

LANDSLIDE PROTECTION BARRIER AT MUELLER STREET TOWNSVILLE, QUEENSLAND, AUSTRALIA

Rockfall Embankments

Problem

A rare weather event in 2019 has brought torrential rain to the city of Townsville causing a landslide to occur behind the houses at Muller street. The landslide has brought down debris composing of mud and rocks impacting 3 houses along its path.

To prevent such incident from repeating itself, the city council has engaged SLR Consulting together with Geofabrics Australia to come up with permanent, quick construction and cost efficient solution.

Solution

The landslide protection works comprise of land clearing works to remove the landslide debris, platform construction for landslide embankment, construction of landslide embankment and spillway drain.

The concept solution is to provide a landslide embankment to prevent future landslides from hitting the houses behind the embankment followed by diversion of the landslide debris and water to downslope via construction of rip-rap lining spillway.

The embankment is designed to resist debris flow velocity of 8m/s with an estimated impact force of 300kN. The final embankment size was proposed by Maccaferri based on the information provided by the Consultant, the embankment is estimated to be able to resist 980kJ of impact energy with anticipated embankment deformation about 40 to 80mm.

Due to constructability issues and the particular difficulties in complying with working at height restrictions, having men working above 2m without an elevated working platform (EWP) presented a challenge. In order to fill the top 3 baskets with the structural fill/rock combination, as outline in the contract requirements, men are required to work outside of the EWP.

The client's proposal to overcome this issue is to fill the top 3 baskets with rock only. All rock will be in compliance with specification for cobble fill. This solution alleviates the need to work outside of the EWP. Upon carrying out the embankment re-design, the new embankment deformation is still within the Client's acceptable limits.

Client: Townsville City Council

Designer / Consultant: SLR Consulting

Contractor: Townsville City Council

Products used (Qty.)

- Green Terramesh

3.0m(Height) x
50.0m(Length)

Date of construction: 06/2020 - 08/2020



GTM embankment: Fixing of GTM lowest cage in progress



GTM embankment: Compaction of fill in progress



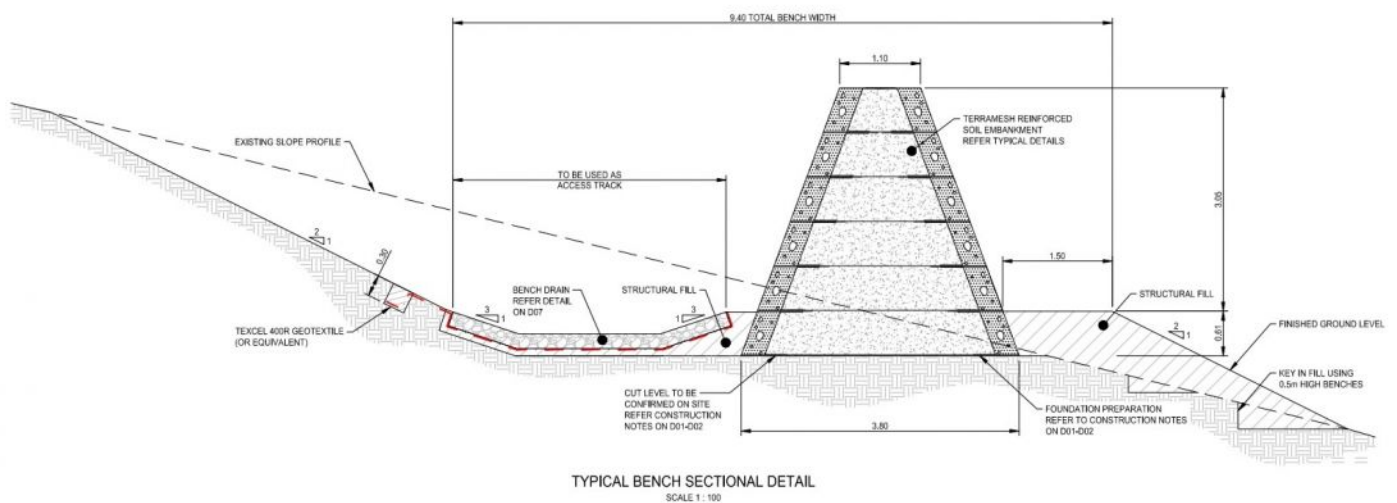
GTM embankment: Workers on EWP filling top most level of GTM cage



GTM embankment: complete installation (upslope view)



GTM embankment: complete installation (downslope view)



Typical section of debris flow embankment

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