



# PLANNING circular

## BUILDING SYSTEM

Building Regulation Advisory Note (BRAN)

**Circular** BS 05-002

**Issued** 19 December 05

**Related**

## Structural steel bolts

This Circular is to provide councils, accreditation bodies, relevant government agencies, industry groups and industry practitioners with advice regarding the quality of structural steel bolts.

### Introduction

An issue has been raised with the Department in relation to the quality of structural steel bolts (including their associated nuts and washers). Of particular concern are high-strength bolts (steel bolts of property class 8.8 or higher).

### Background

High-strength steel bolts are a common type of fastener used to join structural steel members. Structural steel members, and the joints between them, can be subject to significant loads and therefore the bolts used are critical in the satisfactory structural performance of the completed structure.

It is understood that the majority of high-strength bolts used in construction are imported. Concerns have been raised that some batches of imported bolts are not accompanied by any evidence of compliance with the requirements that apply in Australia, or the supporting documentation is inadequate. Also, that some imported products may be stamped as complying, yet may not comply.

### Building Code of Australia requirements

It is a requirement under the *Environmental Planning and Assessment Act 1979* and its Regulations that all building work be carried out in accordance with the Building Code of Australia (BCA).

For the purposes of the structural sufficiency of buildings and structures constructed of steel, the BCA references AS 4100 – *Steel structures*. This Standard sets out minimum requirements for, among other things, the design, fabrication and erection of steelwork.

Where high-strength bolts are to be used, AS 4100 requires that they comply with AS/NZS 1252 – *High strength steel bolts with associated nuts and washers for structural engineering*.

AS/NZS 1252 specifies the dimensional, material and marking requirements for these bolts and their associated nuts and washers. This Standard refers to AS/NZS 4291.1 – *Mechanical properties of fasteners made of carbon steel and alloy steel – bolts, screws and studs*.

AS/NZS 4291-1 specifies material requirements, mechanical properties that must be achieved, and the test methods for determining their mechanical properties.

### Ensuring compliance

Structural steel bolts used in the erection of steel structures must comply with the relevant Standards.

To achieve this outcome:

- design engineers and fabricators should adequately specify the bolts to be used in the erection of structural steel framework, including nominating the relevant BCA (primary and subsidiary) referenced Standards that the bolts and their associated nuts and washers must comply with
- suppliers need to source bolts that comply with the design specifications/BCA.
- end users and purchasers of structural steel bolts, such as builders, site engineers and fabricators, should request appropriate documentary evidence of compliance with the BCA with each batch of bolts (and associated nuts and washers) they order. Evidence of compliance should, as a minimum, identify the organisation which tested the product and clearly verify that the product meets the relevant requirements

- manufacturers/importers should be able to provide a copy of the evidence of compliance to purchasers and end users, or any other person upon request
- those called upon to inspect or supervise steel structures during construction, and who will subsequently issue certification to the building approval authority (to the effect that the completed structure complies with the approved design), should pursue appropriate evidence of compliance. The building approval authority may request a copy of that documentation, or request that the person issuing certification provide specific verification that the structural steel bolts (and their associated nuts and washers) used comply with the relevant Standards.

### **Further information**

If you have enquiries, please contact Alan Host, Senior Building Codes Officer, Building Systems Unit, phone 9228 6404 or email [alan.host@dipnr.nsw.gov.au](mailto:alan.host@dipnr.nsw.gov.au).

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### **Important note**

This circular does not constitute legal advice. Users are advised to seek professional advice and refer to the relevant legislation, as necessary, before taking action in relation to any matters covered by this circular.

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