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Effects of Soil Compaction by Tractor Traffic on reclaimed soil in Isahaya Bay

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Abstract

At a reclaimed field of Isahaya Bay, a vehicle running test was conducted using tractors, and the penetration resistance (cone index) of soil before and after the running was compared. From this result, the effects of a vehicle running load on tread-pressure characteristics and the formation of a hard pan that were observed in the reclaimed soil were investigated.
The running compressed the soil near the surface, which increased the penetration resistance of the trodden place. An increase in penetration resistance became remarkable according to the number of running, and its span of effect spread in a depth direction.
The penetration resistance after drying increased compared with the day just after the running test. On the other hand, through measurement ten days after the seepage, a decrease in penetration resistance was observed at all the depth. This phenomenon was due to a change in the suction of soil caused by drying and seepage, which verified that a change in soil hardness was also caused by a change in the water content of soil.
As for the distribution of the penetration resistance of soil, the distribution region of lower penetration resistance spread further as the water content of soil increased. In particular, when water content was 68.4%, and soft soil was observed at up to the deeper soil. From these facts, it was considered that the compression of soil due to a vehicle running load under the condition of high water content was not liable.

Key words
reclaimed field of Isahaya Bay, soil compaction, hard pan, repeated running, penetration resistance (cone index)

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