

DEBRIS FLOW BARRIERS - A83 TRUNK ROAD (Pt1)
 ARGYLL, SCOTLAND, UK

DEBRIS FLOW PROTECTION (Work phases 5 & 6)
Product: DF30 Dynamic Debris Flow Barriers

Problem

The A83 trunk road is a highly important arterial route through the picturesque but rugged scenery of the Arrochar Alps in the internationally famous Loch Lomond National Park. The route represents a critical life line from the Glasgow area to the whole of the Argyll peninsular and the important commercial and tourist interests in that region.

The Rest and Be Thankful is a mountain pass at the head of a long climb where the road makes a traverse up the flanks of Ben Arthur (The Cobbler) and crosses from Glen Croe to Glen Kinglas en-route to Inverary.

The unstable mountain slopes have a long history of debris flow activity. The silty and bouldery superficial soils overlie glacially smoothed rock-head terraces which combined with unfavourable pore water conditions and extensive basement-cover groundwater flows make debris flows a constant threat. The frequent inclement weather experienced by the west coast of Scotland add to the danger of slope failure.

Over the past 5 years the road has been blocked by debris flows on numerous occasions, sometimes for long periods. When the road is closed the standard diversion route adds 50 miles (80km) for journeys to Inverary. The length of the delay, the trunk road status of the A83 and a full engineering assessment of the geotechnical options for the route led the client to issue contracts for the protection of the A83, around the Rest and Be Thankful, from the effects of Debris flow.



View of the trunk road on mountain slopes from the saddle



Historic photograph showing debris flow on A83



Post plinth installation and anchoring works in progress

Project Client:

TRANSPORT SCOTLAND

Engineer:

MHB

Installer:

GEOROPE

Products used:

DF30 Type1 Debris Flow fences

Date of construction

Summer 2013

Solution

The engineer's solution included three separate high-capacity dynamic debris flow interception fences. The selected systems comprise Type 1 ("in-channel" type) barriers which span the relevant channels.

The designer chose an unconventional layout for the barriers in order to accommodate the client's design impact volume criteria within the available footprint area of the scheme. Maccaferri fulfilled the layout requirements with the use of half height posts within the two of the three Type 1 structures.

The specification of the barrier components used was carefully tailored to offer maximum strength and durability whilst remaining easy to handle and practical install. The primary interception mesh adopted is high strength 4v ring nets and all of the fences use the Patented aluminium energy dissipaters common to all dynamic Maccaferri impact protection fences.



View of fence A showing the half height posts



View of fence B in installed position—note lack of posts



View of fence C showing primary interception mesh



View of fence C following installation showing curved layout

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