

ACA NZ BRANCH: WELLINGTON MEETING

On the evening of 29 October, Engineering NZ hosted a meeting in their Wellington premises of their Bridge Engineering Technical Society (BETS) which was shared with members of the Structural Engineers Society (SESOC), the Surface Coatings Association of NZ (SCANZ) and the NZ Branch of the ACA.

A combination of about 50 members attended in person, and another 90 registered to watch the presentation online via Teams.

Speakers were introduced by the ACA President, Raed El Sarraf of Structural Integrity Consultants, and refreshments were sponsored by the Galvanizing Association of NZ who were represented by Peter Golding, the Galvanizing Association of Australia (GAA) CEO from Melbourne. The principal speaker was Kevin Irving from Chicago, a consultant to the International Zinc Organisation who had been a keynote speaker at the GAA Conference held the previous week in Queenstown.

Kevin's presentation, entitled 'Zinc-based Coatings for Bridge Preservation' discussed the three main ways of using metallic zinc to prevent corrosion of structural steel, ie with hot dip galvanizing, metallizing (aka thermal zinc spray), and zinc-pigmented inorganic and organic coatings. His talk was illustrated with examples of these being successfully used on major bridges in North America and Europe, and also of bridge failures where zinc-based coatings had not been used.

A supporting presentation was given by Willie Mandeno who gave a brief overview of two new zinc coating Standards, AS/NZS 2312.3 Guide to the protection

of structural steel against atmospheric corrosion by the use of protective coatings, Part 3: Thermal spray coatings (published in May 2025) and the revised AS/NZS 4680 Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods (published in June 2025).



Speakers Willie Mandeno (L) and Kevin Irving



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Corrosion protection for metal fasteners and connectors

Corrosion protection in New Zealand is not one-size-fits-all. Engineers and designers must align their material and coating choices with the NZ Building Code (NZBC). By understanding the environmental exposure and applying the right protection strategy, longevity and structural safety of metal connectors can be ensured across New Zealand's diverse climates.

The varied environmental conditions in New Zealand, including coastal exposure, high rainfall regions, and geothermal zones, require a strategic approach to corrosion protection for metal connectors.

Designers must consider environmental exposure, material compatibility, and compliance with the NZBC to ensure structural integrity and long term durability. NZS3604 is New Zealand's Acceptable Solution and the most commonly referred to Standard for the design and construction of timber-framed buildings. It provides

a means of compliance with the NZBC and includes detailed requirements for durability, fixings and corrosion protection for different environmental zones (zones A, B, C, D).

Metal fasteners and connectors must be protected against corrosion appropriate to the exposure zone, e.g. sea spray, marine, geothermal, or urban.

Corrosion protection guidance for metal fasteners and connectors is available, such as given in the following table:



Environment	Recommended material/coating
Low, dry, internal	Hot-dip galvanized coating (Z275); zinc-plated,
Medium, sheltered zones B,C barrier	Hot-dip galvanized coating; proprietary coating
Severe	Stainless steel grades 304 & 316 (austenitic)
Marine & coastal (duplex);	Stainless steel grades 316 & 2205 heavy duty marine coatings,
All external areas & sheltered zone D	Fibre-reinforced polymer material (FRP)

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Corrosion protection for metal fasteners and connectors - continued from page 2

Fastener compatibility: always match a fastener material to the connector material to avoid galvanic corrosion; e.g. only use stainless steel fasteners on stainless steel connectors.

- Where products are used in applications that do not require the typical 50 year working life, it may be feasible to meet the requirements of the NZBC using lower corrosion protection for a lesser specified working life.
- Applying protective coatings like primers or a sealant may also provide additional durability.
- Preservative-treated timber: use corrosion-resistant fasteners such as stainless steel with ACQ, CCA, or other aggressive timber treatments.
- Consideration must be given to microclimates, which include industrial contamination and corrosive environments such as agricultural chemicals and geothermal hot spots, which should be assessed by a corrosion expert.



References: NZS3604 Timber-Framed Buildings. Simpson Strong-Tie www.strongtie.co.nz



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Older ACA NZ members have probably seen a number of situations that may never have made it to a textbook.

If you have a question you'd like clarification on, email it to the Editor at lesboultonrust@gmail.com. We'll pose it to our panel of experts who will answer it in another Bulletin, so everyone can improve their knowledge.

Q: Can corrosion cause safety issues?

A: Yes!

For example, a bridge in Whakatane has handrails so rusty that they could collapse if someone falls against them, cyclists who regularly ride the route say.

They say that lack of maintenance has become of increasing concern. Of particular concern was an area of the handrail where it had rusted completely through, and if someone bumped into the jagged rusty metal they could sustain a nasty wound.

"Any industry with health and safety standards this low would be shut down", one cyclist says.

The NZ Transport Agency (NZTA) acknowledged the

deteriorating condition of the bridge and said it had maintenance scheduled before the end of the year.

Corrosion of metal components can result in severe damage to structures without proper maintenance. The consequences can be serious; corrosion destroys equipment, decreasing readiness and reliability while causing safety hazards and increasing maintenance and other ownership costs.

In the USA if industry owners do not carry out proper maintenance on their structural assets they may be liable to criminal action if somebody is injured due to negligent maintenance.



Source: Sunlive News, August 2025

Auckland Harbour Bridge maintenance costs nearly double because of paint job



The cost of repair and maintenance on the Auckland Harbour Bridge nearly doubled to \$22.4 million in the year to June, as the bridge's original paint coating reaches the end of the design life, requiring a full repaint.

The NZ Transport Agency (NZTA) said the increase in spending was because of the truss bridge

refurbishment project which started in 2024/25. This project involved stripping the paint to bare steel and the application of a new paint coat.

Over the next five years NZTA expected funding for the bridge would remain at a similar level to the current financial year because of the refurbishment project and coating renewals.

Source: NZ Herald, October 2025

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