Tasmanian Heritage Council

Practice Note No 8

GUIDELINES FOR RECONSTRUCTION OF TIMBER BRIDGES

Preamble

Timber railway bridges are designed to carry operating railway loadings. The reconstructed railway loadings are different to the original due to the required use of modern braking systems and to the requirements of current standards. In particular, lateral forces to be considered 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.

These guidelines have been prepared to assist designers and constructors to obtain the desired result of compliance with heritage needs consistent with meeting 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.

Basic principles

- All work is to be to the principles of the Burra Charter.
- Reconstruction shall be to the original with adaptation only as needed to comply with current engineering standards.

The Burra Charter

The Burra Charter provides a rational basis for the conservation of heritage material and is a basis for the understanding of conservation principles, processes and practice.

An understanding of the Charter definitions and conservation processes are important to any project.

Conservation is defined as all of the processes needed to retain cultural significance.

It includes maintenance and may include preservation, restoration, reconstruction and adaptation dependent upon specific circumstances. It commonly involves a combination of more than one of these.

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 is the continuous protective care. It is different to repair which involves reconstruction or restoration.

Preservation is the process of maintaining the fabric of the bridges in their existing state and retarding deterioration.

Restoration means returning the bridges to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.

Reconstruction means returning a bridge to a known earlier state and is distinguished by the introduction of new materials.

Adaptation means modifying a bridge to suit proposed compatible uses.

For any bridge, ***preservation*** means keeping fabric in its present condition with no action except maintenance. ***Restoration*** would require finding and replacing original parts to replace alterations and the removal of non-original additions. ***Reconstruction*** allows the use of new parts or old parts from other bridges. It involves returning to a known earlier form. ***Adaptation*** may involve changing parts to meet the requirements of a new usage whilst keeping the significant features.

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 dampcourses 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.

Departures from the original

All departures are to be documented and justified against the principles.

For further information contact
TASMANIAN HERITAGE COUNCIL
103 Macquarie Street, HOBART TAS 7000
GPO Box 618, HOBART TAS 7001

TEL: 1300 850 332 (local call cost) | 6233 2037
FAX: 6233 3186
EMAIL: enquiries@heritage.tas.gov.au
WEB: www.heritage.tas.gov.au