



Strengthening of the A52 Clifton Stage 2 bridge in Nottingham

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Abstract

The A52 Clifton bridge is a 6-span post-tensioned concrete bridge, which carries the A52 trunk road in the City of Nottingham (UK). The bridge was built in the early 1970's and comprises two distinct bridges: the South Approach Viaduct and the Main Bridge over the River Trent. In February 2020, severe corrosion was identified within the external strands inside the South Viaduct. Lane restrictions were implemented while further investigations confirmed additional corrosion in the prestressing strands for both superstructures. The assessments revealed shortfalls in strength and led to the design of a deck strengthening solution using additional prestressing tendons. This paper describes the strengthening solution for both superstructures including the construction sequences and discusses the destressing works of a selected number of external redundant strands within the Main Bridge allowing the new strengthening tendons to be fully jacked to their final specified forces.

Keywords: bridge; post-tensioning; box-girders; assessment; strengthening; rehabilitation.

1 Introduction

The A52 is one of the main trunk roads in the National Highways network, joining the A1 towards Grantham with the M1 at East Midlands Airport. It is a commuter route and access via the bridge is key for the city of Nottingham.

The A52 Clifton bridge (Stage 2) is a 21.6m wide 6-span concrete bridge, with both internal and external prestressing, and it carries the A52 trunk road over the River Trent and Clifton Lane.

The bridge was built in the early 1970's as part of the A52 widening project offering 5 additional lanes of traffic over the river Trent, next to the original 1950's bridge (known as the Stage 1 bridge). The crossing comprises two distinct skewed bridges separated by an expansion joint.

The South Approach Viaduct is 82m long and consists of 3 continuous, constant depth box girder spans (Spans 1 to 3, 27.457m/27.432m/27.102m).

The Main Bridge is 159m long and consists of 3 continuous spans (Spans 4 to 6) with an 83m