

## 5) Summary and Comments

1. The internal stability results indicate that the Green Terramesh unit with their double twist wire reinforcement is sufficient to provide the stability required without additional need for geogrid reinforcement.
2. The global stability requirement is dependent on the ground profile, ground water and foundation conditions, all of which have to be verified if necessary. Conservative foundation soil parameters have been adopted for the purpose of this failure mechanism. The result indicates the need of single layer of Tensar RE540 geogrid to enhance the FOS. Otherwise, foundation improvement in the form of excavation and replacement with compacted hardfill for area subject to settlement or softening in the long term is highly recommended.
3. Particular attention should be given to long term environmental factors affecting the performance of the proposed structure. The following factors have been considered as part of our proposal and for incorporation into the construction of the structure.
  - a. Some embedment of 300mm below surface for the Green Terramesh embankment is suggested as precaution for scouring at the up slope from water runoff.
  - b. For this same reason, a drainage swale is suggested at a location to prevent surface run-off accumulating behind the proposed structure. Intercepted runoff from both the sloping ground and the catchments area upslope should be led away to convenient points of discharge beyond the limits of the structure. An erosion control mat is suggested for the drainage swale.
  - c. Surface protection should be applied to the cut sloping ground formed in materials susceptible to rapid surface erosion or weakening by water infiltration. Generally, vegetation (grass shrubs and tress) is highly effective and advantageous to fit the purposes. Vegetation stabilizes the soil surface by:
    - Mechanical reinforcement from the root system
    - Modification of soil moisture
    - Reduction of pore pressure by transpiration
  - d. Enkamat 7010, a permanent synthetic erosion control mat is suggested to improve the resistance of the grasses slope to rainfall run-off.

## 6) Product specification

The following specification details the material properties required to meet the safety factors and serviceability limits for the design suggestion and parameters considered in the design programs which was used for this proposal.

### Green Terramesh

All wire used in fabrication and in the wiring operations during construction shall have extruded onto it after coating it with Zn-5%Al-MM (GalMac<sup>®</sup>) a coating of polymer, otherwise referred to as "Plastic Coating". The coating shall be 0.5mm nominal thickness and nowhere shall be less than 0.35mm thickness. The polymer coating shall be grey in colour.

Green Terramesh<sup>®</sup> shall be manufactured with all components mechanically connected at the production facility except for Biomac Grasstrike R300 which is supplied separately. The external face, reinforcing panel, and top return shall be woven into a single unit. Horizontal reinforcing steel rods shall be placed in the front face of the unit. The welded wire panel and triangular brackets shall be factory connected to the base unit. The welded panel is placed behind the front face and the erosion control blanket, which is supplied separately, is placed between the two. The triangular steel brackets are spaced approximately every 1m and secured to the front face and bottom panel on each unit. The erosion control blanket shall be biodegradable Biomac Grasstrike R300 for Green Terramesh<sup>®</sup>.

### **Selvedges**

All the wire mesh elements shall have selvedge and edge wires:

Selvedge wire: a terminal wire used to edge the wire mesh perpendicular to the double twist by mechanically wrapping the mesh wires around it at least 2.5 times, in order to prevent unravelling and to develop a minimum tensile strength in accordance with ASTM A 975:

Edge wire: a terminal wire used to edge the wire mesh parallel to the double twist by continuously weaving it into the wire mesh.

The characteristics of the components with respect to the mesh wire core diameter shall conform to the following table (ASTM A 975)

Diameter (mm)		
Mesh Wire	Selvedge Wire	Lacing Wire
2.2	3.4	2.2

### **Binding and Connecting Wire**

Binding and connecting wire is used to perform all the wiring operations to be carried out in construction of the work. The diameter of the wire (wire core in the case of Plastic coated gabions) shall be 2.2mm.

### ***Lacing Tool***

As an alternative and/or in combination with hand lacing using binding wire, the use of a mechanical (pneumatic) lacing tool and rings may be permitted. Rings shall be either high tensile Zn-5%Al-MM for GalMac<sup>®</sup> units or high tensile stainless steel for GalMac<sup>®</sup>/Plastic coated units. Rings shall be from 3.0mm diameter wire.

### **Disclaimer**

The attached design suggestion has been produced using the methodology detailed in Maccaferri and its Principals' technical manuals, detailed specifications and software. These tools are available for inspection upon request.

However it should be noted that the design suggestion has been developed from information provided to or assumed by Maccaferri which has not been independently verified and which may contain assumptions and inaccuracies regarding geotechnical, hydraulic or other relevant parameters. We therefore strongly recommend the Client and their Engineer;-

- become familiar with the methodologies used and the implications of all the information required, and
- ensure that the design suggestion, any assumptions and all other factors relating to the project for which the proposal has been produced are checked and confirmed by a registered consulting engineer familiar with the project.

We wish to emphasise the point that we have provided a design suggestion for evaluation purposes only and it is not to be considered a full design as;-

- we are not registered consulting engineers, and
- we are not privy to all the information pertaining to this matter, and
- we have no control over the project, construction or installation of the product.

We accept no responsibility for design verification and no warranty is implied or granted in any advice, suggestion, design suggestion or assistance we may give. This document is not to be considered a full design and is provided without obligation. Accordingly, we recommend that complete engineering design and that certification for consent purposes be performed by a suitably qualified registered engineer.

Quantities reflected in this proposal are indicative only. Accurate measurement and calculation of actual quantities should be done by a suitably qualified person such as an experienced quantity surveyor.

Furthermore, the design suggestion has been prepared for the Maccaferri Client named on the covering correspondence only and remains the copyright and property of Maccaferri NZ Ltd and is not to be copied or disclosed to any other person or organisation other than the person or organisation to whom it was originally intended unless consented to by Maccaferri in writing.