IMPORTED STEEL AND COMPLIANCE RISKS IN WALL AND CEILING SYSTEMS

INSIGHTS FROM RONDO'S CUTTING CORNERS INVESTIGATION

RONDO

CSR

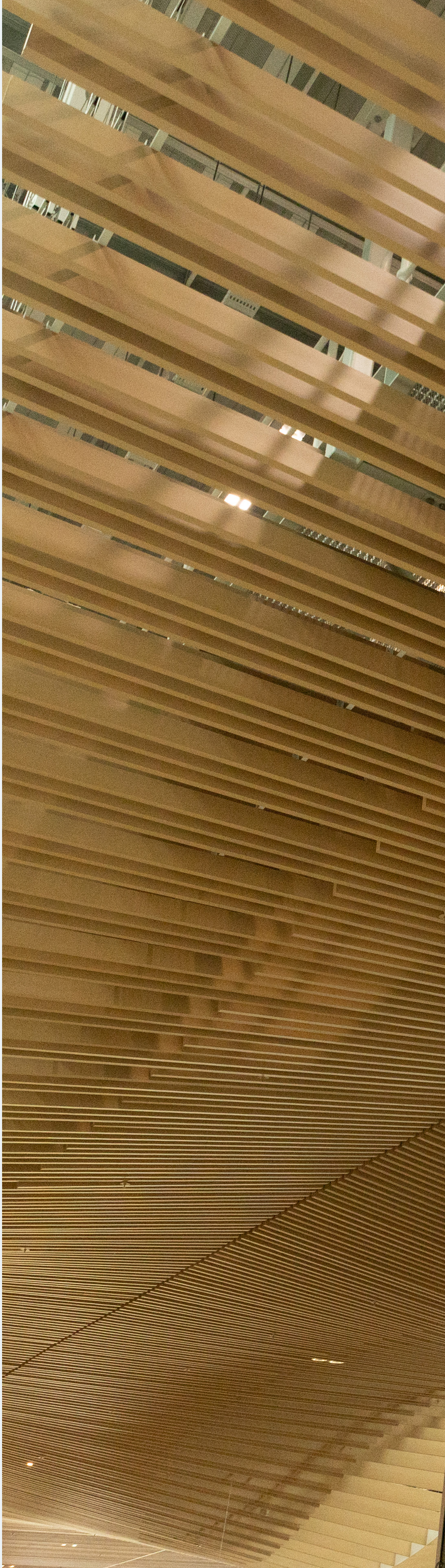
For steel wall and ceiling framing systems, BMT underpins the structural calculations used to determine load capacity, allowable spans and system performance.

INTRODUCTION

Drawing on findings from Rondo's Cutting Corners Investigation, this paper examines the risks associated with non-compliant or substituted steel wall and ceiling products and outlines strategies architects can adopt to safeguard specification integrity during procurement and construction.

Global supply chains are reshaping the availability of construction materials in Australia, with imported steel products now appearing more frequently across a range of building applications. An industry report published on 1 August 2024 estimated that close to $300 million worth of steel had been imported into Sydney over the preceding 18 months alone.[1]

While international sourcing can support supply continuity and cost efficiency, it can also introduce variability in the quality of steel entering the Australian market. These concerns often relate to inconsistencies in material composition, manufacturing processes and claims that are not supported by recognised local testing standards. Where such products are incorporated into wall and ceiling systems, the consequences can extend beyond product failure to broader risks affecting compliance, safety and long-term building performance.



Purchasers may believe they are evaluating like-for-like products, when the materials may in fact vary significantly in several factors that directly affect system performance.

RONDO'S CUTTING CORNERS INVESTIGATION

Background

In response to growing industry concern about the quality of imported steel components, Rondo undertook a 15-month investigation examining steel wall and ceiling products supplied to the Australian market.[2] The study involved six rounds of independent laboratory testing on products sourced from more than five Australian suppliers importing steel components from China.

