

Static design of steel-concrete lining for traffic tunnels

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Abstract. Article summarizes the results of research focused on the structural design of traffic tunnel linings that have been achieved in the framework of a research project TE10168 that supports The Technology Agency of Czech Republic. This research aim is to find and develop a process for design structure parameters of tunnel linings. These are now mostly build up by a shotcrete technology. The shotcrete is commonly endorsed either with steel girders or steel fibres. Since the installation a lining structure is loaded while strength and deformational parameters of shotcrete start to rise till the setting time elapses. That's reason why conventional approaches of reinforced concrete are not suitable. As well as there are other circumstances to step in shown in this article. Problem is solved by 3D analysis using numerical model that takes into account all the significant features of a tunnel lining construction process inclusive the interaction between lining structure with rock massive. Analysis output is a view into development of stress-strain state in respective construction parts of tunnel lining the whole structure around, including impact on stability of rock massive. The proposed method comprises all features involved in tunnel fabrication including geotechnics and construction technologies.