

## **USE OF THE CORRELATION BETWEEN ULTRASONIC WAVE VELOCITY AND POINT LOAD STRENGTH OF WEATHERED ROCKS FOR SITE INVESTIGATIONS**

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In order to find an inexpensive and quick site investigation method for the determination of strength of insitu weathered rock masses, a laboratory study has been carried out of some engineering properties of weathered rocks of Sri Lanka.

Large irregular shaped samples from fresh rocks of charnockite, hornblende biotite gneiss and biotite gneiss in different localities and from differently graded insitu weathered materials overlying those fresh rocks were collected. Then point load strength and ultrasonic wave velocity of fresh and weathered grades were found and the weathering ratio as described by Iliev in 1966 was determined. Iliev's weathering ratio, based on the ultrasonic P-wave velocity, is the simplest method of finding the weathering condition of rocks. Attempts were made to find any correlation between Iliev's weathering ratio and point load strength using the results from charnockite samples tested. Then the same method was applied for hornblende biotite gneiss and biotite gneiss types.

The results indicated that the weathering ratio increases with the decrease of point load strength. Due to the difference in strength of the fresh rocks, the weathered grades of the rock also differed according to the locality. Therefore, the values of the weathering ratio and the point load strength of weathered samples depend on the values of the same parameters of the mother fresh rock. However, for one rock type these two parameters vary within a particular range or a zone. Therefore, the upper and lower boundaries for such a zone can be established using the experimental data. In a point load strength - weathering ratio domain linear upper and lower zone boundaries may be identified. The gradients for the linear boundaries may be the same with two constants for the upper and lower.

The relationship found between the point load strength and weathering ratio indicates that the approximate strengths of the subsurface weathered rocks could be found by seismic refraction surveys. This is an economical and fast method of preliminary investigation in any site. This research must be continued to establish such correlations for other rock types in the country. A similar procedure may also be useful in site investigations in other countries too.