以碎形維度描述優良級配砂土之剪力強度

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摘要

本文針對優良級配條件下，探討不同顆粒形狀與尺寸對砂土內摩擦角之影響。顆粒形狀以碎形理論之碎形維度來量化砂土顆粒之形狀特徵，建立次圓球狀至角狀所對應之碎形維度。試驗三種砂土之顆粒尺寸範圍介於 74～4760 μm 之間，顆粒形狀之碎形維度介於 1.034～1.056。由直剪試驗求得三種不同優良級配曲線下之砂土剪力強度，並經分析顯示於試驗範圍內砂土摩擦角與碎形維度約呈線性關係。

關鍵字: 摩擦角、碎形維度、顆粒形狀、顆粒尺寸

escribing t e S earing Strengt of t e We -graded Sands by racta imension

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ABSTRACT

This paper aims to verify a relationship between the shape of sand grains and the friction angle. In fractal theory, the fractal dimension (D) can provide a measure of particle surface shape. From subrounded to angular sand grain were analyzed to obtain the fractal dimension D=1.034 ~ 1.056 in this study. The samples are well-graded sand within the particle size ranging from 74 ~ 4760 μm. The shear strength of sand was carried using direct shear tests to determine the values of the shear strength parameter with three well-graded curve. A similar linear relationship was found between the friction angle and fractal dimension in this study range.

Keywords: Friction Angle, Fractal Dimension, Grain Shape, Particle Size