FALLING ROCK PROTECTION

Product: RMC “ICAT” Series Semi-Dynamic Rockfall Fences

Problem
The national road no. 75 section Brzesko - Nowy Sacz in Będzieszyna (South Poland) at km 39 + 200 to km 40 + 000 runs between rocky slopes of sandstone and shale (up to 35 m vertical high) covered places a thin weathered layer and Czchów Lake. Along the road temporary mesh fencing was installed as an ad-hoc barrier to stop tiny rock fragments following the development of instability on the slope.

Heavy rainfall that occurred in 2010 resulted in the weathering of local landslides and rock falls that shed blocks onto the road carriageway. As a result of these events the local road authority decided to issue a "design and build" contract to remediate the dangerous section of the slope by the installation of suitable rockfall protection measures.

Solutions
As a result of a comprehensive design process the main contractor decided to use three systems to protect the road from rockfall: rockfall barriers, mesh draperies and secured mesh (with rock bolts across the slope face). The stretch of road was narrow and the high risk areas occurred where the road was in very close proximity to the toe of the slope. For this reason it was considered inappropriate to use conventional dynamic rockfall barriers and instead to use Maccaferri’s semi-dynamic ICAT barriers. These barriers have no upslope bracing cables/anchors and exhibit lower deformations during impact than conventional fences.

In areas where the rock outcrops are located directly adjacent to the carriageway double twisted mesh (3.9 mm Zn/Al) was installed as a high stiffness facing. To limit deformation further, the mesh was reinforced with 16 mm wire ropes paired with Ø25 mm rock bolts and high specification clawed plates. In places where debris was falling from the high sandstone outcrops draped DT mesh was used in combination with catch ditches to mitigate the risk to the road corridor.

Client:
Generalna Dyrekcja Dróg Krajowych i Autostrad

Main contractor:
Consortium: Strabag + Sko-Bud Kraków

Designer:
Geotim (www.geotim.pl)

Products used:
RMC 050A ICAT barrier & DT 3.9mm Galmac mesh

Date of construction
Sep - Dec 2011
Mesh installation (above) and RMC 050a ICAT barrier (below)

Mesh installation - DT 3.9mm Galmac mesh + clawed steel plates