

SH4 REALIGNMENT OKURA (BETWEEN WANGANUI AND RAETIHI)

GREEN TERRAMESH BRIDGE ABUTMENT– 15.7m (max height)

Product: Green Terramesh Units, Tensar RE Geogrid, Miragrid GX Geogrid

Problem

Two abutment walls needed to be constructed to protect the bridge piers and support the embankment fills behind the bridge abutment forming the new realignment for SH4. This new bridge alignment spans across Mangawhero River linking between Wanganui and Raetihi.

Solution

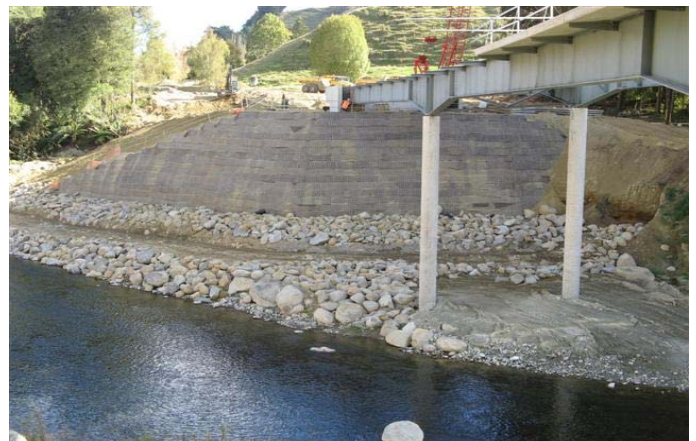
The Green Terramesh reinforced soil structure was considered and was the final choice for the bridge abutment wall. The versatility of geogrid reinforcement when laid around the two existing bridge piers, allowed the structure to be constructed quickly and concurrent with the backfilling process. The alternative option was a conventional concrete retaining wall, which proved to be too costly and impractical to construct. In addition, some geogrid wrap around structure was constructed behind the existing piers to relieve the lateral soil thrust on the bridge piers. This was essential especially for a very tall structure.

MacStars software was used to analyse the Green Terramesh bridge abutment structure for both static and seismic cases. Full PGA horizontal load was applied in the design and analysis of the structure since it was associated with a bridge abutment, i.e. structure movement or deformation shall be restricted during an earthquake event. This required a base geogrid reinforcement length of 16m. The design also considered a rapid draw down case for a 100 year flood event on the static case.

The contractor completed the structure for the Southern Abutment (330m²) and for the Northern Abutment (600m²) expediently and was very pleased with the final outcome.



Bridge prior to construction with piers installed Date: Feb 2009



Completed Green Terramesh abutment structure Date: April 2009

Client name:

NZTA

Main contractor name:

CONCRETE STRUCTURES (NZ) LTD

Engineer's name:

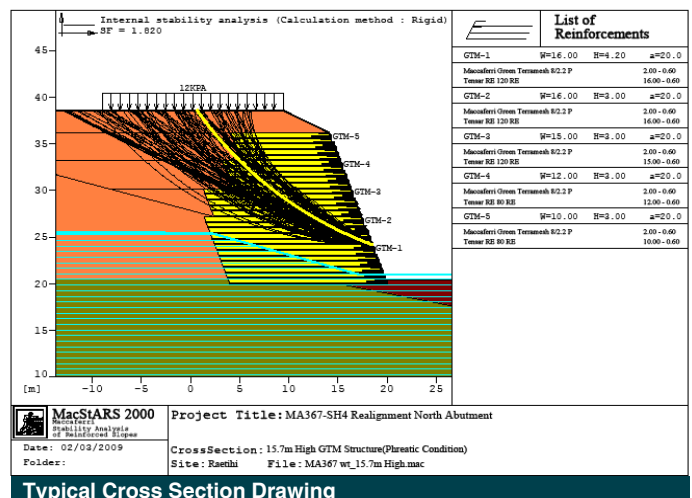
MWH NEW ZEALAND LTD

Products used:

GREEN TERRAMESH UNITS, TENSAR RE,
MIRAGRID GX

Construction date:

MID FEB - END APRIL 2009



Maccaferri NZ Ltd.

14 Goodman Place, P.O. BOX 12536, Penrose, Auckland, New Zealand
Tel. (+64) 9 6346495 - Fax (+64) 9 6346492, FREEPHONE 0800 60 60 20
E-mail: sales@maccaferri.co.nz - Web site: www.maccaferri.co.nz
Quality System AS/NZS ISO 9001:2000

The information presented herein is, to the best of our knowledge and belief, correct and is subject to periodic review and revision. The validity of the information relative to the subsoil, hydraulic and other engineering conditions must be ascertained by a suitably qualified person. No warranty is either expressed or implied. Unauthorised reproduction or distribution is prohibited. Copyright is vested in Maccaferri or Maccaferri's Principal where applicable.