



Settlement of soft soil treated with group of floating bottom ash columns

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ABSTRACT

The global annual production of bottom ash as a waste of coal-burning has been rapid increases in the last decades. Therefore huge amounts of bottom ash have been disposed of in ash ponds areas which pose a significant environmental problem. Bottom ash has quite similar engineering characteristics to natural sand, thus it can be used as a replacement for sand in various civil engineering aspects; since it has been considered as a non-hazardous material. By utilizing bottom ash as a substitute material to sand, the ash storage areas problem can be solved; moreover, the cost of the project will be reduced. This paper presents an experimental study performed on soft soil treated with a group of floating bottom ash columns through physical model tests. The laboratory tests were conducted on the unreinforced soft ground and reinforced by floating bottom ash columns. For treated cases, bottom ash columns of 25 mm diameter and 150 mm length were installed in the soft ground with an area replacement ratio of 13%. The experimental test results revealed that the inclusion of floating bottom ash columns in the soft soil ground enhances the carrying capacity and accelerates the settlement compared to untreated ground.

Keywords: Foundation; Granular column; Ground improvement; Clay soil; Coal ash

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