

IMPORTANT CHANGES TO THE BUILDING CODE OF AUSTRALIA TO ENSURE STEEL LINTEL DURABILITY

Current Requirements for the Protection of Steel Items built into Masonry in BCA 2009 Clause 3.3.3.5

INTRODUCTION

For several years, an anomaly has existed with respect to the Building Code of Australia (BCA) and the information therein in relation to the durability requirements for steel lintels used in masonry construction.

Australian Standard AS/NZS 2699.3:2002: *Built-in components for masonry construction – Lintels and shelf angles (durability requirements)* has defined durability requirements for lintels in relation to their exposure conditions and coating requirements needed to meet a minimum 50 year service life.

The BCA, however, has not included these requirements in its previous documentation, allowing builders, in some instances, to avoid the obligations and additional costs in using compliant lintel products.

Lintels are critical structural components in masonry construction, and in the event of premature corrosion, their replacement cost is out of all proportion to their initial cost.

Steel lintels are always located in a sheltered or shielded positions within buildings, where they are subject to long-term exposure to atmospheric contaminants, such as marine salts or other airborne corrosive influences, but are excluded from the cleansing effect of rain and the drying influence of sunshine.

The protective coatings use on steel lintels must therefore be up to the task of preventing corrosion in conditions that are several times more severe than if the item was fully exposed, because of the accumulation of corrodents and longer times of wetness that lintels experience.

PRINCIPAL CHANGES OF THE CORROSION PROVISIONS IN THE BCA 2009

The upgrade in the corrosion provisions BCA 2009 reflects a revision of the minimum standard for steel treatment in the previous BCA Steel protection Table 3.4.4.2 to a level consistent with the following national and international steel corrosion control standards for engineering purposes.



All steel lintels should be clearly identified with their durability rating and Australian Standards compliance details, as are these packs of product awaiting dispatch.

- ISO 9223: Corrosion of metals and alloys - Corrosivity of atmospheres - Classification
- ISO 14713: Protection against corrosion of iron and steel in structures - Zinc and Aluminium coatings
- ISO 12944-5: Paints and varnishes - Corrosion protection of steel structures by protective paint systems - Part 5: Protective paint systems
- AS 3700: Masonry structures
- AS/NZS 2699.3: Built-in components for masonry construction - Lintels and shelf angles (durability requirements)



All the lintels on this high-rise apartment building in a seaside location have failed after less than 4 years. The coating applied did not comply with AS/NZS 2699.3:2002 leading to expensive remediation for the builder.

- AS/NZS 2312: Guide to the protection of steel against atmospheric corrosion by the use of protective coatings
- AS 4312: Atmospheric corrosivity zones in Australia
- AS 2309: Durability of galvanized and electrogalvanized zinc coatings for the protection of steel in structural applications - Atmospheric
- NZS 4210: Code of practice for masonry construction - Materials and workmanship.
- NZS 4230: Code of practice for the design of masonry structures

The above-listed standards, while dealing with differing aspects of steel protection and specifications, have several things in common, namely:

1. Protective coating specifications designed to meet the corrosivity levels
2. Nominated quality standards for steel preparation and the application of coatings
3. The means of assessing corrosion levels for specification purposes

Importantly the BCA revision 2009 now provides information, which conforms to other current standards listed, and now provides a practical guide for assessing corrosion rates at geographical locations.

Specific provisions of the revision in BCA 2009 include:

- Classification of the atmospheric corrosivity zones in Australia
- Guide to the location of microclimatic conditions within the major corrosion zones

- Guide to recognise the accelerated rate of corrosion of steel that is sheltered from washing by rain, but prone to the accumulation of humidity and corrosive contaminants.
- Protective coating specifications for steel

SUMMARY

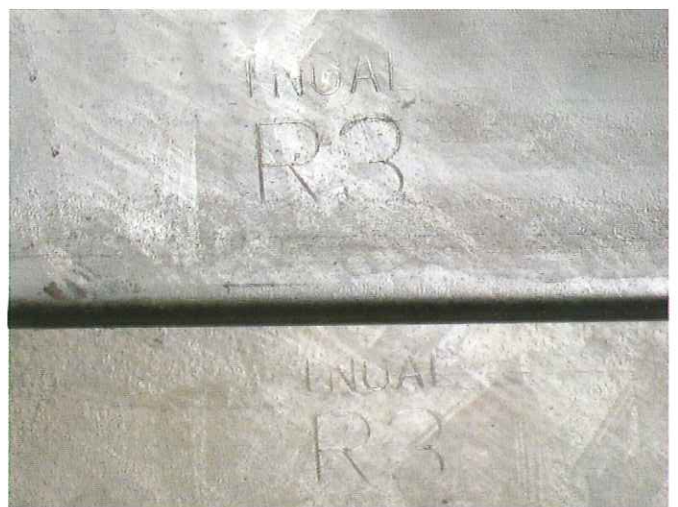
There are strict requirements in AS/NZS 2699.3 related to the durability requirements for steel lintels. In addition, clear labelling and branding of steel lintels with their durability rating is a requirement of this standard, along with testing procedures for any coating used that are not already deemed to comply, as is hot dip galvanizing.

Because enforcement of these standards was not a requirement of the previous BCA, imported inferior lintel products, or those with no labelling, branding or compliant coatings have been widely used throughout Australia.

This revision of the BCA will place more stringent obligations on end-users to ensure that steel lintels used in masonry construction comply with the durability and identification standards that are intended to ensure a 50 year+ maintenance-free life for these structural building components.

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Lintels that comply with Australian Standards are required to be identified with their durability rating. All hot dip galvanized lintels have an R3 rating which is appropriate for all but marine environmental classifications. The durability classification is stamped into the visible (after installation) leg of these Ingal lintels.