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(57) Abstract :
Desired rock fragmentation is the need of the hour, which influences the entire mining cycle. Thus, most engineering segments pay attention to rock fragmentation and neglect by-products like ground vibration and fly rock. Structural and mechanical properties of rock mass like joint spacing, joint angle, and compressive strength of rock pose a puzzling impact on both fragmentation and ground vibration. About 80% of explosive energy that get wasted in producing ill effects, can be positively optimized with a new set of blast design parameters upon identifying the behavior of rock mass properties. In this connection, this research aims to investigate the influence of joint spacing, joint angle, and compressive strength of rock on fragmentation and induced ground vibration. To accomplish this task, research work was carried at an opencast coal mine. The research unfolded that compressive strength has significant positive relation on both mean fragmentation size (MFS) and peak particle velocity (PPV) and joint spacing has shown a positive and negative impact on MFS and PPV. The joint angle holds negative relation in both cases.

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