ABSTRACT

Rock breaking is one of important activities in a mining operation and civil works. In principle, the mechanism of rock breaking can be divided into two types: rock breaking with mechanical methods (free digging and ripping) and rock breaking by drilling and blasting method. Location of rock breaking research on diorite in the Gunung Gajah, Bayat Region, Klaten, Central Java Province.

To determine the classification of rock breaking include seismic wave velocity, discontinuous spacing, rock weathering level, the orientation of the discontinuous, discontinuous conditions, and Rock Quality Designation (RQD) datas obtained of the measurements and rock mass characterization. The datas from the results of laboratory tests are density, specific gravity, water content, porosity and void ratio and mechanical properties of rocks include the ultrasonic velocity, uniaxial compressive strength, tensile strength, point load index, drilling rate index and abrasiveness of rocks.

The results of rock mass characterization such as RQD obtained by scanline method is 94,25%, *space discontinuous field is* 0.26 *m, seismic velocity in the ground for overburden layer with a depth at* 0 *to* 7 *m is* 1947,5 *m/s , and the seismic velocity for diorite layer is* 4546 *m/s. Results of laboratory tests obtained average value of ultrasonic wave velocity is* 5846,2 *m/s, the average value of the uniaxial compressive strength is* 61,422 *MPa, the average value of tensile strength is* 9,88 *MPa, the average value of point load index is* 2,58 *MPa, drilling rate index value is* 20,05 *and the rock abrasiveness value is* 15,6%.

Overburden layer with a depth to 7 *m can be breaking with ripping method and diorite layer can be breaking by drilling and blasting method.*