



Practice Note No 8

RECONSTRUCTING TIMBER BRIDGES

This Practice Note provides advice on reconstructing timber bridges. The advice supports the Tasmanian Heritage Council's Works Guidelines, which provides guidance on seeking approval from the Heritage Council for works to a place entered in the Tasmanian Heritage Register.

Introduction

Timber railway bridges are designed to carry operating railway loadings. Current standards and modern breaking systems have altered the railway loadings from the original. In particular, lateral forces are greater than the original.

Engineering parameters of safety, structural adequacy, serviceability, and of durability are determined by current standards which were unknown at the time of original construction but which are relevant to reconstruction and to which adherence is required.

This practice note has been prepared to assist designers and construction workers to balance cultural heritage needs with engineering requirements for an operating railway.

The guidelines state basic principles against which all proposals will be evaluated.

Examples of specific considerations are used as an aid in understanding the process.

Definitions

The Historic Cultural Heritage Act 1995 and the Burra Charter: The *Historic Cultural Heritage Act 1995* is the statutory basis for management of places entered on the Heritage Register. It contains a number of definitions. It is based on principles of the *Burra Charter* which provides a basis for the understanding of conservation principles, processes and practice.

Conservation includes the retention of the historic cultural heritage significance of the place; and any maintenance, preservation, restoration, reconstruction or adaptation of the place (the Act). Conservation of bridges is not concerned with making them new again, but with giving them a use compatible with the retention of their cultural significance and of their long-term survival.

Maintenance means the continuous protective care of the fabric and setting of a place. It is not the same as repair which involves restoration or reconstruction (the *Burra Charter*).

Preservation means retaining the fabric of a place (in this case, the bridge) in its existing state and retarding deterioration (the *Burra Charter*). For any bridge, preservation means keeping fabric in its present condition with no action except maintenance.

Restoration means returning a place (in this case, the bridge) to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material (the *Burra Charter*). For bridges, restoration would require finding and replacing original parts to

replace alterations and the removal of non-original additions.

Reconstruction means returning a place (in this case, a bridge) to a known earlier state and is distinguished by the introduction of new materials (the *Burra Charter*). It allows the use of new parts or old parts from other bridges and returning to a known earlier form.

Adaptation means modifying a place (bridge) to suit the existing use or a proposed use (the *Burra Charter*). For bridges it may involve changing parts to meet the requirements of a new usage whilst keeping the significant features.

Basic principles

- All work is to be in accordance with the *Historic Cultural Heritage Act 1995* and the principles of the *Burra Charter*.
- Reconstruction shall be to the original with adaptation only as needed to comply with current engineering standards.
- All departures are to be documented and justified against the principles.

Application of principles – some examples

- a) Increased lateral forces: Adaptation using larger bolts and increased member sizes as needed is acceptable. The original geometry and form is to be maintained.
- b) Green timbers split if double bolted at ends: The use of single bolts with dummy bolts to give the original geometry and appearance is acceptable.
- c) Timber preservatives: Adaptation using modern preservatives or damp courses whilst maintaining the original visual appearance is acceptable.
- d) Galvanised fixings: Adaptation using galvanised fixings whilst maintaining the original visual appearance is acceptable.
- e) Splices and end connections: Adaptation using internal or concealed or minimum obtrusive fittings to maintain as close as practicable to original visual appearance is acceptable.
- f) Original Detailing: Timber dressings, chases, notches, corbels, etc to be as original with engineering design and construction to suit.
- g) Cant: Cant is to be provided as original subject to current standards.

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