



Kunovice – railway station

reconstruction of rail switches

country: Czech Republic

realization: December 2004

material: Armatex® G 55/55

..... 11.300 m²



ARMATEX® G

woven geogrid from high-strength PET with PVC adjustment for soil reinforcement

purpose of usage:

soil reinforcement of rail structure for improving of load – bearing capacity of formation



The project “Reconstruction of rail switches in Kunovice railway station” dealt with reconstruction of a line construction in Kunovice railway station – Veselí gridiron, trackage between 101.100 and 101.650 km. The existing configuration of the gridiron required speed reduction to 40 km/h in the direction to Veselí n. Mor. and in the direction to Uherské Hradiště. The proposed design allows track speed of 50 km/h.

Description of the existing situation:

The reconstructed track gridiron is situated in a well arranged area, the body of the railway structure is on the ground level or on a mild embankment with height below 1.0 m.

The ground plane under the reconstructed gridiron was not drained, the existing condition of the sleeper subsoil did not guarantee stable conditions by its structural arrangement.

According to the results of geological survey carried out by Kolejconsult & servis company, the thickness of the existing gravel bed ranged between 0.30 and 0.55 m under sleepers and this bed was soiled completely.

Railway substructure design:

Reconstruction works in full extent, i.e. construction of a subsurface drainage system, creation of load bearing and non-freezing arrangement of structural layers of the body of the railway substructure were proposed on the basis of the engineering geological survey. Reconstruction of the body of the railway substructure was proposed under the reconstructed turnouts No. 10 – 18.

Sleeper subsoil:

With respect to a character of construction reconstruction of rail switches, requirements of the investor for execution of building works using technology of railway grate assembling were taken into account.

Use of a separation geotextile in combination with the reinforcing geogrid **Armatex® G 55/55** which was arranged in two layers was proposed on the basis of the results of geological survey. The geogrid holds a reinforcing function and increases a load bearing capacity of sleeper subsoil. The required properties are defined by the regulation OTP No. 58.253/2000-013-Geogrids and geomembranes in the body of railway substructure.

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Factory Production Control Certificate 0799-CPD-19



The locality of the Veselí gridiron was assessed as a homogenous unit, reinforcement of the ground plane with geosynthetic materials and a structural layer with the thickness of 0.28 m was proposed, i.e. reinforcement with a sandwich structure with the arrangement of the structural layers with a separation geotextile and two layers of the reinforcing geogrid **Armatex® G 55/55**.

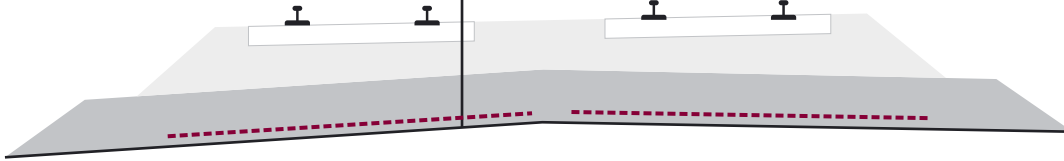
The proposed composition of the structural layers of the body of the railway substructure complies with the conditions of the regulation ČD S4 with respect to the required load bearing capacity on the ground plane of the body of the railway substructure EPL=40MPa and with respect to protection against unfavourable effects of frost.

Progress of works:

- removal of the track structure up to ground plane
- lying down of drainage pipes, underground services, cables and distribution lines
- spreading of separation nonwoven geotextile
- application and pre-stressing of the reinforcing geogrid **Armatex® G 55/55**
- layer of crushed gravel with grain size of approx. 16-32 and thickness of 150 mm
- the second layer of reinforcing geogrid **Armatex® G 55/55**
- base layer, gravel with grain size of 32-63, thickness of 280 mm
- railway gravel with grain size of 32-63, thickness of 300 mm
- wooden sleepers 1A, polyethylene pad, ribbed sole plate S4, rubber pad
- rails tv. S49

CHARACTERISTIC CROSS SECTION: KM 101, 260

superstructure (rail tv. S49, rubber, sleepers)
 crushed gravel 300 mm (fraction 32-63)
 base course from crushed gravel 280 mm (fraction 32-63)
reinforcing geogrid Armatex® G 55/55
 geotextile
 formation



investor:

ČD, a.s.

designer:

N.O.R.T. ing. Karel Smolík

contractor:

Tomi Remont a.s., Prostějov

geotechnical survey:

Kolejconsult & servis, spol. s r.o.

realization:

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