



Evaluation, repair & rehabilitation of 2 flyovers using advance assessment methods – a case study

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Abstract

After the collapse of Majherhat Bridge on September 4, 2018 at Kolkata (India), an expert committee was appointed by the state government to 'examine' all the old flyovers in the city. A large number of such flyovers identified by this committee, which needed urgent repairs. Two of these flyovers were investigated by the authors as a part of consultancy services provided to the owner client. Both these grade separators were in distress and needed urgent attention. But carrying out condition assessment on these bridges and carrying out any repair posed a big challenge to the Consultants and Clients due to number of factors, including lack of records of the bridges, volume of traffic and critical location of these infrastructures. This paper highlights the broad details of advance assessment techniques adopted for structural condition of these flyovers. The details of proposed repair and rehabilitation techniques adopted are also discussed.

Keywords: Rehabilitation, Strengthening, Repair, Rebound Hammer test, Ultrasonic Pulse Velocity test, Core test

1 Introduction

1.1 General

As a result of 3 major bridge failures in Kolkata spread over 5 years (namely the Ultadanga Flyover (2013), Vivekananda Flyover (2016) and Majerhat Bridge (2018)), general safety of bridges and flyovers came under scrutiny in 2018. Kolkata Metropolitan Development Authority (KMDA), was entrusted by the state government with the responsibility of identifying distressed bridges in the state of West Bengal and in carrying out necessary repair and rehabilitation of them.

On the basis of rapid assessment, 20 such bridges and flyovers were identified by KMDA for detailed

investigation and assessment. The authors were responsible for the condition assessment of two of those identified bridges, namely Chingrighata Flyover & Baghajatin ROB (approach viaduct portion, excluding the railway span). A thorough study and investigation was conducted at these locations, which included analytical study based on available information's, extensive non-destructive testing, material testing, load testing, geometric & traffic studies, pavement condition study enabling advance assessment of the bridge condition. Prognosis and diagnosis of these bridges carried out gave many insights into the state of distress which helped the team to decide the course of action. This paper highlights the broad details of advance assessment techniques adopted for