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Technical Committee on Clarification of Mechanism and Countermeasure for Combined Deterioration of RC structure

委員会報告：JCI-TC172A
鉄筋コンクリート構造物の複合劣化機構の解明とその対策に関する研究委員会

Shinichi MIYAZATO, Dr. Eng.: Kanazawa Institute of Technology
宮里　心一，博士（工学）：金沢工業大学
Hajime ITO, Dr. Eng.: Toyama Prefectural University
伊藤　始，博士（工学）：富山県立大学
Tsuyoshi SAITO, Dr. Eng.: Niigata University
斎藤　豪，博士（工学）：新潟大学
Akihisa KAMIHARAKO, Dr. Eng.: Hirosaki University
上原子　晶久，博士（工学）：弘前大学
Koichi MATSUZAWA, Dr. Eng.: Building Research Institute
松沢　晃一，博士（工学）：建築研究所
Shintaro MIYAMOTO, Dr. Eng.: Tohoku University
宮本　慎太郎，博士（工学）：東北大学
Contact: jci-web@jci-net.or.jp
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Abstract
The rate of damage propagation within reinforced concrete structures exhibiting combined deterioration is sometimes higher than that within structures exhibiting single deterioration. However, there has been no systematic organization of information in this regard since that performed by the “Technical Committee on Evaluation, Operation and Management Planning of Concrete Structures with Combined Deterioration” by the Japan Concrete Institute from 2000 to 2001. Therefore, this study has sought to organize the research and survey results regarding combined deterioration caused by chloride attack and carbonation, chloride attack and frost damage, chloride attack and alkali–silica reaction (ASR), frost damage and ASR, and delayed ettringite formation (DEF) and ASR, which have been identified since 2002. Thereafter, the propagation mechanism of combined deterioration in actual structures has been closely examined, and measures for repair and reinforcement of these structures are discussed.

1. Introduction
Reinforced concrete with combined deterioration sometimes experiences damage that propagates faster than that in concrete with single deterioration. Such deterioration is on the rise in actual structures in Japan, which presently faces the growing social problem of an aging population. Therefore, the Japan Society of Civil Engineers Standard Specifications for Concrete Structures and the Architectural Institute of Japan Architectural Standard Specifications and Commentaries for Reinforced Concrete Work JASS5 stated that “attention should be paid to combined deterioration.” However, there has been no systematic organization of findings in this regard since the “Technical Committee on Evaluation, Operation and Management Planning of Concrete Structures with Combined deterioration” reported its results in 2001.
Consequently, this committee has identified mechanisms of combined deterioration in actual structures and buildings, collated the results of the latest research while considering the aspects of material science, and proposed effective methods for maintenance of the structures and prevention of such deterioration.
In order to achieve the above-mentioned.....

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