



**GALVANIZING
ASSOCIATION**



THE OFFICIAL NEWSLETTER OF THE GALVANIZING ASSOCIATION OF NEW ZEALAND

Welcome to the GANZ Newsletter

September, 2009



Welcome to the first GANZ e-newsletter. We hope you find it informative, thought provoking and valuable. In this issue we will explain some of the changes that we have made within the industry. Read about our first graduate of the newly created NZQA hot dip galvanizing qualification into which significant resources have been invested. There are further explanations about the reasons why internal venting has been banned in NZ and discussion on some of the uses for galvanizing in particular the use of galvanizing in reinforced concrete structures. There are informative case studies and for future issues we would like to encourage engineers and architects to send us their examples of galvanizing use.

Since our last Bright Ideas publication, the members of GANZ have been busy finalising our CD and updating the website to reflect your requests. We have also been trying to manage our costs as we continue to operate in a very difficult economic environment. Whilst we applauded some of the infrastructure spend announced by the government, particularly in the roading and electrical infrastructure sectors, we do wonder whether there should be a requirement for NZ content. I think one of the most disappointing comments I heard from a government official was “...whilst government agencies are expected to achieve value for money, they are not permitted to give preference or weighting to local content”. I am not convinced that attitude will help NZ companies in a time when we need economic stimulus. I applaud the work of ICN (the Industry Capability Network) who promote the capabilities of NZ companies, but wonder how frustrating their jobs must be if they have to justify everything purely from a financial perspective. Surely other factors must be considered, such as the cost to the environment, life cycle cost and quality? I could go on, but won't!

We expect the next e-newsletter to be released in the next quarter where it will explain clearly some of the differences between the different types of galvanizing and we will do a thorough comparison between Hot Dip Galvanizing and Zinc Metal Spray applications. We will engage independent experts to do a review of both coatings and will give you the facts as opposed to the hyperbole.

Enjoy reading further and feel free to pass this onto any other staff members within your organisation that you think would benefit from a read about galvanizing.

Jonathan White
G.A.N.Z Chairman

In This Issue

- Galvanized steel reinforcement for concrete
- News from Dunedin: Zealsteel dips ex-PM
- CASE STUDY: Webforge on track
- CASE STUDY: Khyber Pass
- Perry's makes Contact
- The importance of history to the future
- National Certificate: first award for hot dip
- Flour Power Towers above Stewart Plaza

Galvanized steel reinforcement for concrete

Hot dip galvanizing is a viable means of protecting reinforcement, particularly where the durability of concrete cannot be guaranteed. Its use should be considered for harsh exposure conditions, precast construction and prestige facades where long life, freedom from rust staining and low maintenance are important criteria.

Rust-stained surfaces and cracking and spalling of concrete in recently completed structures demonstrate the wide need to protect steel reinforcement. Current Practice Note 17 published by and available from the Concrete Institute of Australia concludes that “Wherever there are serious doubts that (impermeable concrete) will be achieved and maintained for the design life of the structure, then galvanizing should be given serious consideration”.



Galvanized coatings provide important advantages for the protection of reinforcement.

Research and practical experience since the 1950s have shown the corrosion resistance of galvanized steel reinforcement to be greatly superior to uncoated steel, while the bond strengths of galvanized and black steel bars to concrete are not significantly different. The corrosion protection of the galvanized coating ensures that the design strength of concrete is maintained and the possibility of surface rust staining and eventual corrosion of reinforcement and spalling of concrete is removed.

Steel accessories for use in reinforced concrete structures, particularly fittings and inserts which may be partially exposed, are susceptible to the effects of corrosion and should be galvanized. Where only parts of a reinforced concrete element require the reinforcement to be galvanized, such as the external mesh of a precast panel or the top mat of a slab, and black steel is to be used elsewhere in the element, it is vital that the steel be placed in strict compliance with the design requirements.

If galvanized bars are placed in contact with black bars in areas prone to corrosion, there is a likelihood that the galvanizing will attempt to sacrificially protect the uncoated bars, resulting in a reduction in the life of the galvanized coating. However, this effect is likely to be observed only in situations where the galvanic couple – the connection between the galvanized and the black steel – is prone to corrosion such as in areas of reduced cover to the reinforcement or poor compaction or cracking (i.e. overall poor quality) of the concrete.

To ensure that this is not a durability concern, it is recommended that where particular parts of RC elements are to utilize galvanizing, all steel in that area should be galvanized including tie wire, inserts and bar chairs. Alternatively, plastic coated ties should be used. Further, any point of connection to uncoated steel should be deeply embedded in the concrete to ensure that both the steel and the galvanized coating are maintained in their respective passive state. Under these conditions, neither the steel nor the galvanizing will be prone to corrosion.

