

Development of Expanded Clay as Internally Curing Concrete Aggregate

M. M. H. W. Bandara¹ , W. K. Mapearachchi²

Abstract

The increase of highway and other related structures development of any country due to economic boom may lead to introduce fast and sustainable construction techniques and materials. Internal curing is a revolutionary curing process which has lot of advantages more than the conventional curing process. Internal Curing is a practical and applicable method that can supply extra water throughout the concrete mixture in order to complete the cement hydration process. This can be done by using lightweight aggregate which replaces some of normal and conventional aggregate in the concrete mixture. Water that absorbed inside expanded lightweight aggregate can provide ad-additional water throughout the concrete mixture for curing process.

According to the international context, lot of international researches on performance evaluation of internally cured concrete has been conducting. And also this method is used internationally for various concrete applications. Internal curing process is widely used for concrete road construction because of its advantages. As a one of rapid developing country, in Sri Lanka yet there is no better technical knowledge and materials to implement this method for road construction process. And also There is no good research in order to find locally available materials and to evaluate performance of internally cured concrete for Sri Lankan road construction according to the Sri Lankan climate and readily available local resources.

This research focused on the method of selecting suitable locally available resources in any country as internally curing concrete aggregate and to evaluate internally cured concrete relevant to the local context of that country. As well the main objective of this research is to select or produce a suitable internally curing concrete aggregate using readily available local resources in Sri Lanka and to find a suitable method to develop the marginally suitable aggregates. That includes the characterization of locally available lightweight aggregates to evaluate the performance of internally curing concrete.

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1. Post Graduate Student, Transportation Engineering Division, Department of Civil Engineering, University of Moratuwa, hasithabandara11@gmail.com
2. Professor, Department of Civil Engineering, University of Moratuwa
wk.mampearachchi@gmail.com 0112650567 (Ext: 2024)