INTISARI

Bendungan Matenggeng berlokasi di Kabupaten Cilacap, Provinsi Jawa Tengah dan masuk pada wilayah kerja Balai Besar Wilayah Sungai Citanduy, Direktorat Jenderal Sumber Daya Air, Kementerian Pekerjaan Umum dan Perumahan Rakyat. Pembangunan bendungan berada pada daerah yang memiliki kondisi geologi yang cukup kompleks sehingga perlu dilakukan penyelidikan geologi teknik meliputi aspek geomorfologi, aspek batuan dan tanah, dan aspek struktur geologi untuk mengevaluasi kondisi geologi teknik dan metode ekskavasi massa batuan pada area konstruksi bendungan. Metode penelitian meliputi pemetaan geologi teknik skala 1:10.000, evaluasi sampel *core* batuan bawah permukaan, penentuan kualitas massa batuan berdasarkan *rock mass rating & geological strength index*, analisis petrografi, pengujian sifat indeks dan keteknikan batuan, dan penentuan metode ekskavasi massa batuan berdasarkan EXCASS System. Hasil penelitian menunjukkan geomorfologi daerah penelitian terbagi atas satuan dataran banjir Sungai Cijolang berlereng landai (2°–4°), satuan perbukitan sesar Dayeuhluhur berlereng agak curam – curam (8°–35°), dan satuan perbukitan aliran lava Dayeuhluhur berlereng curam (16°–35°). Satuan batuan daerah penelitian terdiri dari andesit lapuk rendah hingga tinggi dengan kualitas buruk hingga sangat baik, satuan perselingan batupasir – batupasir kerikilan lapuk rendah hingga sedang dengan kualitas buruk hingga baik, satuan perselingan batulanau – batupasir lapuk rendah hingga sangat lapuk dengan kualitas sangat buruk hingga baik, dan endapan lempung – berangkal. Struktur geologi yang berkembang pada daerah penelitian berupa kekar ekstensi dengan arah gaya utama ENE – WSW, sesar turun dengan orientasi N – S, sesar naik dan sesar geser dekstral dengan orientasi NW – SE, dan sesar geser sinistral dengan orientasi NE – SW. Metode ekskavasi untuk tanah residu, endapan lempung – berangkal, dan perselingan batupasir – batulanau kualitas sangat buruk menggunakan metode *digger*; batulanau, batupasir, dan batupasir kerikilan kualitas buruk menggunakan metode *easy – hard ripper*; batupasir, batupasir kerikilan, dan breksi andesit kualitas sedang menggunakan metode *hard ripper – hammer*; dan andesit, batupasir, batupasir kerikilan, dan breksi andesit kualitas baik – sangat baik menggunakan metode *blasting*.

Kata Kunci: Bendungan Matenggeng, penyelidikan geologi teknik, kualitas massa batuan, *rock mass rating*, *geological strength indeks,* metode ekskavasi massa batuan.

ABSTRACT

The Matenggeng Dam is in Cilacap Regency, Central Java Province and under the authority of the River Basin Organization for Citanduy, Directorate General of Water Resources, Ministry of Public Works and Housing. The construction of the dam is in an area that has complex geological conditions, so it is necessary to conduct an engineering geological investigation including geomorphological aspects, rock and soil aspects, and geological structural aspects to evaluate the engineering geological conditions and rock mass excavation methods in the dam construction area. The research methods included engineering geological mapping with 1:10,000 scale, evaluation of subsurface rock core samples, determination of rock mass quality based on rock mass rating & geological strength index, petrographic analysis, testing of index properties and rock engineering, and determination of rock mass excavation methods based on EXCASS System. The results show that the geomorphological of the study area consist of the Cijolang River floodplain unit with gently slopes (2°-4°), the Dayeuhluhur fault hills unit with moderately steep - steep slopes (8°-35°), and the Dayeuhluhur lava flow hills unit with steep slopes (16°-35°). The rock units of the study area consist of andesite with slightly to highly weathered and poor to very good quality, intercalated sandstone – gravely sandstone unit with slightly to moderately weathered and poor to good quality, intercalated siltstone – sandstone unit with slightly to completely weathered and very poor to good quality, and clay – cobbles deposits. The geological structures developed in the study area are extension joint with ENE – WSW main force direction, normal fault with N – S orientation, thrust fault and dextral strike slip fault with NW – SE orientation, and sinistral strike slip fault with NE - SW orientation. The excavation methods for residual soil, clay-cobble sediment, and intercalated sandstone – siltstone with very poor quality use digger method; siltstone, sandstone, and gravely sandstone with poor quality use easy – hard ripper method; sandstone, gravely sandstone, and andesite breccia with fair quality use hard ripper – hammer method; and andesite, sandstone, gravely sandstone, and andesite breccia with good - very good quality use blasting method.

***Keywords**: Matenggeng Dam, engineering geological investigation, rock mass rating, geological strength index, rock mass excavation method.*