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ASSESMENT OF EXCAVATABILITY OF WEATHERED ROCK BY SEISMIC VELOCITY METHOD

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ABSTRACT

Seismic refraction method is one of the most popular methods in assessing surface excavation. The ripper manufacturers keep updating the guidelines of their machineries performance based on the seismic velocity. The main objective of the seismic data acquisition is to delineate the subsurface into velocity profiles as different velocity can be correlated to identify different materials. The physical principal used for the determination of rippability is that seismic waves travel faster through denser material as compared to less consolidated material. In general, a lower velocity indicates material more rippable and a higher velocity indicates more difficult to be ripped. However, a few researchers have noted that seismic velocity method alone does not correlate well with the excavatability of the material. In this study, a seismic velocity method was used in Bukit Indah, Johor to assess the accuracy of this seismic velocity method with excavatability of this weathered sedimentary rock mass. A direct ripping run by monitoring the actual production of ripping has been employed at later stage and compared to the manufacturer's recommendation. This paper presents the research findings of the seismic velocity tests in weathered sedimentary area. The reliability of using this method with the actual rippability trials is also presented.