

SCOTTS MEADOW HOUSING DEVELOPMENT

TORQUAY, DEVON, UK

SLOPE REINFORCEMENT

Product: ParaGrid[®], Biomac[®] C

Problem

Cavanna Homes of Torquay, Devon, wished to develop a parcel of sloping land, that also contained a capped landfill site, into a new housing development. Bearing in mind the high cost of residential land and the difficulties with an undulating site, the client's aims were:

- To provide well sized level plots
- To construct a steep embankment having long-term structural stability
- To provide an aesthetically pleasing naturally green face

Solution

Maccaferri were approached by Cavanna Homes and their consulting engineer, Hyder Consulting Ltd, to propose solutions to meet these objectives. The selected solution was a soil reinforced embankment with a 60° face angle of repose. Soil reinforcement was provided using ParaGrid 80/15S in 800mm and 1000mm lifts. The slope face was formed using a rising shutter system allowing the ParaGrid to provide a wrap around anchored slope face. Paragrid is placed horizontally between layers of compacted fill, reinforcing it, and enabling the fill to perform better than it does in its natural state; supporting higher loads and standing at steeper angles. Biomac C, a biodegradable matting, was used to contain a 300mm depth of topsoil on the inside face of the slope and provide short term erosion protection, thus allowing rapid plant growth.

A 250mm thick granular drain wrapped in a Bidim geotextile was provided at foundation level to eliminate the build-up of pore water pressures within the embankment.

To ensure suitable factors of safety against overall stability, especially adjacent to the capped landfill at the toe of the reinforced slope, the structure was embedded into the ground.

Client:

CAVANNA HOMES

Main contractor:

O & L CONSTRUCTION LTD

Designer:

HYDER CONSULTING

Products used:

PARAGRID, BIOMAC C

Date of construction

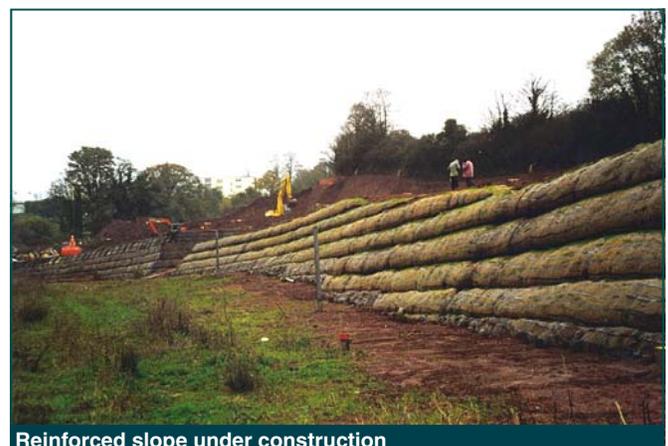
SEPTEMBER 1997— AUGUST 1998



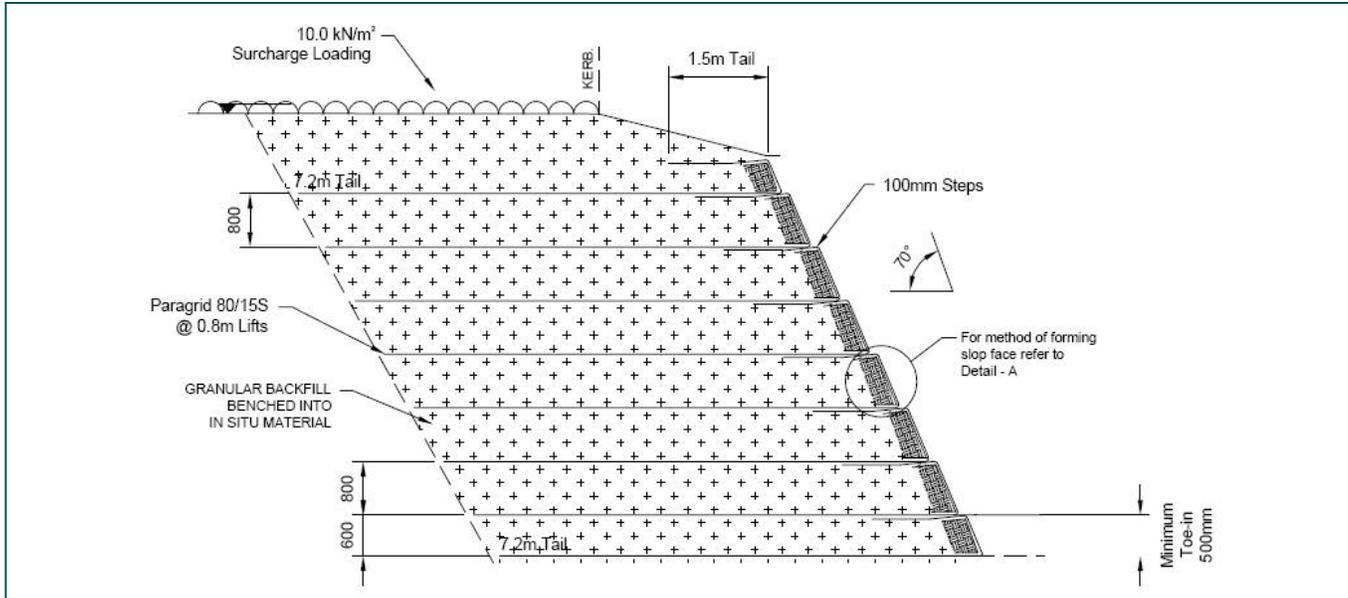
External shutters / rising formwork



Backfill placement onto geogrids



Reinforced slope under construction



Project section

The strap-like construction of the Paragrid geogrids, enables them to be used with a wide variety of fill material. It offers better interaction with marginal fills than a rigid geogrids for example. Its tough polyethylene sheathing protects the polyester core, offering excellent resistance to damage during installation. These benefits reduce the amount of geogrid required within structural embankments.

Reusing the soils excavated from site gave the added benefits of eliminating the costs that are incurred when importing and exporting soils to and from site. These costs are not only the cost of disposal and quarrying, but also the cost to the local neighbourhood caused by polluting truck movements.

The Paragrid reinforced embankment fulfilled the client's objective and provided a robust embankment with an environmentally friendly vegetated appearance. The additional land that the solution created added value to the housing units and also increased the number of properties that could be constructed on the site.



Completed slope after construction



Completed slope 3 months after construction

Maccaferri Ltd - Head Office
 7600 The Quorum,
 Oxford Business Park, North,
 Garsington Road, Oxford, OX4 2JZ
 Tel: 01865 770555
 Fax: 01865 774550
 Email: oxford@maccaferri.co.uk
Web: www.maccaferri.co.uk

Area offices
Perth:
 T: 01738 621317 F: 01738 442283 E: perth@maccaferri.co.uk
Belfast:
 T: 028 9026 2830 F: 028 9026 2849 E: belfast@maccaferri.co.uk
Dublin:
 T: 01 8851700 F: 01 8851601 E: dublin@maccaferri.ie
Web: www.maccaferri.ie



Oxford, Perth, Belfast