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Support of unstable wedges along the Platamon railway tunnel under construction, in northern Greece

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Abstract

In this paper, support measures obtained with the RMR classification method were used for estimating the support capacity of wedges found in relatively shallow tunnels. This was done for the Platamon railway tunnel, in northern Greece, which is at present, under construction. According to our investigation, the safety factors, which were calculated using the above mentioned support measures, were much higher than the theoretically needed safety factor. In cases where the height of the wedges is much greater than their base and the rockmass quality is very poor, the proposed RMR support measures could be introduced. In these cases, additional techniques, which include steel ribs and shotcrete (together with rock bolts), could be used. © 2002 Elsevier Science B.V. All rights reserved.

Keywords: Tunnel; Bolting; Wedge support

1. Introduction

The Platamon tunnel under construction is located in northern Greece, near Mount Olympus (Fig. 1). It is part of the new double track high-speed railway line connecting the northern boundaries of Greece with Athens. The height of the tunnel is 13 m. The whole Platamon project includes tunnels with a total length

of 4330 m and two bridges with a total length of 270 m. The tunnel is 2666 m long made up of the following parts:

1. 2+430–3+818: tunnel
2. 3+818–3+880: cut and cover
3. 3+880–4+345: tunnel
4. 4+345–4+412: cut and cover
5. 4+412–5+096: tunnel

The support measures along the tunnel were estimated using the RMR classification (Bieniawski, 1989). The concept of this paper was to use the support measures, obtained with the RMR system,

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