



CASE STUDY

JORDAN RIVER BRIDGE

Brighton, TAS, Australia

TerraClass® Abutment

Owner: DIER

Consultant: GHD

Contractor: VTJV (VEC Civil Engineering-Thiess Joint Venture)

Construction: May 2011 – July 2011

Background

The Jordan River Bridge is a 300 m component of the northern section of the Brighton Bypass Project in Tasmania. It enables the crossing of the Jordan River and the associated levee deposit.

The Brighton Bypass was the largest transport infrastructure project ever conducted in Tasmania. It provides a bypass of the towns of Brighton and Pontville, approximately 70 km north of Hobart, and its purpose is to improve the efficiency and safety of the Midland Highway. The Midland Highway is Tasmania's major north-south transport corridor and provides a crucial freight connection supporting the region's reliance on the northern ports.

The Brighton Bypass has delivered a new dual carriageway between the East Derwent Highway at Bridgewater and the existing Midland Highway at a cost of \$191 million.

The Reinforced Earth Company (RECO) was engaged by VEC Civil Engineering – Thiess Joint Venture (VTJV) to provide abutment walls for the Jordan River crossing which supports twin 166 m bridges. These bridges incorporate a single span of 70 m, which is believed to be the longest single simply supported bridge span ever launched in Australia.

Challenge

In 2008 the Jordan River Levee site was identified as having potential for significant Aboriginal heritage values. Investigation findings confirmed that the site is the oldest known site in Tasmania and is about 600 m long and about 60 m wide.

As these indications became apparent, the Tasmanian Department of Infrastructure, Energy and Resources (DIER) responded by investigating ways to ensure that historical artefacts and the site itself would not be lost as a result of the construction of the bypass. To ensure the site was protected, the contractor, designer and DIER worked closely to modify the bridge design accordingly.

DIER states in a fact sheet published in August 2010, that "NO artefacts contained within the important levee deposit will be destroyed as a result of the construction of the proposed bridge."

Solution

A short embankment, bridge abutments and multiple span bridge was constructed outside the levee to complete the crossing.



Main Picture: Construction site.
Top: Lifting the first bridge girder into place from outside the Levee area.
Above: Artefacts found on the Levee site.

Transport infrastructure





A bridge design involving a 70 metre bridge span was developed to avoid permanent impacts on the levee deposit. The long bridge span was launched from above rather than lifted from below to further protect the area. The Reinforced Earth® bridge abutment needed to be in place to allow the first girder of the long span to be launched from high above the levee. The first girder was then used to carry the remaining three girders across the levee.

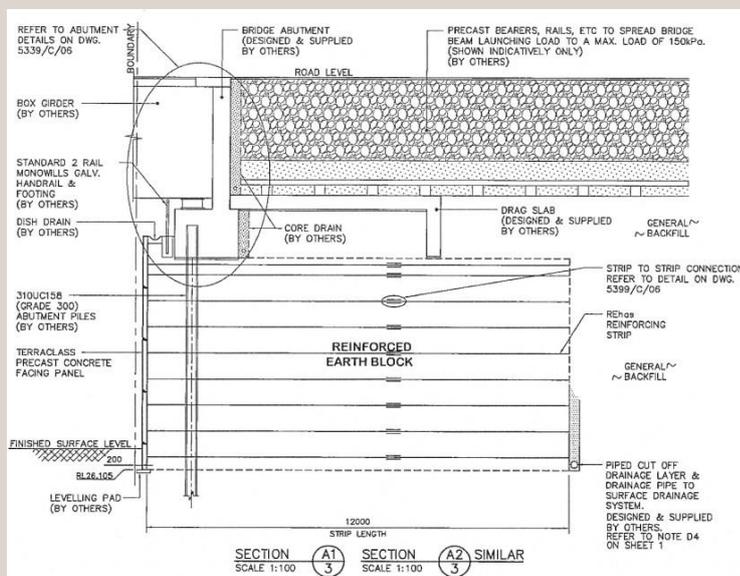
It was necessary to operate a 100t crane to lift the girders into place. The crane was placed on top of the Reinforced Earth® block prior to

the completion of the backfill placement. The Reinforced Earth® wall was designed for a temporary bridge beam launching a live load of 150 kPa acting at road level in response to this requirement.

The Jordan River Bridge is a significant component of the Brighton Bypass and the planning and construction achieved a successful result. The DIER, the VTJV, and the designers at RECO worked together to develop new and innovative techniques to manage the strict limitations on access to a heritage site.

Project specifications

System	TerraClass®
Finish	Smooth, Grey
Structure	Reinforced Earth® Abutment Wall
Area	400m ²
Max. Height	7m
Length	72m
Design load	25 kPa
Design life	100 years



Main Picture: Crane on top of the Reinforced Earth TerraClass® bridge abutment.
Left: Cross-section of the Reinforced Earth® Block