

Evaluation of Soil Stiffness and Strength for Quality Control of Compacted Earthwork

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Abstract : Microstructure and fabric of soils play an important role on structural properties e.g. stiffness and strength of compacted earthwork. Traditional quality control monitoring based on moisture-density tests neither reflects the variability of soil microstructure nor provides a direct assessment of structural property, which is the ultimate objective of the earthwork quality control. Since stiffness and strength are sensitive to soil microstructure and fabric, any independent test methods that provide simple, rapid, and direct measurement of stiffness and strength are anticipated to provide an effective assessment of compacted earthen materials' uniformity. In this study, the soil stiffness gauge (SSG) and the dynamic cone penetrometer (DCP) were respectively utilized to measure and monitor the stiffness and strength in companion with traditional moisture-density measurements of various earthen materials used in Thailand road construction projects. The practical earthwork quality control criteria are presented herein in order to assure proper earthwork quality control and uniform structural property of compacted earthworks.

Keywords : dynamic cone penetrometer, moisture content, quality control, relative compaction, soil stiffness gauge, structural properties

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