



SIKA AT WORK

BRIDGE 233 BUNBURY FOR MAIN ROADS WESTERN AUSTRALIA

STRENGTHENING: Sika CarboDur®

BUILDING TRUST



PROJECT OVERVIEW AND REQUIREMENTS

PROJECT DESCRIPTION

Bridge 233 Willinge Drive over Preston River in the City of Bunbury is part of the port access road to Bunbury Port. The bridge was constructed in 1966 with a 300 mm thick concrete flat slab deck supported by continuous Jarrah timber half caps and driven Jarrah timber piles. The concrete deck consists of eight continuous 7.62 m long spans, a total length of 61.77 m between abutment centre lines and has a total width of 9.17 m. It was built with a skew angle of 15 degrees normal to the bridge centreline.

The road profile at both approaches and the recently invested money to upgrade the guardrail system were part of the decision to strengthen the concrete deck with externally installed polymer fibre reinforcement.

PROJECT REQUIREMENTS

The bridge required a structural strengthening solution that was less time consuming and laborious than the traditional method of using dowells to apply a 100 - 150 mm concrete overlay to the existing concrete, which could take up to 4 to 6 weeks longer than using CFRP. Existing steel reinforcement within the bridge structure presented an obstacle to engineers and installers in that the applied strengthening solution must provide a high level of strengthening with minimal penetration below the deck surface.

The shear capacity of the slab, the concrete compressive strength and epoxy bond strength were also extremely important factors when considering solutions for this project.



SIKA'S COMPLETE SOLUTION

SIKA SOLUTION

In order to provide a structural strengthening solution that was suitable to the clients needs, Fulton Hogan and Structural Systems WA utilised Sika's proven range of Sika CarboDur® and Sikadur® products for both the top surface and underside of the deck.

Shallow grooves were cut into the deck of the bridge where Sika CarboDur® S2.025 Plates and Sikadur® 330 epoxy were installed using the near surface method (NSM). This allowed the strengthening of the bridge over the piers with minimal penetration, while Sika CarboDur® S1512 Laminates and Sikadur® 30 epoxy were applied at the soffit to increase the capacity closer to span centres.

Using Sika's strengthening products with efficient application techniques such as the Near Surface Method allowed installers to complete the project within a short amount of time, keeping operation costs and downtime of the bridge to a minimum.

A Project Engineer from Main Roads Western Australia stated-

"We have managed all the challenges thrown at us during the construction period and managed to complete the job in three weeks".



STRUCTURAL STRENGTHENING



PROJECT PARTICIPANTS

Contractor: Fulton Hogan and Structural Systems WA

Consultant: AECOM

Client: Main Roads Western Australia

Sika Representative: David Collins

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