

NS HIGHWAY 101 INTERCHANGE DIGBY, NOVA SCOTIA, CANADA

MECHANICALLY STABILIZED EARTH WALLS Product: Terrawall System

Problem:

When a galvanized wire product is placed into direct contact with salt water, it is only a question of when, not if, the structure will corrode.

In 1990, Nova Scotia Transportation & Infrastructure Renewal (NS TIR) built a 6m high galvanized gabion basket semi-gravity retaining wall to support part of the off ramp for NS Hwy 101. The structure was built with the base of the gabion wall sitting in a salt marsh.

In 2005, after 15 years of the foundation being exposed to salt water, coupled with the routine winter snow removal practice of using large quantities of road salt in order to melt ice build up on the roadway, the galvanized gabion baskets finally corroded away and the structure failed.

NS TIR contacted Maccaferri Canada Ltd. in April 2005 in order to determine a course of action that would result in the replacement of the existing gabion structure. NS TIR was satisfied with the performance of the original structure. It was acknowledged that the routine practice of using large quantities of the road salt had most likely been the cause of the galvanized structure failure. Any structure proposed for replacement would have to take this practice into account and be built for a 75 year design life.

Solution:

Working with NS TIR, Maccaferri developed a concept in the Spring of 2005 that would see the existing gabion structure replaced with a design/build wire faced retaining wall system. Two systems were specified as being able to satisfy the design constraints. For this project, Maccaferri offered our Terrawall System as a cost effective, rapidly installed mechanically stabilized earth system.

The Terrawall System consists of factory assembled units of PVC coated, galvanized double twisted woven wire mesh that use a single unit as both the facing and soil reinforcement elements. The combination of PVC coating and galvanized wire has been demonstrated to satisfy a 75 year design life

Client:

Nova Scotia Transportation and Infrastructure Renewal

Main contractor:

Rice's Contracting

Designer:

Maccaferri Canada Ltd. / Mitchelmore Engineering

Products used:

198 m² Terrawall System

Date of construction

November 2005



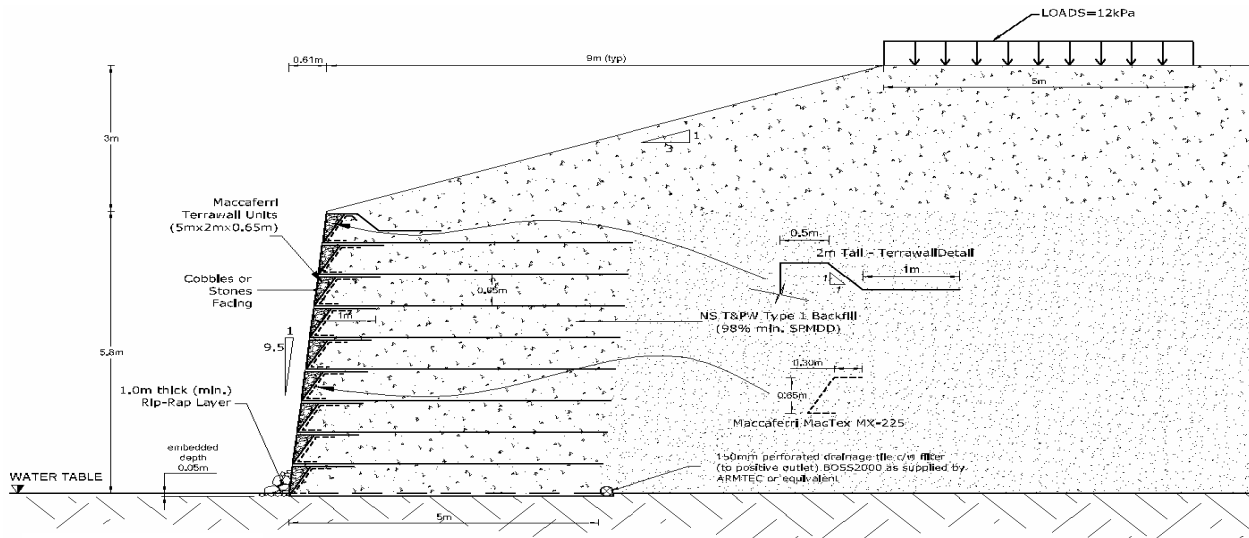
Original Gabion Retaining Wall under construction, 1990



Failed Gabion Retaining Wall, May 2005



Foundation Terrawall Units being installed



Typical Cross Section

requirement. A thin layer of stone is placed at the facing of the unit for erosion protection. The Terrawall units can be used to construct permanent or temporary wall systems, up to a near vertical configuration.

In October 2005, a design build contract was awarded to Rice's Contracting of Bridgetown, NS to remove the failed gabion structure and to replace it with a Terrawall System. The new Terrawall structure was 46m long, with a maximum height of 5.8m.

Maccaferri retained Mitchelmore Engineering to review the Terrawall design and to provide on site geotechnical support during the project.

Maccaferri provided on site assistance in order to train the Contractor's crew in the correct installation procedures.



Terrawall Structure partially completed



Installation of Terrawall Units



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