

Committee Report: JCI-TC115FS

Technical Committee on Diagnosis of ASR-affected Structures

委員会報告：JCI-TC115FS

ASR 診断の現状とあるべき姿研究委員会

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Abstract

Aiming to organize views on the risk of alkali-silica reaction (ASR) of concrete structures, and present rational diagnostic methods and control measures, the Technical Committee on Diagnosis of ASR-affected Structures investigated ideal diagnosis and control of ASR. First, cases in which ASR influenced the serviceability of affected structures were organized, and the need to clarify the relationship between ASR and usability was pointed out. The present state of ASR diagnosis, control measures and their issues in Japan were also presented based on the latest information in and outside Japan. The Committee proposed ideal diagnostic methods for each importance level of structure, concrete prism test and control measures.

1. Introduction

Views of the diagnosis of alkali-silica reaction (ASR) and control measures are undergoing large changes in and outside Japan. In Japan, measures have been implemented to control ASR since 1986, but some structures still undergo ASR, showing that current control measures have limitations. With such a background, some business entities have recently deployed new ASR control measures.

The need to revise ASR control measures has been already indicated by scientific societies such as JCI-TC062A, "Technical Committee on Mitigation and Diagnosis of Alkali Silica Reaction Considering the Action Mechanisms (chair: Kazuyuki Torii)". However, new and ideal control measures have not much been discussed quantitatively, possibly because of several reasons. One of the reasons is that actual damage

by ASR is not clear. Even when ASR is diagnosed based on crack patterns in a structure, it is not further investigated in detail as to why ASR occurred. Nor has its methodology been fully worked out. Establishment of an appropriate diagnostic method is indispensable for taking rational control measures. Another reason is because the risk of ASR development is not clear. Although taking a control measure incurs additional costs, its effect in reducing risk is not clear, or in other words, the cost-performance ratio is not clear. The risk does not need to be reduced uniformly in all structures, but it is better to determine measures that can be implemented depending on the importance of each structure. However, people are scarcely aware of this. ASR is not a phenomenon observed only in Japan. Today, Japanese construction technologies.....