Design and Construction of the Temporary Bridge for the Construction of New Bridgewater Bridge in Hobart, Tasmania

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Abstract

The New Bridgewater Bridge Project is the largest transport infrastructure project in Tasmania's history. It involves construction of a new bridge over the River Derwent and other associated road infrastructure. The New Bridgewater Bridge (NBB) is approximately 1.3 km long spanning the River Derwent connecting the Brooker Highway to the Midland Highway.

Construction access across the River Derwent was critical for the New Bridgewater Bridge construction, and a temporary bridge was developed to facilitate uninterrupted construction and logistical access. The temporary bridge is over 360m long which in itself is the longest bridge built in Tasmania in over 20 years. The bridge was required to be able to support construction loads for piling, pier, and superstructure construction, including precast box girder segment deliveries, varying crane configurations up to 400T in size, heavy pile driving equipment, storage of various elements and other miscellaneous equipment loads, as well as wind, flood loading and lateral forces from slewing and spragging. There is no public vehicle access to the temporary bridge.

A number of challenges were incurred in the design and construction of the temporary bridge including the large number of load cases to be incorporated, the required geometry to allow passing vehicles with minimal disruption to program, the need to maintain operational waterway navigation, challenging geotechnical conditions and the desire to rapidly build the bridge from the deck level without the need for site welding over water. This resulted in an innovative design and construction methodology that was able to be assembled with only 2mm of construction tolerance on the key elements. This paper provides an overview of the approach and outcomes of the design and construction for the temporary bridge including innovations and lessons learned.

Figure 1: Temporary Bridge Layout

Figure 2: Temporary Bridge in Operation