



INTISARI

Penelitian dilakukan di Desa Randusari dan sekitarnya, Kecamatan Cibeureum, Kabupaten Kuningan, Provinsi Jawa Barat. Dalam proses pembangunan tubuh bendungan terdapat rekayasa keteknikan yang dikenal sebagai saluran pengelak. Saluran pengelak dibangun dengan tujuan mengalihkan aliran sungai. Saluran pengelak pada penelitian termasuk ke dalam tipe terowongan pengelak. Terowongan pengelak dibangun memotong sebuah bukit sehingga pengkajian karakteristik geologi teknik dan kualitas massa batuan pada daerah sekitar bukit perlu dilakukan.

Kondisi geologi teknik diketahui berdasarkan pemetaan dengan skala 1:5000. Berdasarkan hasil pengamatan lapangan dan data sekunder dari tim konsultan supervisi diketahui bahwa daerah penelitian terbagi menjadi 5 satuan litologi meliputi satuan batulempung sisipan batupasir, satuan perselingan batupasir dan batulempung, satuan breksi vulkanik, satuan batupasir sisipan batulempung dan satuan batulempung. Daerah penelitian terbagi menjadi 8 satuan geologi teknik yaitu satuan batulempung sisipan batupasir kualitas sedang, satuan perselingan batupasir dan batulempung kualitas sedang, satuan perselingan batupasir dan batulempung kualitas baik, satuan breksi vulkanik kualitas sedang, satuan breksi vulkanik kualitas baik, satuan batupasir sisipan batulempung kualitas sedang, satuan batulempung kualitas sedang dan endapan lempung pasir.

Massa batuan pada terowongan pengelak berdasarkan klasifikasi RMR terbagi menjadi kelas *fair rock* dan kelas *good rock*. Berdasarkan klasifikasi *Q-system* massa batuan terbagi menjadi kelas *poor rock*, *fair rock* dan *good rock*. Penilaian klasifikasi GSI menunjukkan nilai 43 ± 2 - 75 ± 2 . Risiko keteknikan yang dapat terjadi pada terowongan pengelak yaitu *raveling*, *running*, *flowing* dan *rock burst*. Sebagai tindakan pencegahan risiko keteknikan maka ditentukan sistem penyangga berdasarkan klasifikasi RMR. Pada kelas III dilakukan pemasangan *rock bolt* dengan panjang 4 m, spasi 1,5-2 m dan *wiremesh*. Ketebalan *shotcrete* 50-100 mm. *Light steel ribs* dengan spasi 1.5 m (jika diperlukan). Pada kelas II dilakukan pemasangan *rock bolt* dengan panjang 3 m, spasi 2,5 m dan *wiremesh*. Ketebalan *shotcrete* 50-100 (jika diperlukan).

Kata kunci: Terowongan pengelak, geologi teknik, kualitas massa batuan, sistem penyangga, risiko keteknikan, RMR, GSI dan *Q-system*



ABSTRACT

This research located at Randusari Village, Cibeureum Subdistrict, Kuningan District, Wes Java Province. During dam constructions, there is a component known as diversion channel. Diversion channel is built with the aim of diverting the river flow. The diversion channel in this research belongs to tunnel type. The diversion tunnel is constructed under a hill, therefore the research to understand the geological engineering characteristics and the rock mass quality around the research area needed to be done.

The geological engineering characteristics are determined by geological engineering mapping on the scale of 1:5000. Based on field observation and secondary data from the supervision consultant team, it is known that the research area is classified to 5 lithological units, those are claystone interbedded with sandstone, sandstone intercalated with claystone, volcanic breccia, sandstone interbedded with claystone, and claystone. the research area is classified to 8 geological engineering units, such as fair quality claystone interbedded with sandstone, fair quality sandstone intercalated with claystone, good quality sandstone intercalated with claystone, good quality volcanic breccia, fair quality volcanic breccia, fair quality sandstone interbedded with claystone, fair quality claystone and sandy clay deposits.

The rock mass inside diversion tunnel based on RMR classification belongs to fair rock class and good rock class. Based on Q-system classification, the rock mass is divided to poor rock, fair rock and good rock. The assessment of the GSI classification shows GSI value of 43 ± 2 - 75 ± 2 . The engineering risk that could happens inside the diversion tunnel are raveling, running, flowing and rock burst. As a precaution, the support system is determined. Based on RMR classification, class III rock mass will be strengthened by 4 meters length rock bolt, spaced in 1,5 – 2 m and wiremesh. Shotcrete thickness 50 – 100 mm. Light steel ribs is applied at 1.5 m spacing (if needed). On class II rock mass will be strengthened by 3 meters length rock bolt, spaced in 1,5 – 2 m and wiremesh. Shotcrete thickness 50 – 100 mm (if needed).

Keywords: *diversion tunnel, geological engineering, rock mass quality, support system, engineering risk, RMR, GSI and Q-system*