

THE ROLE OF POSITION OF INITIATION AND STEMMING ON BREAKAGE

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ABSTRACT

The course of motorway tunnel under construction was set only 2 m away from the main motorway. The thickness of the tunnel overburden rock was 9 m.

During the tunnel construction the traffic on the motorway was not supposed to be interrupted. The tunneling was carried out by NATM with classical drilling of blastholes and by blasting.

For the purpose of evaluating possible damage of the rock burden above the tunnel, meaning also a possibility of motorway damage and possible interruption of traffic, measuring of seismic effects of blasting on the surface was carried out with the intention of defining the safe mode of blasting.

Because of the thin overlayer it was possible to place the seismograph 10-m away from the place of blasting. Along with measuring of the influence of a dynamic component of blasting on the surrounding rock mass, also measured was the influence of the position of initiation and stemming of blastholes on the rate of breakage.

Several pairs of blastholes were drilled, changing the position of initiation of the blasting charge, and the mode of stemming, but with exactly the same amount of explosive charge.

After blasting the length and volume of the breakage was measured for each blasthole. The results of measuring showed that the greatest breakage was achieved by initiation from the top of blasthole giving an almost equal dynamic effect of blasting.