

Ted's News

June 2016

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[Galvanised Bolts More Variable Than Timber](#)



The image on the top left hand is of an Australian made bolt installed on a cross arm on a powerpole at Millmerran in 1950 and removed in 2001 and which, after 50 years, still has some galvanising in place, The image on the top right is of an imported bolt after 12 months in Gatton, a very similar environment. The galvanising has completely failed,

The lower image is of a bolt painted with a suitable epoxy and removed after three months. The galvanising has separated from the steel taking the paint with it. When I saw this bolt I took some of the same batch to a laboratory to tell me what was happening. They looked at the bolt and said, "Look how shiny it is. It must be electroplated, but we will check it to be sure." They rang back to say that they were indeed hot dipped galvanised and according to the relevant standard were very well galvanised. They further commented that obviously it was not working and could not offer a suggestion why. Because of this I have always, in my CPD sessions, advised professionals to specify stainless bolts because it left us as a supplier with a real quandary as I would never sell anything if I priced with the more expensive fastener.

Is this extremist? I do not think so, even if you consider a well galvanised bolt. Bolts are galvanised in small batches in wire cages which are then spun at high revolutions to remove excess zinc and give a clean thread. The typical minimum coating thickness for a 10 mm bolt or larger would be 390 g/m² or 55 microns. By contrast, the minimum coated thickness for steel over 6 mm, which sits in the vat for up to 10 minutes is 600 g/m² or 85 microns and regularly reaches 700-900 g/m². Longevity is dependent on the zinc coating so normal steel could have an expected life of 30 to 50% longer than that of the bolt

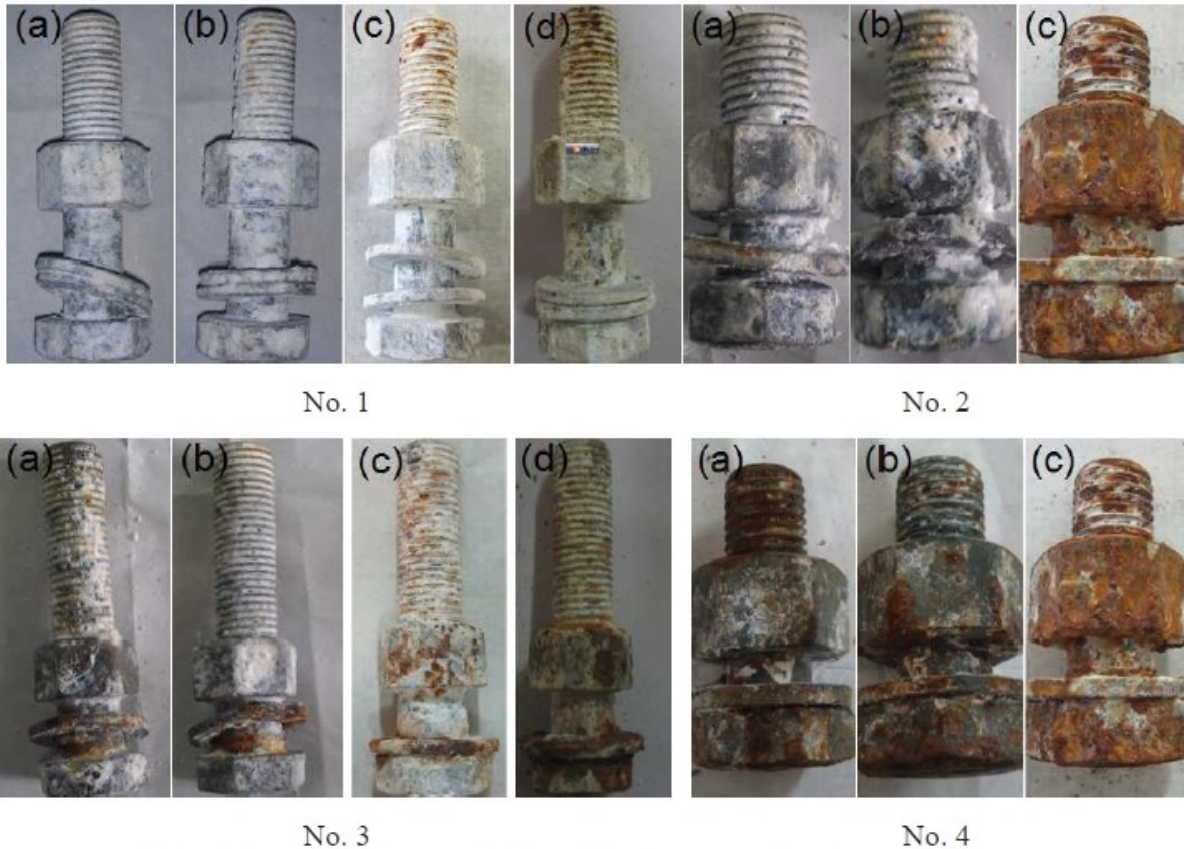


Fig. 1 Corrosion photos of No. 1 ~ No. 4 in neutral salt fog environment
(a) 500 h; (b) 1000 h; (c) 1500 h; (d) 3000 h

