

INTISARI

Bendungan Rongkong merupakan salah satu bagian proyek penugasan Percepatan Penyediaan Infrastruktur melalui *Better Engineering Service Project* (ESP) oleh Kementerian Pekerjaan Umum dan Perumahan Rakyat. Proyek Bendungan Rongkong dikembangkan untuk pengelolaan sumber daya air secara terpadu di daerah Kabupaten Luwu Utara, Provinsi Sulawesi Selatan. Penyelidikan sebelumnya telah dilakukan oleh konsultan di bawah Direktorat Bendungan dan Danau, namun pada penelitian ini dilakukan penyelidikan yang lebih detail untuk mengetahui karakteristik geologi teknik pada daerah konstruksi Bendungan Rongkong berdasarkan aspek geomorfologi, aspek batuan dan tanah, dan aspek struktur geologi. Metode penelitian yang digunakan berupa pemetaan geologi teknik berskala 1:10.000, pengujian sifat indeks dan sifat keteknikan, perhitungan diskontinuitas, penilaian kualitas massa batuan menggunakan *Geological Strength Index* (GSI), penilaian sifat fisik, dan analisis laboratorium. Selain itu, dilakukan juga analisis mengenai ekskavasi massa batuan menggunakan metode *EXCASS System* yang menggunakan parameter *Geological Strength Index* (GSI) dan *point load strength index* (Is_{50}).

Hasil penelitian menunjukkan daerah penelitian terdiri dari morfologi satuan gawir sesar tererosi berlereng curam dan satuan dataran sungai dengan variasi litologi berupa batu granodiorit dan sekis biotit. Karakteristik keteknikan massa batuan pada daerah penelitian terdiri dari satuan tanah residu, satuan batuan lapuk tinggi, satuan batuan lapuk sedang, satuan batuan lapuk rendah, dan satuan batuan lapuk segar. Struktur geologi yang hadir berupa sesar geser sinistral diperkirakan dengan arah gaya NW-SE dan kekar gerus dengan arah gaya utama WNW-ESE. Karakteristik geologi teknik berdasarkan kualitas massa batuan GSI menunjukkan kualitas massa batuan di daerah penelitian terdiri dari batuan kualitas baik hingga buruk. Karakteristik geologi teknik berdasarkan kualitas massa batuan terdiri dari 5 satuan tingkat pelapukan, yaitu satuan tanah residu yang berukuran pasir hingga lempung, satuan batuan lapuk tinggi berkualitas sangat buruk hingga buruk, satuan batuan lapuk sedang berkualitas buruk hingga sedang, satuan batuan lapuk rendah berkualitas sedang, dan satuan batuan lapuk segar berkualitas baik. Metode ekskavasi massa batuan daerah penelitian berdasarkan *EXCASS System* yang direkomendasikan adalah menggunakan *hammer* pada litologi granodiorit dengan nilai GSI 45-65 dan sekis biotit dengan nilai GSI 35-55, serta menggunakan *ripper* pada litologi granodiorit dengan nilai GSI 20-35.

Kata kunci: Bendungan Rongkong, karakteristik geologi teknik, tingkat pelapukan, *Geological Strength Index* (GSI), metode ekskavasi massa batuan.

ABSTRACT

Rongkong Dam is one of the components of the Accelerated Infrastructure Provision Project through the Better Engineering Service Project (ESP) by the Ministry of Public Works and People's Housing. The Rongkong Dam project was developed for integrated water resource management in the North Luwu Regency, South Sulawesi Province. Previous investigations were conducted by consultants under the Directorate of Dams and Lakes, but in this research, a more detailed investigation was carried out to determine the geological engineering characteristics in the construction area of the Rongkong Dam based on geomorphological aspects, rock and soil aspects, and geological structure aspects. The research methods used include geological engineering mapping at a scale of 1:10,000, testing of index properties and engineering properties, discontinuity calculations, assessment of rock mass quality using the Geological Strength Index (GSI), assessment of physical properties, and laboratory analysis. In addition, an analysis of rock mass excavation using the EXCASS System method was also conducted, which uses parameters such as Geological Strength Index (GSI) and point load strength index (Is_{50}).

The research results show that the study area consists of erosionally faulted hillside morphological units and river plain units with lithological variations including granodiorite and biotite schist. The engineering characteristics of rock mass in the study area consist of residual soil units, highly weathered rock units, moderately weathered rock units, poorly weathered rock units, and fresh rock units. The geological structures present include sinistral strike-slip faults estimated to have an NW-SE force direction and joint fractures with a primary force direction of WNW-ESE. Geological engineering characteristics based on the quality of rock mass (GSI) indicate that the rock mass quality in the study area ranges from good to poor. Geological engineering characteristics based on the quality of rock mass consist of 5 weathering levels, namely residual soil units ranging from sand to clay, highly weathered rock units with very poor to poor quality, moderately weathered rock units with poor to moderate quality, poorly weathered rock units with moderate quality, and fresh rock units with good quality. The recommended method for rock mass excavation in the study area based on the EXCASS System is to use a hammer for granodiorite lithology with GSI values of 45–65 and biotite schist with GSI values of 35–55 and a ripper for granodiorite lithology with GSI values of 20–35.

Keywords: Rongkong Dam, geotechnical characteristics, weathering level, Geological Strength Index (GSI), rock mass excavation methods.