TENCATE Mirafi®

PROJECT REFERENCE

Mirafi® HP woven geotextile subgrade stabilization

Long Beach Port, California, USA

Project Data

Project	:	Subgrade Stabilization at Port of Long Beach, CA, USA
Products Used	:	Mirafi® HP570 woven geotextile

Overview

The Port of Long Beach is the second busiest container seaport in the United States. To meet constantly growing demand to handle cargo from Asia it was necessary to expand container terminal capacity.

This project consisted of building a new wharf at Pier G to expand the international Transportation Service Container Terminal as part of the Long Beach Mega Terminal Development Plan, and consolidate and redevelop existing Piers G and J to accommodate growing cargo volumes to year 2020.

The design of this project initially began 30 years ago as a landfill operation for Pier G226. The landfill operation included the placement of hydraulic fill dredged from the harbor. The fill area was contained by a shoreline rock dyke embankment and a soil surcharge was placed over the hydraulic fill to prepare the area for future development.

Problems Encountered

The design called for removal of the soil surcharge to wharf level and to convert the rock dyke embankment to a seawall structure with 30m high gantry cranes supported on piles. While undertaking the earthworks the contractor encountered problems of subgrade pumping resulting in an unstable platform that was insufficient on which to construct the designed paved container storage area.

The Geotechnical Consultant assessed the situation and found that the water problem in the fill was complicated by fluctuation of tidal groundwater below the wharf area. Various proposals and options were evaluated within test areas on site.

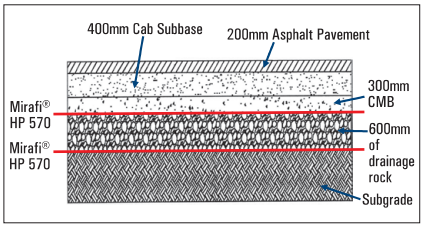
Solutions Evaluated

One solution evaluated was to use a commonly available biaxial geogrid to improve subgrade support and backfilled with select fill. However, waving and pumping of the fill continued to be observed. A second test area using Mirafi® HP570 geotextile was installed, and similarly covered with backfill. In this test area, the Mirafi® HP570 controlled the waving and pumping condition and allowed the placement of additional fill layers in a controlled manner. Based on the results of the tests, Mirafi® HP570 was chosen for design of the final container yard pavement support structure.

Construction

The final design required installation of a subgrade stabilization layer of Mirafi® HP570 laid directly over the soft subgrade to control the waving and pumping during construction. A 600mm thick drainage rock layer was then dumped on the geotextile. A second upper layer of Mirafi® HP570 was then installed over the drainage rock layer, for base reinforcement, above which the pavement was constructed.

The multilayer Mirafi® HP solution, successfully resolved the soft subgrade stability problems and cost effectively facilitated construction of a pavement capable of withstanding the heavy traffic loads typically evident in port pavements.



Detail for subgrade stabilization

Placement of the drainage aggregate over the Mirafi® HP570

100 116-ch-06 | 08

TenCate Geosynthetics Asia Sdn. Bhd. (264232-U)
14, Jalan Sementa 27/91, Seksyen 27,
40400 Shah Alam, Selangor Darul Ehsan, Malaysia.
Tel: +60 3 5192 8568 Fax: +60 3 5192 8575
Email: info.asia@tencate.com www.tencategeosynthetics.com

TENCATE materials that make a difference