Until now, I have not been able to get publically available information on how bad the imported bolts can be. It was as if there was a conspiracy of silence. An article written in the Journal of Applied Mechanics and Materials on the anti-corrosion performance of four randomly purchased bolts in China identified the problem and more importantly offered suggestions as to why. The conclusion was □□□□ *"The anti-corrosion performance of the four hot-dip galvanizing bolts obtained from different company were all unsatisfactory. The causes of the above phenomenon are the lower thickness of the hot-dip coating, too much defecys on the surface of the coatings and the elemental composition impurity".*

How great was the variability of the galvanising? the average coating thickness on individual bolts went from 130 um to 34 um and the minimum was 13 um which happened to be on the same bolt that averaged 130 um. This is greater variability than timber and can mean that the bolt, not the timber, is the weak link in the system.



Is there an alternative to stainless steel? Quite possibly and that is ITW Prolines Tech-Shield™ coated bolts. This is an epoxy coating applied with an electric charge which endures an even coating. ITW is the only Australian organisation I am aware of which has taken the issue of poor performance of imported galvanised bolts very seriously. In conjunction with ITW technical coating specialists in Asia and the United States, they developed a new advanced barrier coating that helps bolts fight off the chemicals found in treated timber. This ultimately extends the life of the bolt. Apparently when tested at an Independent laboratory to international and Australian standards Tech-Shield™ provided, on average, 3.9 times the protection of their regular hot dipped galvanised bolts when used in treated pine. Unfortunately they were not available when I operated my business so I don't have personal experience but the company has considerable credibility with me and this isn't a paid advertisement.

To determine the suitability of this product for your needs contact [David Collinson](#) at ITW..

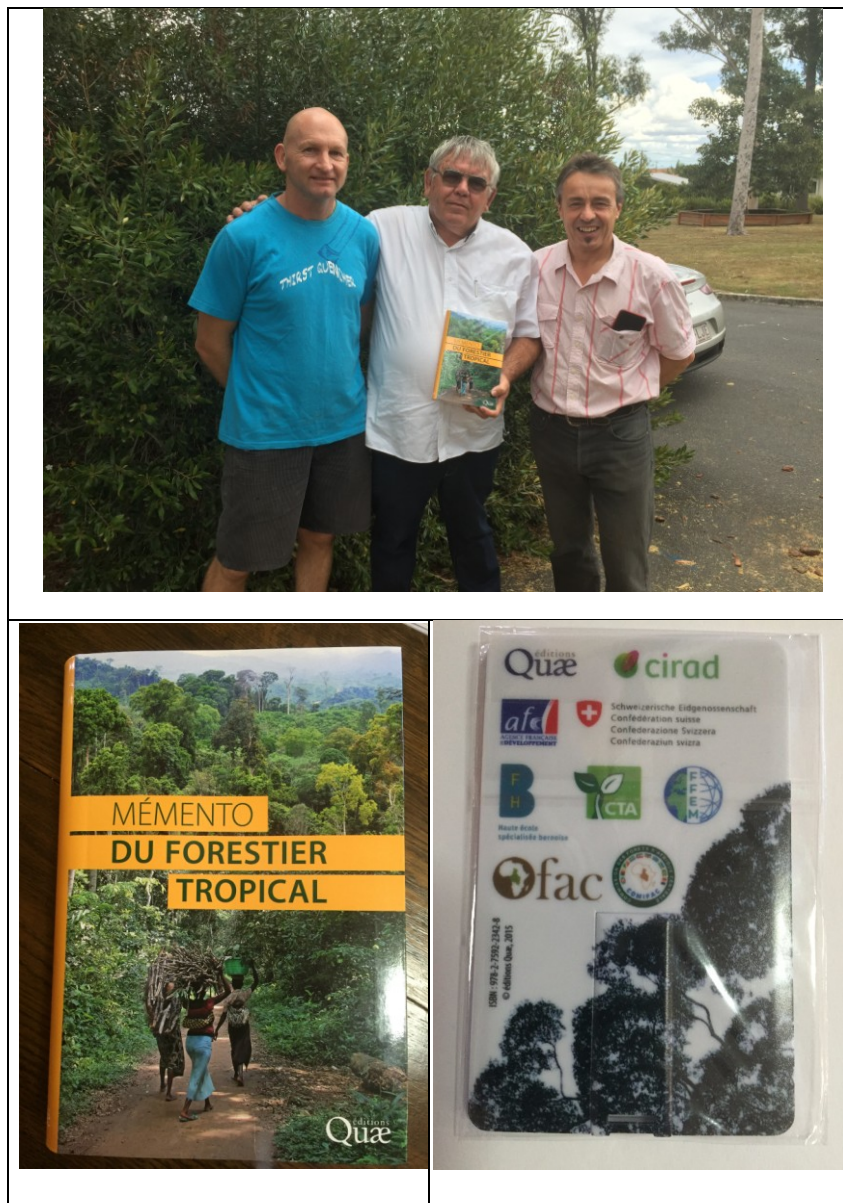
Note: The journal article is Li. Cuoxin, Shanjing Xia, Yilang Peng. Anti-Corrosion Performance of Four Hot Dip Galvanising Bolts in *Applied Mechanics and Materials* Vols. 395-396 (2013) pp 708-711

The State of Timber Research in Australia

Part 2 of 2

This section is postponed as there is some important news to relate next month.

