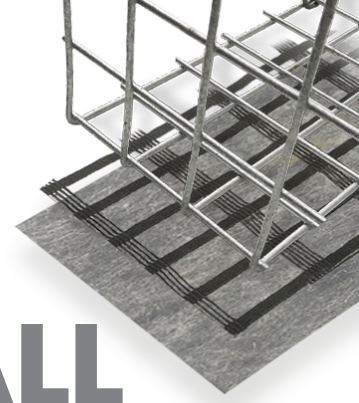


CASE STUDY

NELSON JUNCTION

VEGETATED MSE WALL



DURAMESH®, STRATAGRID®, BIOWOOL



ADVANCED GEOSYNTHETIC SOLUTIONS

PROJECT INFORMATION

Spread over an 8-hectare site close to the airport in Tāhunanui, Nelson Junction is a new, high-profile development catering for home improvement, lifestyle and large format retail. Originally a cotton mill in the early 1940s, over the years this site has steadily been developed over alluvial soils washed down from the Tāhunanui Hills. With modular commercial leases ranging from 500sqm to 2,500sqm on offer and an expected rise in customer activity, new car parking areas were required along the northern edge of the site alongside Jenkins Stream.

The car park areas needed to be raised above the existing ground level to prevent any possible flooding and sit directly behind the proposed buildings, prompting Gibbons Property Group to find a vegetated retaining wall solution that could gain maximum land use and blend in with the natural surroundings of the stream. Access roads rising from each end to the proposed car park areas were also required.

DESIGN

A DuraMesh vegetated MSE wall using StrataGrid reinforcement grid was designed by Swanney Geotechnical and Civil Engineering, with close support for conceptual development given by Cirtex. The wall spans over 130m with a 70° face angle. Rising to a maximum retained height of 2.8m, the wall seamlessly integrates with the surrounding landscape, adjusting in elevation as it drops down to meet the existing road and main carpark areas. The wall was designed for surcharge loads typical of parking and vehicular access, accommodating a live loading of 12kPa.

To enhance stability, 3-meter geogrid reinforcement tiebacks would be strategically placed in 600mm increments. BioWool, combined with a layer of topsoil set between the reinforced fill and the DuraMesh panels, would ensure vegetative growth. A safety barrier would also be placed along the top of the wall.

INSTALLATION

As Nelson Civil Construction were unfamiliar with building a vegetated DuraMesh MSE wall, Cirtex provided over three hours of on-site support during the initial stages of construction. Cirtex talked them through the whole construction method, from getting their levelling pad ready, placing and hog-ringing the panels, detailing the correct StrataGrid placement and fitting of BioWool, to attaching the braces before adding topsoil layers and compacting the engineered fill. Every step of the construction process was explained, with the comprehensive guidance proving invaluable for the construction team. Precise grid adjustments were also required during the placement of the crash barrier along the top of the wall.

The new development within Nelson Junction has already proved to be a success. Even before completion, all proposed buildings have been leased, with future tenants looking forward to the expansion of Nelson's latest retail centre, confident that the new DuraMesh MSE wall will help serve their customers' accessibility requirements.

The DuraMesh system provided the following benefits to the project:

- Lightweight and easy to handle
- Can be vegetated using BioWool
- Can easily be cut and angled to conform to irregular shapes

