

Implementation of Sound Analysis Technique to Analyze the Influences of Crushing on the Behavior of Granular Materials

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The behavior of granular materials would normally be considered “crushable”, in spite of the fact that would typically be thought not to be so. Breakage of particles is shown to be a feature of the mechanics of all sands and gravels, but the degree of crushing show some changes. Very little research has been conducted to date on how to evaluate crushing and what effect varying levels of crushing have on the engineering properties of these granular materials. Manufactured aggregates with different crushing strength have been used in this study to observe the influences of crushing on the behavior of granular materials [1]. A different approach of signal processing techniques for geotechnical application will be introduced to analyze the influences on crushing on the shear behavior of granular materials. Thus, the crushing and movement of particle with respect to neighboring particles are quite different inside and outside the shear zone. The results of signal processing technique show that the amount of crushing is higher inside the shear zone than outside shear zone [2]. Implementation of sound analysis techniques and results of experimental studies will be presented.

References

1. Arslan, H., Baykal, G., (2006) “Analyzing the Crushing of Granular Materials by Sound Analysis Technique” ” ASTM, Journal of Testing and Evaluation, (in press)
2. Arslan, H., Baykal, G., 2006. “Utilization of Fly-Ash as Manufactured Engineering Materials”, Environmental Geology, Springer Journal, ISSN: 0943-0105 (in press)