Published in Memento Du Forestier Tropical



In conjunction with Henri Bailleres (on the right) Team Leader, Forest Products Innovation and Gary Hopewell Senior Research Scientist, Horticulture and Forestry Science (obviously then on the left) of the Department of Agriculture and Fisheries, I contributed a chapter on timber construction to the prestigious French publication *Memento du Forestier Tropical*. Despite being a 1200 page book, we were all a little miffed at the way our document had been trimmed for publication until we saw the USB stick attached where the expanded document can be found along with 1000 colour images! A more recent example of cutting edge technology again from the French! Read French, ask me for a copy of the article.

Problems looming with self drilling screws

When the Tek patent expired, the Australian market was flooded with low cost, low quality lookalikes. The protective coating could be down to 2-3 microns of electroplated zinc giving only 25% of the corrosion protection of the original ITW Buildex product. The implications for corrosion in any timber, let alone treated timber, through inadvertently using poor quality coatings, is obvious. The demand of roofing manufacturers in 1981 that their screws be able to withstand 1000 hours of the standard salt spray test led eventually to AS 3566 – Self Drilling Screws. This Standard was unusual as it is a performance based specification and not a materials specification. Regrettably, this very good standard was withdrawn in 2015.

I understand that large purchasers of screws are still requiring compliance with the old standard and you would be wise to insist on it also, But in practical terms, unless human nature has changed, what brand of screw you use now will depend on how much you trust the manufacturer's guarantee.

An Accountant That Really Helped Us

Not a paid commercial



For three months I ran information on a mortgage broker that really helped us when our bank was being very difficult. I kept running it because people kept contacting him. There must be a lot of hurting people out there. Part of our solution was getting a very good accountant who went the extra mile. Brett Garmeister, a partner in OBT Financial Group, had been a friend for a long time but I had been using one of those expensive higher profile city companies for over 30 years. With Brett I received what was, in my

opinion, better advice without the gold plated invoice. I recommend him to you if you are unhappy with your present arrangement. Who knows, if things keep going in the right direction I may have to call on OBT's considerable financial planning expertise? His contact details are:

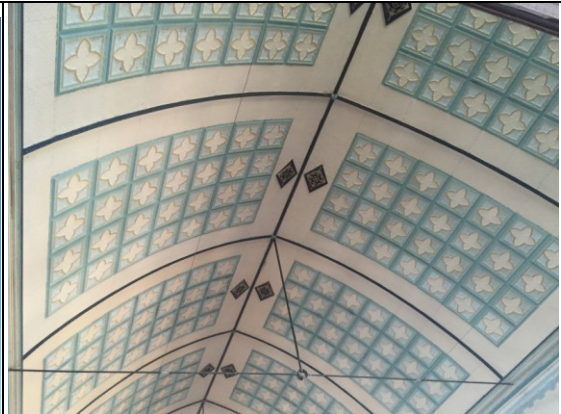
Phone: (07) 5462 2277

Email: brettg@obtfinancialgroup.com.au

Web: <http://obtfinancialgroup.com.au/>

Largest Timber Church in Australia

Travelling from my home in Gatton through Rosewood on the way to Ipswich in Queensland you go past the interesting old Rising Sun Hotel. No doubt, it has been the ruin of many a poor boy just like its namesake in New Orleans. But, if you turn to your left before you cross the railway line you will find St Bridgets Catholic Church which we we can only hope has been the redemption of some. If you love timber, you will love this 1910 building which claims (as a few others do) to be the biggest timber church in the country. Here are a few images to ponder how things used to be done.





The only timbers I could identify were floor which is crows ash and the pews which are hoop pine. Even the altar and the handrails are timber, a testimony to the decorators skill to make it look like marble. The pressed metal ceiling is brilliant. A special thanks to St. Bridgets parish for opening the church so I could bring you these images.

[Need a Timber Consultant or Expert Witness?](#)

I have over 40 years experience in the industry and can assist you with any of your timber needs.

Design - I have seen what works and what doesn't and have a good library of CAD drawings and images to back up what I say, which can often be contrary to common practice.

Inspection - I have written the books on the subject and can assess construction and material as to its suitability for the application.

Reports - I can drive a word processor with ease and can give you a well reasoned reply.

Bridge Quote Requests

Call me on 0414 770 261 to discuss your needs. We built brilliant bridges in both timber and timber and steel. My Timber Footbridge book has an excellent checklist in the back by which to assess quotes. It is also ideal as a tender specification. I find it frightening how many corners can be cut when it comes to footbridges.