MACCAFERRI

CASE HISTORY

Rev:00, Issue Date 08.24.2009

MSE STRUCTURE FOR SEISMIC ISOLATION

SAANICH, BRITISH COLUMBIA, CANADA

SOIL REINFORCED RETAINING WALL

Products: Terrawall, Green Terramesh, MacGrid Geogrids, ParaGrid Geogrids

Problem:

A gently sloping hill and favourite neighbourhood walking trail encroached onto the proposed site of a new upscale condominium development in Saanich, BC, located on Vancouver Island. The purpose of the reinforced soil structure was to accommodate site grading and allow for the retention of the walking trail, while at the same time acting to seismically isolate the building foundations. Vancouver Island is one of the most seismically active regions in Canada. The project site was located within an abandoned gravel pit.

Maccaferri Canada Ltd. was requested by the project geotechnical engineer, C.N. Ryzuk & Associates, to provide a proposal that would see reinforced soil structure built on the site that would consist of MSE walls, reinforced soil slopes, and composite sections (wall + slope). The on-site soils, high quality gravels, were to be used as engineered fill for the entire structure.

Solution:

The area has potential earthquake risk and the project structural engineer wanted an earth retaining structure, not the building foundation, to carry the seismic loads. The lower part of the structure would be situated below grade, facing the concrete foundation wall of the underground parking structure, while the upper part of the structure was to be vegetated and blend into the surrounding hillsides. Maccaferri proposed a near vertical Terrawall System which extended from the bottom of the parking garage to the grade at which the buried structure day-lighted. A patio served as the roof of the parking structure and from this level, a sloped Green Terramesh (70° from horizontal) was proposed in order to make the landscaped are feel less enclosed.

The Terrawall and Green Terramesh Systems use double twisted woven wire mesh to form individual units that act as both facing and soil reinforcing elements. Given the height and seismic loads for this project, high strength MacGrid and ParaGrids (up to 200kN/m) were used as the primary soil reinforcement with the Terrawall and Green Terramesh acting

Client:

Hunt Valley Investments Ltd.

Main contractor:

Hunt Valley Investments Ltd.

Designer:

Maccaferri Canada Ltd. / C.N. Ryzuk & Associates

Products used:

1100m^2 Terrawall; 550m2 Green Terramesh;
13740m2 MacGrid Geogrid; 11310m2 ParaGrid Geogrid

Date of construction

Summer 2003 - Spring 2004

Start of Construction, Summer 2003

Foundation of Terrawall w/ ParaGrid 200/15

Completed Terrawall w/ Green Terramesh under construction

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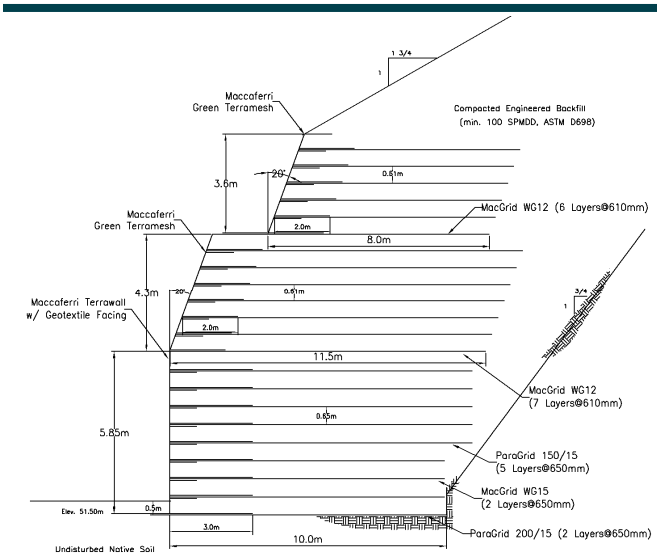
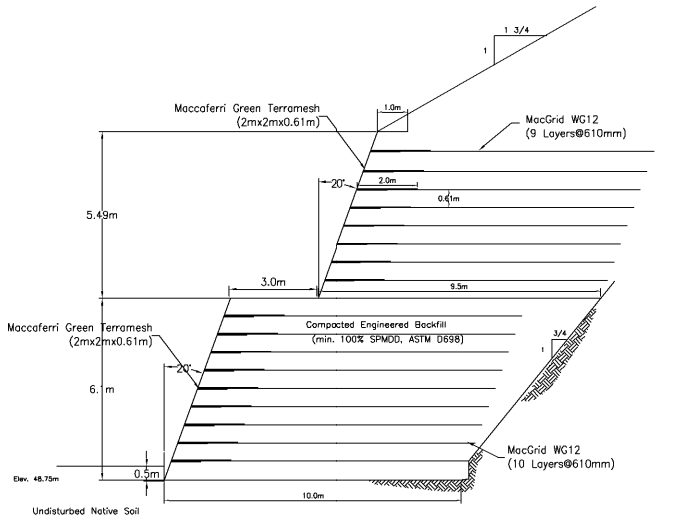


Maximum Cross Section



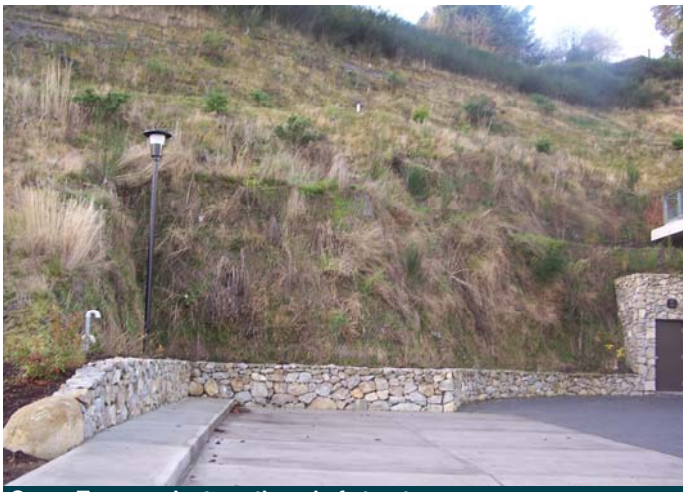
Typical Reinforced Slope, South End

as facing units.

Although normally built using a thin veneer of stone facing, it was decided to use a non-woven geotextile as the facing for the Terrawall since the facing would eventually be shielded from UV exposure. Two layers of non-woven geotextile were used in lieu of the stone.

Due to the complexity of the project, Maccaferri provided extensive on site assistance in order to train the Contractor's crew in the correct installation procedures of the different systems.

The building was one of many built on the development site. Based upon the performance of this structure, the Owner, Hunt Valley Investments, built other Maccaferri reinforced soil systems at additional locations within the development.



Green Terramesh at south end of structure

January 2004

May 2006

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