

## Port Of Long Beach Middle Harbor Development UNITED STATES Long Beach, CA



**Owner**  
Port of Long Beach

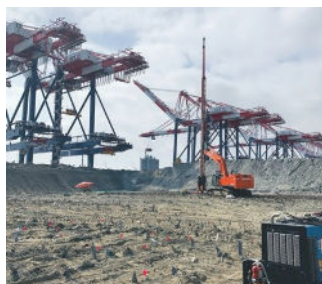
**Engineer**  
Moffatt & Nichol

**General contractor**  
Manson/Connolly JV (MCJV)

**Dates of work**  
March 2013 April 2019

### Main figures

**Wick drains**  
7,000,000 LF



### Description

As part of a multi-billion-dollar project, Menard was contracted to install wick drains at the Port of Long Beach (POLB) Middle Harbor Redevelopment. POLB addressed two aging piers as part of a program to rebuild America's Greenest Port. The overall project was performed in multiple phases and required the infill of existing ship slips with dredged material. Ground improvement was performed on the dredged material, while the reclaimed land was developed as part of the autonomous Long Beach Container Terminal.

### Ground conditions

Prior to placement of the dredge fill, the site consisted of ~50 to 60 ft of water underlain by a 10-ft mud line that transitioned to sand deposits at depth. Fill placement was completed using hydraulic and mechanical processes. The fill was variable, but generally, it could be described as silty sand with pockets of soft fine-grained material and other manmade fill.



### Solution

For large areal fill placement, a wick-drain and surcharge program often provide the most economical solution. Typically less costly than traditional deep foundations or other ground improvement techniques, the wick drains, with surcharge, allow the fill material to undergo rapid consolidation within a relatively short duration. The various methods of fill placement – along with the placement of the heterogeneous material – proved to be challenging. Consequently, pre-augering across different portions of the work area, as well as the development of special wick installation equipment to overcome dense layers at depth, was required. Despite the challenges, Menard installed 7 million LF of wick drains ranging in depth from 30 to 100 ft in multiple phases.

As part of the POLB's efforts to rebuild America's Greenest Port, Menard completed wick-drain installation within the scheduled time frame and within the project's budget.