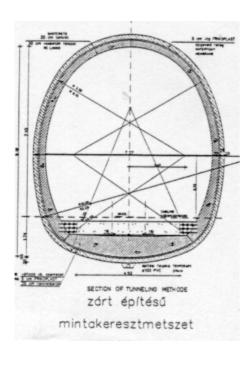


TUNNEL CONTRUCTION

BALLA HILL TUNNEL OF THE HUNGARIAN - SLOVENIAN RAILWAY LINE NAGYRÁKOS



Client:

MÁV Szombathely Directorate via MÁVTI

Features:

Total length of tunnel: 375 m

Length of construction, cut-and-cover: 45+39 m Length of construction, mining method: 291 m

Section of tunnel:

single track railway tunnel section

Design speed: 160 km/h Maximum rock cover: 12 m Area of rock section: 74 m²

Area of clear tunnel section: 45 m²

Alignment of tunnel:

horizontal: curve of R = 2 300 m

vertical: 12 %_o

Time of design: 1997

Time of implementation: 1998-2000

Services:

- Preliminary design
- Design for approval
- Tender document



The Balla Hill Tunnel is located between chainages 325+85 hm and 329+60 hm of the MÁV railway line between Zalaegerszeg and the state border as a part of the railway link between Hungary and Slovenia.

The tunnel crosses sedimentary strata of the rivers Rába and Kerka. Clay layers of medium hard consistency can be found at the tunnel roof and in the covering layers above, while gravel- and sandcontaining layers are to be encountered in the core and bottom of the tunnel.

Of the groundwaters, pressure water is absent along the tunnel, however, confined waters are present.

The lining of the tunnel consists of two shells corresponding to the geotechnical conditions. The external tunnel lining is made with shotcreting technology by stages, as the tunnel driving advances

The internal lining is made of reinforced concrete units, which are assembled behind the formwork moved on a carriage. Waterproofing is installed between the two linings.

Recesses are established in the side wall of the tunnel with a spacing of 25 m at the left and right, alternating.

The portal of the tunnel is shaped as an inclined ellipsis which blends into the topography of the landscape.

A.8.11.Balla March 1999