans called for installation of wick drains in critical areas, and expansion to the remainder of the island if time permitted. With the crew's successful installation rate, the entire island was completed, ensuring the best possible consolidation for the project.

The success of overcoming the challenges on this project can be attributed to the wide scope of expertise, experience and resources available within the Nilex Wick Drain Division.

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