

CORROSION PROTECTION FOR EXPOSED STRUCTURAL STEEL AND NON-CONFORMING BUILDING PRODUCTS

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Building Practitioners

This fact sheet is to highlight the changes that have been made between the 2019 and 2022 National Construction Code (NCC) *Deemed-to-Satisfy (DtS)* Provisions for corrosion protection.

Non-conforming building products (NCBPs) are building products that are not safe, non-compliant with relevant regulatory provisions, or do not perform to the standard represented for their intended use.

A building product is any material or other thing associated with, or that could be associated with, a building.

Exposed structural steel is any form of steel used for a structural purpose in a building or structure that is exposed to the external environment, for example, a prefabricated structural sub-floor frame.

As a building product, it is required to comply with the National Construction Code (NCC) corrosion protection provisions. Compliance can be achieved by ensuring the steel provided is hot dipped galvanised to the correct coating mass / thickness, given as g/m² or µm. Alternatively, the steel can be protected using an appropriate paint system to meet the exposure conditions and atmospheric corrosivity categories for the application.

NCC 2019 Deemed-to-Satisfy solution options

In Queensland, the expected life of a dwelling is at least 50 years. This is derived from *Performance Requirement P2.1.3* of the NCC 2019, Volume 2. It is here in which the requirement for primary building elements in class 1 or 10 buildings must have a design life of at least 50 years; or is easy and readily accessible to replace. Further AS/NZS 1170.0 notes the design life for normal structures is generally taken as 50 years. In addition, Part 1.6 Durability Considerations in AS 2312.1 *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings, Part 1: Paint Coatings*, states the design documentation is to advise if the structural member requires replacement at a defined number of years, to satisfy the required corrosion resistance.

NCC, Volume Two, Part 3, the *Deemed-to-Satisfy (DtS) Provisions* are divided into two compliance options; “acceptable construction practices” (ACP) and “acceptable construction manuals” (ACM). In general, either an ACP or an ACM may be used as options when proposing a *DtS Solution*. If compliance with NCC Part 3.4.4.4 Corrosion protection ACP is not achieved, compliance with the ACM and the applicable Australian Standards is required to achieve a DtS Solution.

NCC, Part 3.4.4.4 Corrosion protection specifies, structural steel members that are not built into a masonry wall must be protected against corrosion in accordance with Table 3.4.4.7. This gives options for galvanising coating mass or paint systems to satisfy the *DtS ACP*.

The ACM satisfies the *Performance Requirement P2.1.1* if the exposed structural steel corrosion protection is carried out in accordance with either AS 4100 - 1998 or AS/ NZS 4600 - 2018. Both standards reference AS 2312 -2014 Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings: either Part 1 for paint coatings, or Part 2 for hot dip galvanising. These provide the compliance options for the relevant exposure conditions and atmospheric corrosivity categories determined in accordance with AS 4312 - 2019 Atmospheric corrosivity zones in Australia.

To achieve compliance for an applied system to AS 2312.1, extra long term classifications exceeding 25 years requires adherence to the corresponding corrosivity zone and durability. Alternatively, structural steel requires hot dipped galvanizing to the minimal coating mass thickness required to achieve an extra long term classification exceeding 25 years to the corresponding corrosivity zone specified in AS 2312.2.

NCC 2019 Performance Solution

Any corrosion protection method that does not meet the *DtS Provisions* would need to be considered via a *Performance Solution* and must follow NCC Part A2.2.

It is beneficial to understand the *Performance Requirements* and compliance with AS 2312.1 and AS 2312.2 as the industry transitions to NCC 2022. The NCC 2022 incorporates and adopts parts of the standard to form the *DtS ACP*.

NCC 2022

There have been significant changes to the corrosion protection provisions in NCC 2022. Part 6.3.9 of the ABCB Housing Provisions, Corrosion protection covers the corrosion protection requirements for all structural steel not built into a masonry wall. There are now three tables within the clause which are required to be followed to achieve a *DtS* solution. Table 6.3.9a states “*Hot dip galvanising and duplex systems must be in accordance with AS 2312.2. Paint systems must be in accordance with AS 2312.1*”. With this change and the additional compliance tables, the NCC implements corrosive protection specifications direct from the AS 2312 series offering a wider range of *DtS* solutions.