The investigation focused on commonly specified elements used in plasterboard systems, including steel studs, tracks, deflection head tracks, furring channels and related components. Results identified multiple issues across the tested products, including non-compliance with Australian Standards, inconsistent material quality, incorrect product markings and inadequate corrosion protection.

Rondo has also recently released a further instalment of the Cutting Corners Investigation on 10 February 2026, examining zinc coating levels on imported steel products in more detail.[3]

Key findings

The investigation identified several areas of concern:

- **Base Metal Thickness (BMT):** Some tested products fell below the minimum thickness requirement (≥95% of design thickness) under AS/NZS 4600, despite being labelled as compliant.
- **Corrosion protection:** Zinc coating levels on some components were below the recommendations of AS/NZS 2785, potentially affecting long-term durability.
- **Product marking:** Instances were identified where labelled specifications did not match measured material properties.
- **Equivalency claims:** Some imported products were promoted as equivalent to locally manufactured systems despite differences in thickness, coatings and manufacturing tolerances.
- **Fire compliance:** Limited evidence was identified demonstrating fire testing in plasterboard systems in accordance with NCC requirements.

Base Metal Thickness (BMT) shortfalls

Regulatory requirements

Base Metal Thickness (BMT) refers to the thickness of the steel material before any coatings or treatments are applied. It is a fundamental parameter in cold-formed steel design because it directly influences the strength, structural adequacy and suitability of steel components for specific applications. For steel wall and ceiling framing systems, BMT underpins the structural calculations used to determine load capacity, allowable spans and system performance.

Under AS/NZS 4600 Cold-Formed Steel Structures, the delivered steel thickness must be at least 95% of the thickness used in structural design calculations. Clause 1.5.1.5 ("Acceptance of Steels") requires that the minimum uncoated steel thickness at any point in the product, as delivered to site, meets this 95% threshold. This requirement ensures that the structural capacity assumed during design reflects the actual material properties of the installed components.

Investigation findings

Testing undertaken during the Cutting Corners Investigation identified instances where imported steel wall and ceiling components fell below the required thickness. In several cases, products labelled as 0.50 mm BMT measured approximately 0.45–0.47 mm, representing 90–94% of the specified thickness. Some steel tracks labelled 0.55 mm BMT measured around 0.47–0.48 mm, equivalent to 85–87% of the stated thickness.

The investigation also identified discrepancies between product markings and measured material properties. Stud and track components marked 0.50 mm BMT were measured at 0.46–0.47 mm, while furring channels labelled 0.50 mm BMT measured 0.45–0.46 mm. In one case, an importer's catalogue listed steel stud at 0.50 mm BMT and track at 0.55 mm BMT, yet the importer's own test data indicated actual thicknesses of 0.468 mm and 0.484 mm, respectively.

Product	Specified BMT	Tested BMT (mm)	Variance	Compliant to NCC of tested sample product
64mm Stud	0.50	0.46	92%	✗
64mm Stud	0.55	0.47	85%	✗
64mm Stud	0.50	0.47	94%	✗
64mm Track	0.50	0.47	94%	✗
64mm Track	0.55	0.47	85%	✗
64mm Deflection Head Track	0.50	0.46	92%	✗
64mm Deflection Head Track	0.55	0.51	93%	✗
28mm Furring Channel	0.50	0.45	90%	✗
28mm Furring Channel	0.50	0.46	92%	✗
16mm Ceiling Batten	0.50	0.46	92%	✗
Top Cross Rail	0.75	0.68	91%	✗
Isolation Track	0.75	0.70	93%	✗

Test results of some of the wall and ceiling components tested.

Design and construction risks

Where structural calculations rely on the nominal BMT stated in product data sheets, reduced thickness in the actual product can invalidate those assumptions. If designers calculate load capacities using 0.50 mm or 0.55 mm BMT, but the installed product is thinner, the system may not achieve the intended structural performance. Even where installation workmanship is correct, the system may still be non-compliant because the installed material properties differ from those used in design.

