INTRODUCTION

The mechanical behavior of Pleistocene clays becomes important in geotechnical engineering, as applied pressures increase with increasing scale of structures. Because Pleistocene clay layers are located deeper than Alluvial clay, it may be difficult and expensive to take a large amount of undisturbed clay samples. Therefore, the mechanical behavior of Pleistocene clays has not fully been understood so far. Moreover, even in an Alluvial clay layer a few meters thick, the sedimentary environment could have been changed because of a long geological sedimentary period. This means that such physical properties of Alluvial clay as particle size distribution and consistency limits could vary even within the same clay layer, together with a change in mechanical characteristics. To elucidate vertical variation of mechanical characteristics of undisturbed clays in a layer through triaxial tests, several identical undisturbed clay specimens are required at a deep position. In this paper, the advantages of a small specimen are discussed, focusing on providing more specimens from a limited sample and shortening consolidation time. Then, practical applications of the mini-triaxial test to soil investigation are demonstrated successfully.

MINI-TRIAXIAL COMPRESSION APPARATUS

The newly developed mini-triaxial compression apparatus consists of 4 main units: Axial loading facilities, triaxial cell, pneumatic pressure control instruments and measuring instruments.