Further information

Under Queensland’s NCBP legislation, persons in the *Chain of Responsibility*, including but not limited to manufacturers, suppliers, and installers, all have a positive duty to ensure the building products they design, manufacture, import, supply, or install, are safe, compliant, and accompanied by the ‘*required Information*’ for the product, or otherwise risk incurring significant penalties.

Construction documentation for Exposed Structural Steel Building Products should include important information for the use of the steel in potential corrosive environments. This could include, but is not limited to the following:

- *Suitability for corrosive environments as described in AS 4312 – 2019 for atmospheric corrosivity categories C1, C2, C3, C4, C5 and CX.*
- *Specific preparation, application or protection requirements for the structural steel to withstand corrosive environments in compliance with the AS 2312 suite. For example, additional paint protection.*
- *Compliance with the NCC section 6.3.9 Corrosion protection (NCC 2022) / if applicable under an existing Building approval; NCC section 3.4.4.4 Corrosion protection (NCC 2019 Dts ACP)*
- *Compliance with AS 4100 - 2020 and AS/NZS 4600 – 2018 (NCC 2022) / if applicable under an existing Building approval; AS 4100 - 1998 and AS/NZS 4600 – 2018 (NCC 2019 – Dts ACM)*
- *Batch numbering of hot dip galvanized coating described as the coating mass (g/m²) in accordance with AS 2312.2.*

If you are a person in the *Chain of Responsibility* who is involved with the ordering, supply, or installation of any exposed structural steel, be sure to check that the product meets all the relevant regulatory provisions including any NCC Performance Solutions, before supply or installation.

Definitions

Chain of Responsibility¹ – a person is a person in the chain of responsibility for a building product if—

- (a) the person—
 - (i) designs, manufactures, imports or supplies the building product; and
 - (ii) knows, or is reasonably expected to know, the product will or is likely to be associated with a building; or
- (b) the person installs the product in a building in connection with relevant work; or
- (c) the person is an architect or engineer who, in designing a building, specifies that the product be associated with the building.

Required information² – for a building product, means information about the product that—

- (a) for each intended use of the product, states or otherwise communicates the following—
 - (i) the suitability of the product for the intended use and, if the product is suitable for the intended use only in particular circumstances or subject to particular conditions, the particular circumstances or conditions;

- (ii) instructions about how the product must be associated with a building to ensure it is not a non-conforming building product for the intended use;
 - (iii) instructions about how the product must be used to ensure it is not a non-conforming building product for the intended use; and
- (b) complies with the requirements for the information, if any, prescribed by regulation for this definition.

Performance Requirement³ means – a requirement which states the level of performance which a *performance solution* or *Deemed-to-Satisfy solution* must meet.

Performance Solution⁴ means - a method of complying with the *Performance Requirements* other than by a *Deemed-to-Satisfy Solution*.

Deemed-to-Satisfy Solution⁵ means - a method of satisfying the *Deemed-to-Satisfy Provisions*.

Deemed-to-Satisfy Provisions⁶ means - provisions which are deemed to satisfy the *Performance Requirements*.

Useful links

ABCB Handbook – Performance Solution Process.

<https://abcb.gov.au/sites/default/files/resources/2022/Handbook-performance-solution-process.pdf>

Disclaimer

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If you have any questions as to how the NCBP laws apply to you, you should obtain appropriate independent professional advice regarding how to discharge your duties under the QBCC Act and achieve compliance with relevant regulatory provisions for building products. This is especially important if you (or your company) intend to later rely upon that advice to demonstrate satisfaction of your duties under Part 6AA of the QBCC Act or other legislative obligations.

¹ See section 74AE of the *Queensland Building and Construction Commission Act 1991* (Qld).

² See section 74AG of the *Queensland Building and Construction Commission Act 1991* (Qld).

³ As defined in the National Construction Code 2019 & 2022.

⁴ As defined in the National Construction Code 2019 & 2022.

⁵ As defined in the National Construction Code 2019 & 2022

⁶ As defined in the National Construction Code 2019 & 2022