9 THINGS TO KNOW ABOUT...

SOIL CONSOLIDATION

The Canadian and US Ports of Entry (POE) will include several buildings, canopies, roadways, parking lots and bridge ramps. All of these structures will require a solid base on which they can be built. Under natural conditions, it could take ten-to-twenty years for the underlying soils to consolidate and ensure that there is a solid base on which to build the structures. To expedite the consolidation process and the construction schedule, an innovative drainage system using wick drains and surcharge is being used at the Canadian and US construction sites.

1 WICK DRAIN

Wick drains are man-made vertical drainage paths that expedite the consolidation of soils.

2 GRID INSTALLATION

The wick drains are installed on a grid of up to 15 metres/ 5 feet apart and to a depth of 20 metres/65 feet. The spacing between each wick drain allows them to properly consolidate and drain the soil.

3 STITCHER

A specialized piece of equipment known as a stitcher is used to install the wick drains. The stitcher is attached to an excavator and consists of a vertical mast housing a hollow mandrel. The mandrel houses the spool of wick drains which is hydraulically pushed into the ground.

4 CANADIAN POE

Bridging North America has completed the installation of 133,000 wick drains at the Canadian POE. That is in addition to the 42,000 wick drains completed during the Early Works activities. Connected in one line, that would equal nearly 3,400 km /2,100 miles. This is greater than the distance from Windsor, Ontario to Las Vegas, Nevada.

5 US POE

Approximately 80,000 of 87,900 total wick drains have been installed at the United States POE. Connected in one line, that would equal more than 1,500 km/944 miles. This is greater than the distance from Detroit, Michigan to Savannah, Georgia.

6 BY THE NUMBERS

The wick drains installed on the Canadian and US Ports of Entry cover a combined total area of more than 487,000 square metres/5.2 million square feet – the size of 138 hockey rinks. The total length of wick drains used on both sides is the equivalent of 6,900 km/3,044 miles.

7 SAVES TIME

Under natural conditions, it could take ten-to-twenty years for the underlying soil to consolidate and ensure that there is a solid base on which to build the structures. By installing wick drains, crews can begin building structures in as little as 6 months.

8 FILL AND SURCHAGE

More than 1.275 million metric tonnes/2.8 billion pounds of engineered fill and surcharge material were placed on top of the wick drains. The pressure from the fill and surcharge will accelerate the drainage process.

9 BY THE TRUCKLOAD

The engineered fill and surcharge used on the construction sites is the equivalent of more than 92,800 truck loads.

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