Fire test reports supporting plasterboard systems are typically based on framing within defined thickness ranges. For example, CSR, one of Australia's major building materials manufacturers and a leading supplier of plasterboard systems, publishes fire test reports supporting its fire-rated wall and ceiling assemblies. These reports specify steel framing with a BMT between 0.50 mm and 2.4 mm, reflecting the parameters used during fire testing. Where the installed framing thickness falls below 0.50 mm, the tested system configuration no longer applies, meaning the assembly may not achieve the nominated Fire Resistance Level (FRL). Steel that is too thin may lack sufficient structural capacity to perform as tested, further undermining the validity of the FRL regardless of the lining used.

Zinc coating deficiencies and corrosion risks

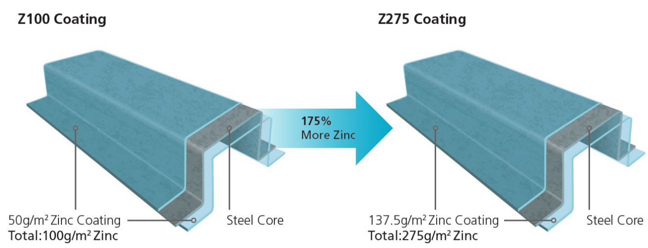
Regulatory requirements

Acting as a sacrificial barrier, the zinc coating on steel products helps prevent rust formation and extends the service life of the product. In concealed steel framing systems used in walls and ceilings, adequate coating protection is essential because deterioration may not be visible once construction is complete.

Australian guidance on corrosion protection is outlined in AS/NZS 2785:2020 Suspended Ceilings. The standard recommends a minimum coating of Z180 for internal ceilings located more than 300 m from breaking surf and Z275 for ceilings outside the building envelope located more than 1 km from saltwater. These recommendations are intended to ensure sufficient long-term corrosion resistance in typical building environments.

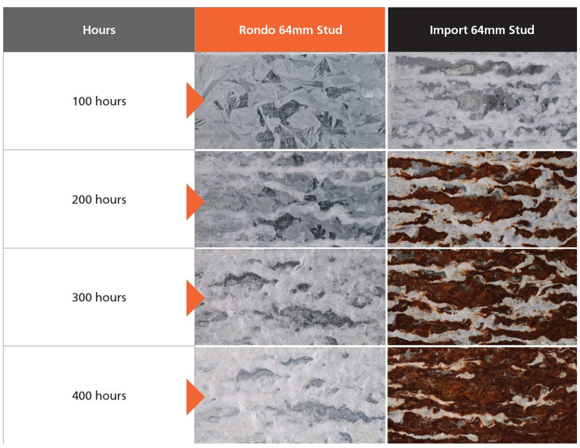
Investigation findings

Testing conducted as part of the Cutting Corners Investigation identified substantially lower zinc coating levels on several imported steel framing components.[4] A number of the products assessed were manufactured with Z100 coatings, which are considerably thinner than the coatings typically applied to comparable locally manufactured systems. Z275 coatings contain around 175 g/m² more zinc than Z100, providing significantly greater sacrificial protection to the underlying steel. When coating thickness is reduced, the capacity of the zinc layer to shield the steel from corrosion is diminished.

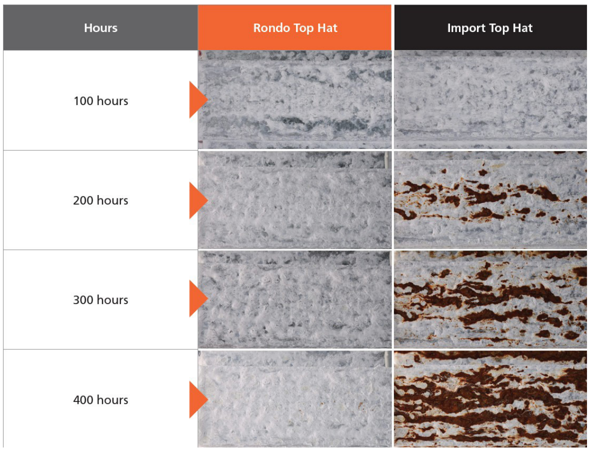


Accelerated corrosion testing undertaken by an independent laboratory demonstrated the potential durability implications. During salt-spray exposure testing, red rust developed on imported steel samples after roughly 200 hours, with more extensive corrosion visible by 400 hours. By comparison, Rondo samples with heavier zinc coatings showed no visible red rust within the same testing period, indicating a markedly higher level of corrosion resistance.[5]

