

Subgrade Stabilization for Container Yard for Infinity Logistics, Westport, Klang



Mirafi® HPa – Subgrade Stabilization for Container Yard for Infinity Logistics, Westport, Klang

Project Data

Project	: Subgrade Stabilization for container yard for Infinity Logistics, Westport, Klang
Year of construction	: 2015
Client	: Infinity Logistics & Transport Sdn Bhd
Material	: TenCate Mirafi® HP380a

Introduction:

In South East Asia, infrastructure developments increasingly involved construction over soft soils. Soft soils commonly formed by alluvial deposition in a lake or sea environment, poses great challenges and difficulties from the infrastructure construction point of view.

Pulau Indah is home to Westport, Malaysia. The general subsoil in this area is made up of very soft marine clay to depths of more than 30m, the water table is almost at ground level and the subgrade comprises a dessicated crust layer of the marine clay formation. At this project site, a stable load supporting platform was required for container handling and stacked storage.



Figure 1: Rutting on container's load supporting platform

Problem :

Due to the increase in container handling and storage demand, additional load supporting platform areas had to be constructed. With the above-mentioned soft marine clay profile, the construction of the initial platform was very challenging and costly. 1m of base course material was laid in efforts to create a stable platform. However, when the heavy-reach stacker started operations on the platform, severe rutting occurred as shown in Figure 1.

Solution :

The platform at Westport Pulau Indah was reconstructed with Mirafi® HP380a subgrade stabilization geotextile placed between the soft subgrade and a reduced base course thickness of 500 mm over the soft subgrade as shown in Figure 2. The Mirafi® HP380a subgrade stabilization geotextile offered a combined function of reinforcement, base course confinement, separation and permeability which resulted in a stable load supporting platform for container handling, stacked storage and cost savings for the client.

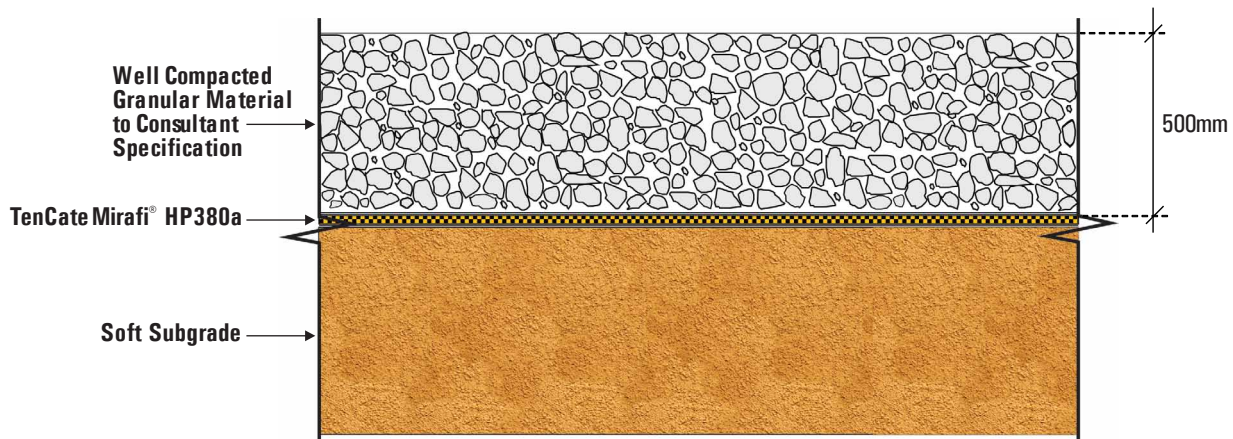


Figure 2: Mirafi® HPa geotextile is placed between the soft subgrade and base course material

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Figure 3: Laying of Mirafi® HPa Geotextile



Installation:

The subgrade was first prepared by making the surface of the subgrade relatively smooth and leveled. The Mirafi® HP380a geotextile was then rolled out flat and tight with no folds or wrinkles directly on the prepared subgrade as shown in Figure 3. Adjacent rolls were joined by overlapping. The aggregate fill was placed and spread over the Mirafi® HP380a geotextile in 200 to 300 mm loose lifts. The aggregate fill was end-dumped from the edge of the previously placed material, spreading from the middle outwards. Subsequently, the aggregate fill was compacted to the project requirement.

Summary:

The use of geosynthetic has been shown to improve the performance of roads and other load support structures. The most established method for unpaved road design is the Giroud-Han Method which was developed to determine the thicknesses of unreinforced and geosynthetic-reinforced aggregate bases for unpaved roads over soft subgrade.

In the case of Westport, Pulau Indah project, the adoption of Mirafi® HP380a geotextile with a reduced base course thickness of 500 mm proved to be an optimal solution that provided a stable load supporting platform for container handling and stocked storage as shown in Figure 4. The Mirafi® HPa geotextile provided an integrated function of reinforcement, base course confinement, separation, as well as permeability that significantly improved and enhanced subgrade stabilization. It was a solution which was cost effective for the client as opposed to the initial construction without the use of geotextile that proved to be costly and unsatisfactory.



Figure 4: Stabilized container's load supporting platform

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Further details of this application and products can be obtained by contacting your nearest TenCate Technical Support Office.

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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@tencategeo.com www.tencategeo.asia