

A Three-Stack Mechanical Sieve Shaker for Determining Aggregate Size Distribution of Soils

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(Received 15 October 2012; Revised 27 November 2012; Accepted 29 December 2012)

Abstract: *The design, construction and testing of a soil dry sieving apparatus is described. It could be used to effectively determine the aggregate size distribution curves of three dry soil samples simultaneously. The design required that a means be developed to agitate soil samples placed on three stacks of sieves. Both vertical and slight outward movements of the soils in the sieve nest were obtained in this particular design. Three soils were used to test this equipment using the operating parameters of three vibration frequencies and three sieving times. Best sieving of the three soils was obtained at 1.75 Hz frequency for a sieving time of 15 minutes. Results obtained at this best operating condition were then compared to those obtained from an existing commercial mechanical sieve shaker at the same 15 minutes sieving time. The results showed that the constructed three-sieve shaker performed very well in comparison with the commercial shaker; in addition it was quieter and easier to operate. The major advantage of the constructed three-sieve mechanical sieve shaker is that three stacks of sieves are incorporated into the design. This decreases by almost three times, the normal time required for aggregate size analysis using the existing commercial shakers, which all utilise single sieve stacks.*

Keywords: Soil, sieve, stack, shaker