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Evaluation Criteria for Condition State of Reinforced Concrete and Prestressed Concrete Bridges

Sudhira De Silva, Chandana Nawarathna, Laksiri Pradeep, and Suranga Priyalal

Department of Civil and Environmental Engineering, Faculty of Engineering, University of Ruhuna, Hapugala, Wackwella, Galle

This research paper presents a new approach to develop a simple bridge rating system for Sri Lanka. This approach evaluates the current performance of concrete bridges on the basis of simple visual inspection and non-destructive tests. The main reason to conduct this research is to develop a proper bridge management system for Sri Lanka and to develop deterioration prediction curve for bridges. Also some applicable maintenance techniques are introduced according to identify condition state of the bridge based on the durability performance of the each bridge. During field inspection the major issue, to deteriorate concrete bridges was identified as chloride induced corrosion called chloride attack. To understand bearing capacity reduction and area reduction of reinforcing steel due to corrosion, Accelerated Corrosion Testing Method (ACTM) was carried out at the laboratory. By conducting loading test the bearing capacity reduction of deteriorated concrete beam was compared with control beam. More than fifty percentage of area reduction in steel bars was observed while it caused to reduce flexural capacity reduction more than seventy percentages, compared to control beam.
Keywords: bridge rating system, visual inspection, acceleration corrosion testing method, non-destructive tests