

Abstract

The development of Tunnel Notog BH 1440 (Multiyears 2016-2018) located in Kalirajut, Notog, Patikraja, Banyumas, Central Java Province using excavation method by New Austrian Tunneling Method (NATM) . Tunnel excavation will cause changes in stress distribution and rock mass displacement around the tunnel which will make deformation on the tunnel wall therefore tunnel stability analysis is necessary. To know the rock mass displacement, it is used approach with empirical method that is rock mass classification based on Rock Mass Rating (RMR) System and numerical calculation with finite element method (FEM).

Results of rock mass classification were obtained at STA. 359 + 415 has a weight value of RMR 70 (Good Rock) for 10 meter diamtre of tunnel obtained stand-up time 4500 hours while at STA. 359 + 427 has a weight of RMR 66 (Good Rock) for the same diamtre of tunnel obtained stand-up time 2500 hours. Based on the value of RMR, then the supporting system using wire mesh and rock bolt with 20 mm diameter full grouting and 3 m length with 2.5 m spacing, shotcrete with 20 mm thickness on that stone condition. Based the numerical calculation obtained on STA.359 + 415 has 0.0043 m of total displacement, while on monitoring data 0,004 m and on STA 359 + 427 by numerical calculation has a total displacement value 0.0053 m, while based monitoring data has a total displacement 0.005 m. For the strength factor after installation the supporting system, the value of strength factor is increased and had a value > 1 . From the results of this analysis, then the supporting system which was used is appropriate and sufficient.