ANZAC Bridge Maintenance Project

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Colin has over 17 years experience as an Engineer and has worked in a variety of countries including UK, Malaysia, Australia and Vietnam. He has particular knowledge of cable stay bridge design.

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1. Introduction

The ANZAC Bridge was designed and constructed in the early 1990's. This iconic bridge forms a vital link connecting the centre of Sydney with the western suburbs and carries approximately 125,000 vehicles each day including pedestrians and cyclists.

Since the original construction, a number of developments have taken place which has caused the Roads and Maritime Services (RMS) to review the structural performance and consider whether additional maintenance was required in the short-term to extend the longevity of the bridge into the future, taking into account whole of life costing. Specific areas that were to be investigated included:

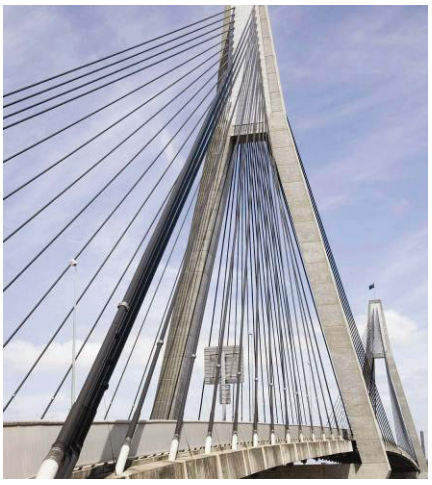

Fig. 1: ANZAC Bridge looking towards the west

- Stay cable vibrations
- Water ingress and durability
- Stay capacity
- Access improvements
- North and south fence upgrade

In late 2010, RMS formed an alliance with Baulderstone, Freyssinet and Sage Automation named Bridge Solution Alliance (BSA) to deliver the project in two phases. Aurecon in association with Cardno was engaged as the design consultant for the project and subsequently engaged Leonhardt, Andra and Partner (LAP) for their specialist stay cable input. All parties worked as an integrated team under the name BSA to deliver the works. Through a collaborative approach between BSA and numerous stakeholders, the design solution was delivered to RMS in a very short timeframe of six months.

2. Existing bridge configuration

The bridge is a cable stay structure with two planes of stay cables connecting the towers to the deck via twin edge beams. The edge beams are 1.8 m deep and between 1.5 m and 1.35 m wide. The edge beams are either reinforced concrete or prestressed depending on the location across the bridge. The reinforced concrete deck is supported by cross girders spaced at 5.1 m centres.

The bridge has three main cable-stayed spans measuring a total length of 805 m and 32.2 m wide. These spans are supported by 128 stay cables that fan out from the top of two 120 m high towers at either side of the deck, each of which is founded on 56 reinforced concrete piles. The stay cables

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