

A90 TRUNK ROAD SCHEME PORTLETHEN, ABERDEEN, UNITED KINGDOM

Slope Protection

Problem

The new £12m Portlethen Interchange on the A90 trunk road, has been constructed to provide road access to a new residential, commercial and retail development in the village of Portlethen, 8 miles south of Aberdeen. Over 800 houses are being built there by Scottish developer, Stewart Milne Group.

The proximity of nearby houses also meant that a steep, 65-degree embankment was required on the Southbound off-slip. The client, Transport Scotland, wanted a natural-looking, yet engineered solution to the slope stability issues prevalent on the embankment slopes on either side of the new highway.

Solution

Consulting Engineers for the project, Fairhurst Partners selected a soil nailing solution in conjunction with Maccaferri Geomac System; an innovative slope stabilisation/erosion protection system from Maccaferri Ltd.

Geomac Mattresses are large flat wire cages, similar to gabions, 6m x 2m x 0.23m, lined with filter fabric and filled with stone and soil. When installed and seeded, they create stable erosion protection panels of retained and encapsulated topsoil that promote rapid vegetative growth particularly on wet slopes and, in the case of the Portlethen Interchange, on steeply sloping dry embankments.

The Portlethen Interchange was constructed as a cut-and-cover project with the southbound carriageway installed first, followed by the northbound, with live traffic movement throughout the operation. Extensive groundwater control measures were required in the 7m deep cutting due to the high water table level in the area.

This was excavated in 1.5m deep stages to allow the Geomac Mattresses to be fixed as work progressed. Dywidag soil nails, 8-10m in length were drilled and fixed to the Geomac Mattresses creating an efficient, stable structure.

Client: Transport Scotland

Designer / Consultant: Maccaferri Ltd

Contractor: Fairhurst Partners

Products used (Qty.)

Date of construction: 03/2007 - 07/2007

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Empty Geomacs, placed on soil-nailed slope



Geomac during installation showing partially filled units



Geomac during installation



After installation, prior to vegetation establishment



After construction, showing successful vegetation