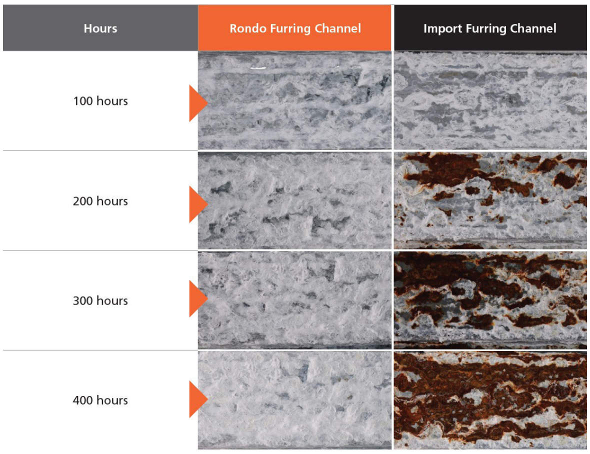
Steel Stud Salt Spray Test



Top Hat Salt Spray Test



Furring channel Salt Spray Test



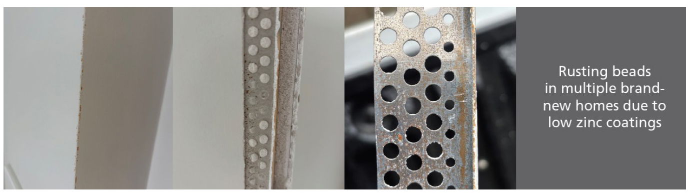
Earlier findings from the investigation showed that tested steel studs and tracks with base metal thicknesses between 0.5–0.55 had zinc coating masses ranging from approximately 99–122 g/m² (combined coating on both sides).[6] By comparison, equivalent locally manufactured components from Rondo were supplied with approximately 275 g/m² of zinc coating. Similarly, heavy gauge deflection head tracks, which are commonly used in external wall applications, were found to have coating masses of 171–179 g/m², again below the 275 g/m² coating level used in comparable Rondo products.

Design and construction risks

Reduced zinc coatings can introduce several risks for building performance and durability:

- Accelerated corrosion of concealed steel framing.
- Premature deterioration of components in humid or condensation-prone environments.
- Increased maintenance and rectification costs.
- Potential system failure where corrosion affects structural capacity.

Real-world examples have been reported where corner beads with very low zinc coatings (such as Z70) rusted through finished plasterboard walls in newly constructed homes.[7] This type of damage can result in costly remedial work.



Fire compliance

Regulatory requirements

Steel framing used in fire-rated wall and ceiling systems must comply with the National Construction Code (NCC) Specification C2D9, which governs the testing and evidence required to demonstrate a system's FRL. Fire-rated assemblies are tested as complete systems. This means that the performance of plasterboard, framing, fasteners and other components are assessed and verified together under controlled laboratory conditions. Substituting alternative components that have not been included in the original test and vary in terms of materials, dimensions and tolerances can invalidate the tested performance of the assembly.

Investigation findings

The Cutting Corners Investigation found no clear evidence that some imported steel wall and ceiling components had undergone fire testing with plasterboard assemblies in accordance with NCC Specification C2D9. In some cases, claims of equivalency with compliant products appeared to rely on comparisons of yield strength or other material properties rather than evidence from system-level fire testing.

This approach presents a significant compliance risk because fire performance is not determined solely by material strength. Parameters such as BMT, section geometry and manufacturing tolerances can influence the behaviour of the steel framing during fire exposure.

