

TWIN CULVERTS KAIKOURA

DATE: JANUARY 2020
CLIENT: NEW ZEALAND TRANSPORT AUTHORITY

TENSAR® RE

FEATURES

Tensar® RE geogrid is suitable for a wide range of applications from shallow slopes to vertical walls. Tensar® RE geogrid can be joined using bodkins to reduce wastage on site and provide an efficient mechanical connector for concrete panel retaining walls. Tensar® RE geogrid can be positively connected to the Keystone TW3 modular block using a specially developed connection system. The versatility and robustness of Tensar® RE geogrid allows its use with most engineered fill types.

In early February 2018, Tropical Cyclone Gita, a category 4 storm with winds of more than 275 kilometres per hour, ravaged the Pacific. This caused thousands of cubic meters of debris to slip off the hills along the east coast of the South Island, New Zealand, causing road blockages requiring repair. The twin culverts located in Oaro could not handle the water inflow due to the small culvert intake and pipe diameters of 450mm and 625mm. This led to rain accumulation at the culvert intake, which then flooded over the road and down the slope to the river below. Due to the ground being saturated and the culvert pipes having water pressure on them, the pipes were thrust out of position, causing further erosion of the slope below the road. By the time the Cyclone had passed only one lane of the road was usable.

New Zealand Transport Authority contacted North Canterbury Transport Infrastructure Rebuild (NCTIR) to come up with a solution. The NCTIR engineers contacted Geofabrics, and the technical department assisted in selecting materials for the MSE slope. The design is unique, having to use 13mm Concrete Canvas for scour protection and Tensar® RE560 as a wrap-around that will be vegetated. RST Environmental Ltd completed the construction of the slope.

The project was completed on time with the larger intake culvert with large wing walls and twin 1050mm culvert pipes, and it should last another 100+ years.