Read more in Chapter 3 on the Free CD After Fabrication, Hot Dip Galvanizing

[TO TOP](#)

News from Dunedin: Zealsteel dips ex-PM

Fabricated from mild steel, the title of this work is 'Unfinished Business' referring to a bygone era in New Zealand contemporary culture. This particular brand of National Socialism was thankfully stopped before it took full manifestation and in retrospect appears in our history as a vision that had been arrested before a crisis transpired.

It was decided to have Robert Muldoon hot dipped galvanised to arrest the forces of the elements and to give the man a thick skin somewhat akin to that which he had in real life. Hot Dip allows Rob to live outside in Coastal Dunedin, enjoying a reflective life now, at the Ironic Café where he gets to be photographed with his own mob and even high ranking members of the other mob, namely some Labour Opposition MPs.

One thing is for certain - being hot dipped galvanised, Rob will outlive other opposition coatings and remain the quintessential Aucklander yet to be reclaimed by his own.



CASE STUDY: Webforge on track

Webforge (NZ) Ltd has been heavily involved in the recent upgrade to Wellington's ONTRACK electrical network, securing the Hot Dip Galvanizing requirements for three tenders that were spread between structural eng companies based throughout the North Island. The total weight was approx 800 Tonnes of structural beams over the three contracts. Two out of the three required a HDG 900 (125µ) coating on all beams and associated parts.

The first contract of 160 Tonnes was spread over a 3 month time frame with the last beams completed and delivered to Wellington in July. The Auckland based client (D&H Steel) looked for a supplier able to offer the option of sandblasting, HDG and the pick up of product in Auckland and delivery to site in Wellington without the hassle of having to deal with a number of suppliers. All galvanizing was completed to the high standard set by On-Track and delivered on time.

The second contract consisting of approx 430 Tonnes for MJH Eng (Wgtn) was not as straight forward, with a number of issues that needed to be worked through prior to any items being galvanized. As part of the pricing process Webforge had identified a number of issues in regard to the lack of holes and crops in the beams to allow for the free flow of pre treatment chemicals and zinc. Without them the final quality of coating would have been compromised. Webforge worked closely with MJH Eng and project head Opus Int in changing the drawings to allow for the crops and lifting points to be included, therefore ensuring a high quality coating surface



[TO TOP](#)

suitable for painting after HDG. This was crucial as the bottom 100mm of the beam and the base plate were coated with 400µ of Rust-Oleum Noxyde after galvanizing. The project is well underway with completion due mid September 09.

The third contract of approx 220 Tonnes which is currently being undertaken for Patton Eng (Hastings) is progressing well. There were also some issues with the placement of holes and crops for drainage that were not allowed for approval from the final client and inevitable issues arose when it came time to apply the Rust – Oleum Noxyde paint system. Further procedures have since been put into place to minimize zinc build-up in un-cropped areas and the project is due for completion in early Oct.

The difference in design and allowance of drainage, ventilation crops and holes across the three projects highlights the need for the Galvanizing industry as a whole to educate consulting engineers and clients on the need to allow the free flow of pre-treatment chemicals and zinc therefore ensuring a higher standard of finish.

On-Track's requirement for HDG 900 (125µ) is above the current industry standard (AS/NZS 4680 2006) that most NZ & Australian galvanizing companies work to achieve. The HDG 900 spec involves some planning and consultation between the consultant, fabricator and galvanizer at an early stage to ensure steelwork is specified and designed to guarantee a high quality, long lasting Hot Dip Galvanized coating. This involves the cropping details, steel member size, bath capabilities and the composition of the steel. Tests have indicated that 0.04% silicon is the minimum amount required to achieve AS/NZS 4680 minimum coating thickness. This is generally not an issue with hot rolled sections, but can cause problems with hollow sections or cold-formed sections when a HDG 900 coating is specified. Attention to detail in the design and consultation process will ensure a good outcome for all involved. With the AS/NZS 4680 (2006) standard specifying only 85µ for steel 6mm and over, HDG 900 (125µ) greatly improves the life span of the galvanized coating and the ability to compete against paint systems where the client is looking for long lasting corrosion protection.

Overall, Webforge has been successful in meeting the high requirements of both quality & service. Webforge was also central to negotiations between designer and fabricator ensuring the high standard of coating specification required by ONTRACK for this project to be achieved.

[TO TOP](#)

CASE STUDY: Khyber Pass

The galvanizing on the Khyber Pass section of Auckland Motorway has been in place since 2000. Over this time it has been exposed to a variety of environmental conditions, from weather and sea-spray to high levels of vehicular emissions.

As stipulated by the client, it was vitally important that the steel coating on such a busy part of the Auckland Motorway system require little or no maintenance.

Recent Protective Coating testing has shown that the galvanizing thickness exceeded the AS/NZ4680 standard (averaging 123 microns) which means that galvanizing has met the clients requirements and that on-going life cycle costs remain low and traffic flow is uninterrupted.



