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ROADS

Ostrava, Rudná – Hrušov

Motorway D47

country: Czech Republic
realization: 2002 – 2008
material: Kortex® GT 400/50, 600/50 ..... 103.000 m²
Kortex® GTPP 14/14 ..... 225.200 m²

KORTEX® GT

woven geotextilie from high-strength PET
for soil reinforcement, separation
and filtration

purpose of usage:
earth reinforcing in three strata filling of bridge abutment, filtration, separation

KORTEX® GTPP

woven geotextilie from PP tapes or strings
for soil reinforcement, separation
and filtration

purpose of usage:
earth reinforcement, filtration, separation

D47 Motorway is a part of VI.B branch of the multimodal corridor in the route of Katovice – Bohumín – Ostrava – Brno – Vienna. In Brno, the corridor is connected to IV multimodal corridor in the direction of Nuremberg/Dresden – Prague – Brno – Bratislava – – Budapest – Sofia Istanbul. In the direction of Katovice and Warsaw, the motorway continues with the polish A1 Motorway. The motorway is a technically complicated structure which has to satisfy always stricter requirements concerning the blending with the landscape and environmental damage. The design of 80.2 km long motorway includes 155 structures; out of which 14 large bridges, 14 fly-over crossings and a dug tunnel (1.08 km long). Bridges and elevated roads represent 13% of the road length.

Stability of embankments was reassessed within this construction. Recalculation followed up with the stability assessment of dike formations in the MÚK Rudná construction and MÚK Northern Link-up. The reason for recalculation in the selected cross-sections was a change of material in the embankment. Originally, the material used in the embankment was considered to be granular fill (dirt from Paskov of G2 nature), thereafter a sandwich structure was opted for, with the thickness of individual layers in the sandwich structure and the strength and deformation characteristics of flexible layers considered as per customer's specification. Assessment was made by mathematical modelling.

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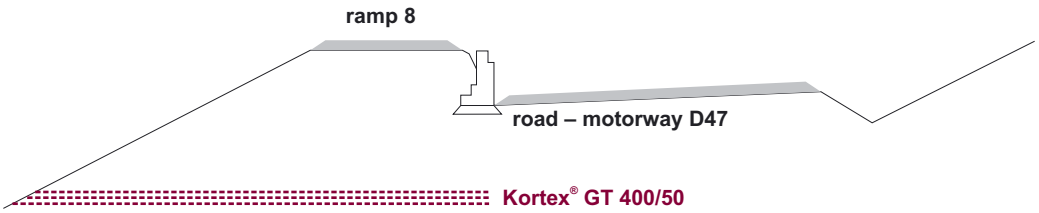
Characteristic cross-section:



geotextiles necessary at sandwich placement Paskov II Diamo

geotextile necessary at sandwich placement Paskov II - Klimkovice

REINFORCING GEOTEXTILE

Sandwich embankments were created by alternating reinforcing (50 cm) and flexible (30-40 cm) backfill layers. Stability failed to meet requirements in higher embankment ramps and one tensile geotextile had to be added to secure stability. The **Kortex® GT** 600/50 and 400/50 woven reinforcing geotextile was used as an ideal solution.

The geotextile was placed on a protective layer of crushed-run rock in the thickness of 100 mm and the protective layer on the geotextile was placed in the same way.

SEPARATING GEOTEXTILE

Works on the construction of the motorway embankment itself were commenced with the placement of filtration-separation geotextile **Kortex® GTPP** 14/14. The ground was levelled and all sharp objects were removed before the geotextile was placed. The overlap of individual bands during the placement should be, according to TP 97, at least 300 mm. Attention should be paid so that the geo-textile is not directly moved on by truck etc.

A consolidation layer of Hrabová blast furnace slag with the fraction of 63-90 or Hrabová steel slag with the fraction of 0-250 was spread on the geotextile under the whole area of the future earth structure in the thickness of 0.60 m and compacted pursuant to the requirements of ČSN 72 1006 for earth structures (97% PS).

The use of woven geotextile for separation purposes in this construction proved again that woven PET and PP based geotextiles of **Kortex®** type are more than suitable materials for increasing stability of embankments and for separation and filtration solutions where they successfully replace the use of nonwoven geotextiles.

investor:
Ředitelství silnic a dálnic ČR, Brno
designer:
Dopravoprojekt, a. s., Brno
constructor:
Sdružení Moravsko – slezská dálnice, Ostrava
(ODS, a.s., OKD, a.s., SSŽ, a.s.)
geological survey:
GEOSTAR, s.r.o., Brno
section:
4708.2
length of section:
6,54 km (km 146,600 – 153,054)
realization:
05/2002 – 08/2008