

**L 193 - Widening of Faschinastraße,
Damüls, Vorarlberg - Austria -
using Fortrac® geogrids**



Project/ Location:	L 193 Widening of Faschinastraße Damüls, Vorarlberg - Austria
Client:	Amt der Vorarlberger Landesregierung Abteilung VIIb - Straßen- und Brückenbau
Design and geotechnics:	3P Geotechnik ZT GmbH Lauterach, Austria
Contractor:	Oberhauser & Schedler Bau GmbH & Co-Andelsbuch, Austria
Constructed:	Autumn 2002 / Spring 2003
Products:	Fortrac® , Type 110/30-20 Fortrac® , Type 80/30-20 Fortrac® , Type 55/30-20

Background and construction

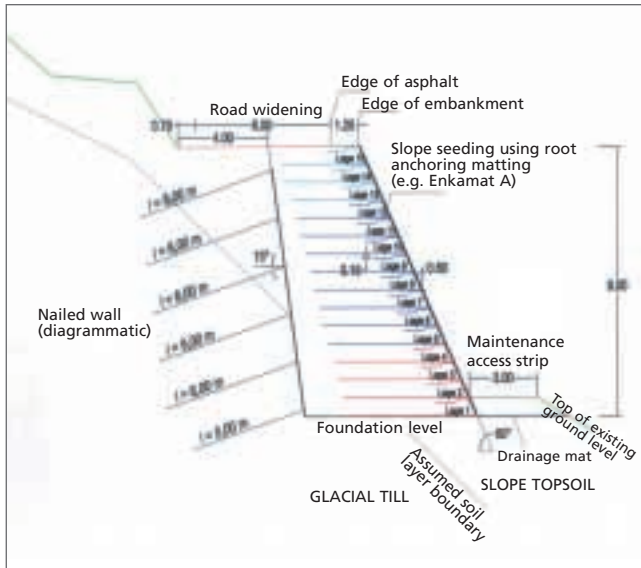
A 300 metre long length of the existing Faschinastraße required to be widened to alleviate several narrow sections of the road. One traffic lane had to be maintained at all times during the construction of the widening. The road runs over steeply sloping

ground. The embankment foundation was constructed through the topsoil on to stable glacial till at depths of 3-5 m below existing ground level.

A geogrid-reinforced embankment solution was investigated in addition to a conventional anchored reinforced concrete wall. A comparison showed that up to a height of 9 m, an embankment with a slope angle of 60 - 65° represented the most economic solution. The cost saving was approximately 30%.

A nailed wall was installed in advance of the actual embankment works in order to allow the traffic to continue to flow during construction.

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With the existing road and slope temporarily secured, work could then begin on the construction of the reinforced earth embankment. In order to intercept and divert localised slope seepage water out to the valley sides, the whole surface was covered with a drainage mat, which was sprayed with a skin of concrete incorporating pressure relief holes. Up to 15 layers of Fortrac® geogrid with a longitudinal tensile strength of 55-110 kN/m were used to reinforce the embankment. The geogrids were installed every 0.6m vertically.

In addition to testing the basic suitability of the fill material, compaction tests were carried out, continuously, during construction. This testing proved the required degree of compaction of more than 98 % was achieved. Local glacial till material was used in the embankment as well as imported fill.

In spite of the difficult alignment of the road with its two curves and tight radii, the embankment was completed precisely to the required tolerances by local contractor Oberhauser & Schedler Bau. The main construction work took about three months and was completed in autumn 2002. This was followed by seeding (hydroseeding) in the middle of 2003.



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