

# Condition Assessment and measures to Repair and Retrofit Baghajatin ROB, Kolkata

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## Abstract

This paper provides a comprehensive evaluation of Baghajatin ROB, located on the trunk route of the EM bypass of Kolkata Metropolitan, India. The bridge has been subjected to increased traffic volume, aggressive weathering conditions, and lack of proper maintenance over the years, resulting in its gradual deterioration. This paper aims to highlight the existing state of the ROB and discusses the methodology adopted to repair and retrofit. It includes the current progress of the repair and retrofitting at the site and the challenges involved in construction. This study provides value to engineers, policymakers, and infrastructure stakeholders seeking to develop effective strategies for maintaining and upgrading crucial infrastructure.

**Keywords:** Non-destructive testing; retrofitting; intermediate supporting arrangement; geocell; peel strength; geogrid; sustainable development.

## 1 Introduction

### 1.1 General

The safety of bridges and flyovers in Kolkata came under scanner after three major bridge failures in the city between 2013 and 2018. These tragedies resulted in the loss of about 30 lives, several injuries and immense suffering to their families. In response, the Kolkata Metropolitan Development Authority (KMDA) was tasked with identifying distressed bridges and conducting necessary repairs and retrofitting. The study was conducted by the authors as part of the KMDA's initiative to identify and repair distressed bridges, focusing on Baghajatin ROB.

The study involved a thorough investigation using modern-day assessment techniques which include physical site inspection, partial destructive/non-destructive testing (NDT), traffic and pavement characteristics studies, and analytical investigation. The findings from the assessment helped the team

to determine the extent of distress and the best strategy for intervention. This paper provides a detailed account of the repair and retrofitting methodology followed to restore the structural integrity and longevity of the ROB and provide a safe and secure environment for commuters.

### 1.2 Bridge Location and Year of Construction

The Baghajatin Road Over Bridge (ROB) is situated in southern Kolkata. The Eastern flank/LHS Carriageway was constructed in 1999 and after about 13 years i.e. in 2012 the Western flank/RHS Carriageway came into existence. The ROB serves the people of the following localities: Mukundapur, Chak Gharia, Jadavpur, Santoshpur and Kalikapur. The ROB connects Garia to Ruby and lies between Garia and Baghajatin railway stations. The name of the locality "Baghajatin" holds a great struggle for Indian Independence and it has been named in honour of the legendary freedom fighter Mr Jatindranath Mukharjee.