

INTISARI

Kementrian PUPR melalui Balai Besar Wilayah Sungai Citarum (BBWS Citarum) berupaya mengurangi penyebab terjadinya banjir di Kabupaten Bandung dan bantaran Sungai Citarum dengan cara membangun terowongan pengelak air, yang dinamakan Terowongan Nanjung, di Desa Lagadar, Kecamatan Margaasih, Kabupaten Bandung, Provinsi Jawa Barat. Penelitian ini berfokus untuk mengetahui klasifikasi lapisan batuan Terowongan Nanjung berdasarkan sistem RMR, melihat kegagalan berupa *displacement* yang terjadi pada kondisi eksisting dengan jarak antar terowongan sesuai perencanaan, dan mengetahui jarak aman antar terowongan agar tidak saling mempengaruhi.

Prosedur penelitian dimulai dengan tahap studi literatur, pengumpulan dan pengolahan data, klasifikasi lapisan batuan Terowongan Nanjung berdasarkan RMR, simulasi numeris menggunakan *Rocscience-RS2* penggalian *top heading and bench* dengan kondisi topografi eksisting dan topografi datar, kontrol *displacement* izin di lapangan, dan pembahasan hasil.

Hasil penelitian menunjukkan bahwa lapisan batuan Terowongan Nanjung berupa batupasir termasuk kelas batuan IV berdasarkan sistem RMR. Besarnya *displacement* akhir pada muka penggalian terowongan untuk kondisi topografi eksisting dengan jarak antar terowongan sesuai perencanaan adalah 0,55 cm, dan berada dalam batas *displacement* izin lapangan. Untuk simulasi numeris terhadap jarak antar terowongan diketahui bahwa jarak aman terowongan agar tidak saling mempengaruhi adalah lebih besar atau sama dengan 4 kali diameter terowongan.

Kata kunci: sistem RMR, *displacement*, kondisi topografi, jarak aman terowongan.

ABSTRACT

The Ministry of PUPR through BBWS Citarum tried to decrease the source of flood in Bandung District and the banks of the Citarum River by built a water-dug tunnel, called Nanjung Tunnel, in Lagadar Village, Margaasih Sub-district, Bandung District, West Java Province. The research was focused to classified the rock layer of Nanjung Tunnel based on RMR system, to observed the failure in deformation form on existing condition using the distance of twin tunnels as planned, and to determined un-influence safe distance inter tunnels.

The research prosedure was started from study literature, collected and processed the datas, classified the rock layer of Nanjung Tunnel based on RMR system, simulated top heading and bench excavation using Rocscience-RS2 numerically in existing topographic condition and flatted topographic condition, controlled to the limit of permitted field displacement, and discussed the results.

The results illustrated the rock layers of Nanjung Tunnel in the form of sandstone was in IV class based on RMR system. The maximum of the final displacement on the tunnel dug surface for the existing topographic conditions in the distance of twin tunnels as planned was 0,55 cm, and the value was under the limit of permitted field displacement. For the result of numerical simulations of the distance of twin tunnels has been known that the un-influence safe distance inter tunnels was greater or equal to 4 times of diameter of the tunnel.

Keywords: *RMR system, displacement, topographic condition, tunnel safe distance.*