Compatibility with tested plasterboard systems

Fire-rated plasterboard systems developed by major manufacturers are typically tested using specific steel framing products. For example, CSR and Knauf fire test reports reference steel framing systems developed and tested in conjunction with their plasterboard assemblies.

Differences identified during the investigation, including variations in BMT and manufacturing characteristics, indicate that some imported steel components may not match the framing used in these tested systems. Where this occurs, the substituted product cannot be assumed to deliver the same FRL performance as the tested configuration.

Where steel framing used in fire-rated walls or ceilings does not meet the requirements of the tested system, the assembly may fail to achieve the nominated FRL. This can introduce safety risks in a fire event, result in non-compliance with NCC fire performance requirements, create legal and contractual exposure for project participants and lead to potential insurance implications where certified systems are substituted with untested alternatives.

THE REAL COST OF CHEAP STEEL

The use of non-compliant steel framing in wall and ceiling systems introduces risks that extend beyond initial procurement costs. Where material properties differ from those assumed in design or testing, structural performance may be compromised, increasing the risk of lining cracks, system deformation and premature deterioration. As steel framing is typically concealed behind plasterboard, substituted or inferior products may remain undetected until defects or compliance issues emerge.

The financial consequences stemming from the use of non-compliant steel framing include costly rectification works, project delays and contractual disputes, particularly where fire-rated walls or ceiling systems fail to meet the specified performance criteria. In more serious cases, the use of non-compliant steel components may also introduce legal and insurance exposure for project participants if failures occur or regulatory requirements are not satisfied.

Another consideration is the potential for misleading cost comparisons. Purchasers often assume that products labelled with a specific BMT represent the same material quality across suppliers. Where the actual BMT falls below the advertised value and below the minimum thickness permitted under AS/NZS 4600, the product may appear cheaper but will not provide comparable performance to products that meet the standard. Purchasers may believe they are evaluating like-for-like products when the materials may in fact vary significantly in several factors that directly affect system performance.

Discrepancies between specified and delivered material properties can also affect stakeholder confidence. If products fail to meet documented specifications, this may erode trust between designers, contractors and suppliers. Over the longer term, the consequences of non-compliant materials may affect the service life and value of the building itself. For architects and specifiers, ensuring that materials meet documented standards and tested system requirements is therefore not only a matter of compliance but also of protecting professional credibility.

HOW TO ENSURE COMPLIANCE

Ensuring the reliability and compliance of wall and ceiling systems begins with selecting manufacturers that demonstrate consistent quality control, traceability and certification to relevant Australian Standards. Established suppliers such as **Rondo Building Services** and **CSR** have long supported the Australian construction industry with locally manufactured and tested building systems. Rondo specialises in roll-formed steel wall and ceiling framing products engineered for Australian conditions, while CSR provides integrated system solutions through brands such as Gyprock and Himmel that combine linings, framing and technical guidance to support compliant design.

Working with trusted manufacturers also provides specifiers with access to documented system testing, technical manuals and compliance data that help ensure performance outcomes align with regulatory requirements. For example, system documentation such as CSR's Gyprock Red Book™ and Rondo's Professional Series Technical Resources provide guidance on fire, acoustic and structural performance for wall and ceiling assemblies. These resources support architects, builders and contractors in selecting products that have been tested and verified as part of complete system solutions rather than relying on isolated components with uncertain provenance.

As industry investigations into non-conforming products continue, builders, contractors and architects are encouraged to actively verify the compliance of the steel products they specify and install. This includes confirming certification pathways, checking coating classifications, reviewing test evidence and ensuring compatibility with tested system assemblies. In wall and ceiling construction, where performance depends on the interaction of multiple components, maintaining specification integrity throughout procurement and installation is critical to achieving the performance demonstrated in laboratory testing.

REFERENCES

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3 Rondo. “Cutting Corners Edition II: The hidden cost of lower zinc coatings on imported steel products.” Rondo. https://www.rondo.com.au/about/media/blogs/cutting-corners-edition-ii (accessed 6 March 2026).

4 Ibid.

5 Ibid.

6 Above n 3.

7 Above n 4.

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