APPLICATION OF X-RAY CT METHOD
FOR CHARACTERIZATION OF FAILURE IN SOILS

JUN OTANI, TOSHIFUMI MUKUNOKI and YUZO OBARA

ABSTRACT

X-ray computed tomography scanners, better known as "X-ray CT scanners" have been widely used for medical purposes. But recently, this machine has for engineering purposes been developed as a nondestructive method for any kind of material. In this paper, the application of X-ray CT scanners for characterization of failure in soils is examined using undisturbed soil specimens under unconfined compression. This CT scanner was developed for industrial purposes so that the x-ray capacity is much higher than that used in a medical setting. Here, the change of density under the deformation in the soil specimen can be investigated without any destruction. Not only 2-D cross sectional images but also 3-D images of the deformed soil specimen were obtained without any destruction of the specimen and the behavior in the soil not only visualized but also evaluated quantitatively. Thus, the effectiveness of the X-ray CT method for geotechnical engineering was confirmed.

Key words: clay, failure, image processing, nondestructive method, unconfined compression test, visualization, X-ray CT scanner (IGC: D6/E0)