

**Slope Failure Repair using Polyfelt® PEC at Jalan Gunung Raya,
Langkawi, Malaysia.**



Polyfelt® PEC slope failure repair

Jalan Gunung Raya -Langkawi, Malaysia

Project Data

Project	: Langkawi Kedah Darul Aman, Malaysia
Application	: Reinforcement of a 35m-high slope using sandy soil backfill
Owner	: Public Works Department (PWD), Malaysia
Products Used	: TenCate Polyfelt® PEC 150

Overview

Continuous rainfall resulted in a major landslide on the Federal Route that leads to the highest mountain (881m) in Langkawi which houses a museum, a park and a satellite control centre. The landslide significantly disrupted traffic and posed a danger to road users.

Design constraints

The high, steep and unstable failed slope limited the conventional approach of trimming it to a gentle gradient. After reviewing several remedial options, PWD engineers decided to realign the road 30m out from the failed slope. This required the construction of a geosynthetics reinforced slope working up from the toe of the failure below the road.

Due to the unavailability of granular material at site, the key criteria for the design was to use the fine sandy soil that was readily available at the project site as backfill. TenCate Polyfelt® PEC reinforcement geotextile was chosen because of its high tensile strength, optimum reinforcement/soil friction interface, and in-plane drainage advantages in such soils.

Installation

The geometry of the reinforced soil structure consisted of a 30m-high reinforced soil slope from the toe of the failed embankment. The facing system of

the structure was formed by wrapping a net around bags filled with fine-grained soil. This method of construction facilitates the practical construction of a curved slope. TenCate Polyfelt® PEC was laid behind the gabion and soil bags to strengthen the structure (Figure 1). A layer of TenCate Polyfelt® TS geotextile filter was placed behind the gabions to prevent soil piping through the voids in the gabions.

The primary reinforced direction of TenCate Polyfelt® PEC reinforcement geotextile was installed perpendicular to the slope's surface. Pretensioning of the reinforcement geotextile was done by pegging it in position with the aid of wooden pegs. Compaction of backfill material was done using a 10 ton compactor to achieve a minimum of 90% proctor compaction. Hydro seeding was carried out after the slope was completed for a vegetated surface.

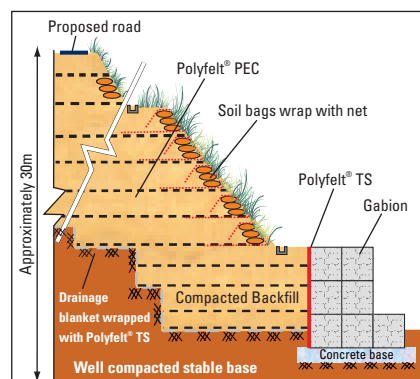


Figure 1: Proposed reinforced wall.



Figure 2: Aerial view of the slope failure.



Figure 3: Reinforcing slope with Polyfelt® PEC.



Figure 4: Vegetated slope after completion.

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