Perry's makes Contact

This project was T Line for Contact Energy. The length of line3 was 8-9 kms long consisting of 900 supports and slippers as well as anchors, all of which were galvanized. The pipe started at 1050NB schxs and by the time it went through flash plants and the pump station for reinjection the pipe ended up being 750sch 40.



The importance of the future

[TO TOP](#)

History and the past: most would acknowledge their importance. The importance of the past is that what has been done previously can be seen and its success easily measured. It may seem obvious to look to the past before doing things now or planning for the future and the built environment is no different. However, often lessons are not learnt from the past and we can fall into the trap of using a material unproven in real life just because it is "new". Just as in our everyday lives, we look to the newest thing, the latest thing, the "in" thing. This is not necessarily a negative prospect as it encourages innovation, but just because something is old, doesn't mean it cannot be used in innovative and exciting ways and still

provide the security that can only be achieved by long-term proved past performance. Galvanized steel is an ‘old’ material being used in ever-increasingly modern and innovative ways. Engineers, architects and specifiers are realizing that the proven performance, durability and sustainability of galvanized steel give them greater flexibility in their designs because they have the security of proven performance.

Galvanizing has been in existence for around 170 years and it has been used in Australia for almost as long. There are galvanized telegraph poles in far north Queensland that are around 130 years old and they are still in such good condition that some cheeky locals often take them down and use them for other structural applications – the ultimate in recycling. “Recycling” and “sustainability” may be new buzz words for many materials and in many industries, but in galvanizing it is par for the course. Both steel and zinc (the components of galvanized steel) are 100% recyclable. It is not a well-known fact, but zinc is one of the few materials that can be recycled indefinitely without any loss of superior performance qualities.

Approximately 30% of the zinc produced globally comes from recycling. The only reason this figure isn’t higher is because the durability of galvanized steel and other products means they remain in service for much longer than other materials and therefore have not been returned yet. Eventually, for example, some of those 80 year old electricity transmission towers scattered around Australia may come back to industry for recycling, but in the meantime, it’s comforting to know that something paid for by the community so long ago is still performing as intended with a minimum of maintenance and cost. Probably the best figure to be reminded of is that over 80% of the zinc available for recycling is recycled. The industry can only recycle what is sent back and it’s doubtful that hundreds of asset owners are going to give back their galvanized steel when it’s still performing so well, regardless of how old it is!

[TO TOP](#)

National Certificate: first award for hot dip

GANZ and EXITO, the galvanizing industry training organisation, have partnered to develop the National Certificate in Hot Dip Galvanizing and the first-ever candidate has just received his award. Motu Fialele of Christchurch is the first to gain his National Certificate in Hot Dip Galvanizing (Introductory Skills) after working in the industry at Perry’s for nine years. Motu says the qualification has given him a much needed understanding of the job and has considerably improved his appreciation of the importance of safety. “If you don’t do the job properly, you put others at risk. When you are handling hot steel other people can be injured if you don’t do things properly” says Motu. With a combination of on- and off-the-job training in skills such as crane usage, first aid and tool safety, Motu believes the certificate will give him many opportunities to progress in the industry.



Motu Fialele with the first-ever National Certificate in Hot Dip Galvanizing presented in New Zealand

Flour Power towers above Stewart Plaza

The latest sculpture to enhance Stewart Plaza in the Christchurch City Council’s revamp of the City Mall was designed by Regan Gentry of Wellington and is an impressive artistic statement.

“In Canterbury, fields of crops have given way to fields of houses. Rows of wheat have been replaced by rows of streetlights,” says Regan.

The towering elegant structure resembles a sheaf of wheat tied together with a tyre. It is the first new public sculpture to be commissioned by the Christchurch City Council’s Public Art Advisory Group. Funding for the work has been made available from the Council’s Public Art Fund and a substantial donation from Adrienne, Lady Stewart and the Estate of the late Sir Robertson Stewart.

“It was decided that we would support local business to make my concept become a reality,” said Regan. “But it became clear that I needed to find an alternative manufacturer for the columns.”

Marc Mendonça, Executive for Fletcher Construction and Trustee for Art & Industry recommended CSP Pacific’s services.

“I met with Ian Rowland, Area Sales Manager for CSP Pacific and we went from there,” added Regan. “Right from the onset the staff at CSP Pacific gave me a good sense of trust and made me feel that nothing was too difficult. Communication was excellent, with Lawrence Amos and Martha Shelford in particular, going the extra mile. I am glad I made the decision to change supplier.”

“Flour Power came in on time and budget and we were particularly happy with the way CSP responded and helped us deliver this spectacular artwork at such short notice,” said Marc.

“This has been a great all around team effort,” said Ian Rowland, “It is an amazing structure and the people of Christchurch should be very proud of it, as we are.”

The sculpture was galvanized at CSP Coating Systems’ Auckland branch.



[TO TOP](#)