

ABSTRACT

Mine design is a prominent stage in a series of mining operation. Mine plan and design requires computer modeling of the resources that would be mined. Two significant aspects in mine planning stage are mine design push back or pit limit and production scheduling, as well as annual planning.

Limestone quarry PT. Artha Parama Indonesia is astronomically located between $111^{\circ} 24' 42.48''$ E - $111^{\circ} 32' 44.23''$ E, and $6^{\circ} 53' 41.21''$ S - $6^{\circ} 55' 11.53''$ S, while administratively is positioned in four district, which are Tunjungan District, Blora District, Jepon District, and Bogorejo District, Blora Regency, Central Java Province. Specifically PT. Artha Parama Indonesia is adjacent to Rembang Regency in the north, Tuban Regency in the east, Blora Regency in the south, and Blora-Rembang highway in the west.

The research is performed in quarry Jurangjero Block and Gunungpayung Block with total area of 105.6 Ha. Limestone reserves estimation based on mine design is 85,494,591 tons, and would be completed to the level 342 meters above sea level, with 374.99 LCM stripped top soil. Mine design is performed to determine detailed bench dimension, includes height of 10 meters, width of 3 meters, width of 10 meters of safety bench, and slope of 70° , with production target of 4,254,847.64 tons annually, and thus obtained 20 years life of mine.

Based on the mine planning, dump truck CAT 775 D is the largest equipment that would operate on the mining road, that the dimension of the dump truck would be used as a reference in designing mining road. According to the dump truck dimension, there would be double track with total width of 16 meters straight and 24 meters cornering, with maximum road slope of 10%. Superelevation would be constructed to stabilize dump truck when cornering, specifically at 90 mm/m. Moreover, there would be cross slope of 30 mm/m in the mining road, thus stagnant water would not interfere mining operation. One unit of Backhoe CAT 375 would be used as excavator for mining operation, and one unit for subsidiary equipment, while two units of dump truck CAT 775D would be used for hauling operation, and one unit of dump truck for subsidiary hauling equipment.

Key words: push back, reserves , bench geometry, production