

DEPARTMENT of INFRASTRUCTURE, ENERGY and RESOURCES, TASMANIA
BRIDGEWORKS SPECIFICATION

B17 - U-BEAM BRIDGE BOLT TIGHTENING

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Previously MB12

	Contents	Page
B17.1	SCOPE	2
B17.2	EXTENT OF WORKS	2
B17.3	DECK CRACKING	2
B17.4	ACCESS AND SCAFFOLDING	2
B17.5	BOLT REPLACEMENT AND PROVISION OF BOLTS	2
B17.6	TIGHTENING OF BOLTS	2
B17.7	PAYMENT	2

B17.1 SCOPE

This Specification sets out the requirements for the tightening and replacement of transverse bolts connecting adjacent inverted 'U' beams.

B17.2 EXTENT OF WORKS

The works shall include the tightening all bolts, including the provision of additional or replacement bolts, tapered washers, spring washers and nuts as required.

B17.3 DECK CRACKING

Load distribution in reinforced concrete U-beam bridges is achieved by a combination of mortar filled shear keys and transverse bolting between beams or through a cast concrete deck.

Failure of the shear keys between the beams is evidenced by longitudinal reflective cracks in the bridge surfacing above the shear keys.

Any such cracks or other defects identified during the works shall be reported to the Superintendent.

B17.4 ACCESS AND SCAFFOLDING

The contractor shall be responsible for the design, supply and erection of all equipment and scaffolding required for access to the structure.

B17.5 BOLT REPLACEMENT AND PROVISION OF BOLTS

Any missing or heavily corroded bolts shall be replaced with new two part bolts fabricated from grade 303 stainless steel, tapered washers, heavy duty spring washers and nuts. The two part bolts are only required where bolts were omitted during construction or where existing bolts are damaged, severely corroded or unable to accommodate the specified torque. No attempt shall, however, be made to modify existing bolt holes. Where misalignment prevents insertion of the new bolts, no bolt shall be fitted.

Two part bolts and associated fittings shall be as shown on the drawings.

All standard components shall be heavy-duty galvanised to AS 4680.

Nuts on replaced or renewed bolts shall be initially tightened until firm contact is made with the spring washers. Bolts are to be symmetrically positioned such that equal lengths of thread are available.

Any existing washers found to be cracked are to be replaced with new tapered or spring washers.

B17.6 TIGHTENING OF BOLTS

Tapered washers shall be correctly seated. Bolts on the central beam in each span shall be tightened first, commencing from midspan and proceeding alternately to each support. Bolt tightening for the remaining beams shall then proceed alternately on either side of the central beam to the outer beams.

Bolts shall be tightened so that spring washers on both sides of the beams are fully compressed and the tapered washers have their thick edge horizontal and on the lower side of the bolt. Two part bolts shall be tensioned using a pre-set graduated torque or impact wrench to a torque at 140Nm. Standard bolts shall be tensioned using a torque wrench to a torque of 140 Nm (105 ft lbs).

B17.7 PAYMENT

Payment for the tightening or replacement of transverse bolts shall be at the items as listed in the Schedule of Rates.

Payment shall include the provision of all plant, labour and materials required for access and scaffolding, supply and installation of replacement or additional bolts and associated fixings, the disposal of any debris.