



August 2014



CONCRETE CONNECTIONS

WWW.ACRASSOC.COM.AU



Concrete Connections

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On the inside

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Cover Photo – Greenscape Lighthouse by
Diagnostech

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Welcome to the August 2014 edition of Concrete Connections.



Welcome to another addition of the Concrete connections.

I'd like to take this opportunity to thank all of our board members, sub-branches from around the country and admin staff for such a great effort this year. There has been a lot of working going on behind the scenes and some fantastic efforts being put into the association resulting in outstanding growth of the ACRA profile. We recently held an ACRA run seminar for the SCA in Sydney, this course was sold out in one day and provide a platform to promote the association and its members to a huge slice of your target market in the strata sector. After this great response and such positive feedback from the Strata community, the same seminar is now in the pipeline for Queensland.

The effects of the state based sub-branches are really starting to show with a recent sold out joint seminar with ACA in Melbourne receiving rave reviews. With an influxes of request from membership from all parts of Australia and New Zealand the hardwork being put in around the country is really starting to show and have a real impact in the growth of ACRA.

We can now provide have the opportunity to further promote your organisation through sponsorship of individual seminars. I know this will be especially pleasing to a number of our product suppliers who have been asking for this marketing platform to be made available. Please follow up with Nicole for more information on this fantastic marketing opportunity info@acrassoc.com.au

Our next two courses are coming up in Victoria (3 September) and Northern Territory (25 September). These courses are open to the industry, so please feel free to promote this learning and networking opportunity to your clients and peers alike and remember, places are limited.

If there is anything in the association you'd like to know more about, or points you'd like to see raised with the board, please contact me directly on 0407 488 849.

~ Daniel Rowley, President.

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ACRA AWARDS

SAVE THE DATE OCT 16

The awards have been received and are now in the hands of the committee and judges.

Who will win on the night? And who will win the coveted award of the 2014 Repair Industry Excellence Award? Be sure to come along to the awards ceremony and networking event at La Aqua in Cockle Bay Sydney on October 16, 2014.

Invites will be sent soon so keep an eye out for this in your inbox in the meantime be sure to block out your calendar for the evening of the 16th of October.



COURSES COURSES COURSES

CONCRETE REPAIR AND PROTECTION COURSE

Melbourne and Darwin – September 2014

LIMITED TO THE FIRST 20 PEOPLE

Opportunity not to be missed in Darwin!

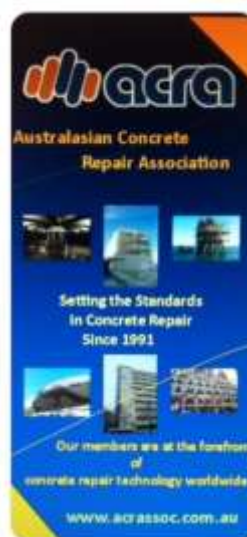
Have you booked your place for either our Melbourne or Darwin Concrete Repair and Protection course?

Both are open to a class of 20 ONLY so please get in quick.

If your off to Darwin for the ACA convention in September, while you're there visiting the ACRA stand why not stay an extra day and get the most out of your visit by taking part in the full day concrete repair and protection course in Darwin.

MELBOURE - September 3, 2014

DARWIN - September 25, 2014



Full course notes and your copy of the ACRA guide will be handed out on the day.

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The course covers the following key topics:

Concrete Properties

Causes of Concrete Deterioration

Site Investigations

Remedial and Protective Systems

Repair Specification

How to Do a Repair Properly

The course stresses the importance of thorough diagnosis, covering the basics of concrete and its deterioration, followed by site investigation techniques and how to select an appropriate remedial or protective system.

A practical understanding of how repairs should be undertaken is discussed in the last two topics of the day – “Repair Specification”, which covers materials and workmanship; and “How to Do a Repair Properly” which presents a step-by-step guide to undertaking a repair and some common problems with workmanship.

BOOK TODAY! WWW.ACRASSOC.COM.AU



CORROSION & PROTECTION OF REINFORCED CONCRETE A 2 DAY ACA/ACRA COURSE



SINGAPORE – OCT 29-30

BRISBANE – NOV 27-28

Participants will receive a solid body of knowledge on the mechanisms of corrosion associated with reinforced concrete and the best preventive and remedial methods available today, so they can offer more effective solutions to combat this costly problem in the construction industry.

For more information and to register [click here](#)

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DIAGNOSTECH

Green Cape Lighthouse



Scaffold being built encasing the Lighthouse structure.

The opportunity to restore a more than 100 year old piece of architecture was a dream come true for façade engineers, Diagnostech. Known for their meticulous attention to detail, especially for concrete repair, the company was engaged by the NSW Office of Environment and Heritage and undertook the remedial work from June to October 2012.

Managing Director, Dennis Stephenson said the initial consultation began in September 2011 when Senior Building Consultant Ewen McDougall found himself hanging from ropes, abseiling the lighthouse tower some 29 metres above the sea while Dennis commenced the ground inspection.

“We audited every centimetre of every structure on the property so that we could provide a comprehensive and accurate condition report. This was provided to the Office of Environment and Heritage,” Dennis explained.

“By undertaking a condition audit of all the assets, beyond the original tender of just the lighthouse, meant that we could write accurate specifications for the project.

“This enabled the government to have a more complete picture of the condition of all its assets on the site. The Office of Environment and Heritage was then able to determine which works were essential across the property making scheduling and resources much more efficient.”

Diagnostech project managed the work, which ranged from concrete repair to replacement of the lighthouse glazing on the tower, with contractors Structural Systems.



Lighthouse structure – evidence of deteriorated coatings, isolated spalling concrete defects and drummy render.

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This work was critical to the survival of this piece of NSW heritage and involved some challenging access and logistics providing the team with some valuable learning along the way.

“The first thing we learned was how the structure was built. Originally constructed in 1883, it was made of rings of steel encased in concrete with six foot thick walls.” “We only found this out when we inspected one of the outer buildings which is now a ruin. But it gave us the insight we needed to do the repairs,” Dennis said.



Initial Inspection showing significant corrosion and 'rust jacking' of the reinforced concrete walls

This tour of discovery added an element of interest to the project they were not expecting.

Another element they didn't expect was the rumoured ghosts in the tourist accommodation. They are now at least warm and dry after the rising damp and roof were fixed.

One tricky element was the replacement of the glazing as it exposed the valuable lantern to the elements and it simply could not be damaged. The lantern enclosure and fixings had corroded and had to be replaced and the modern catwalk around the outside also had not lasted.

“The lighthouse is an amazing piece of engineering and we feel privileged to have had the opportunity to work on it,” Dennis said.

While the old lighthouse will still take a battering from the 40 to 50 kilometre an hour winds that hit the coast at Green Cape at least it is far more secure than it was. The water damage has been repaired and the entire structure coated with a liquid membrane that should see it last for years to come.



Initial condition of the Lighthouse dome. Evidence of long term deterioration including corrosion, water penetration through the lantern glazing and weather beaten coating systems.



The restored lighthouse revealed at the completion of the refurbishment works

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Sika's new "MONOTOP" concrete repair mortars and "FERROGARD" galvanic anodes offering the most durable patch repair system available in Australia.

Reinforced concrete is a versatile and very durable construction material. However chloride and carbonation induced corrosion of the reinforcing steel can result in significant concrete spalling. Furthermore, the traditional patch repairs life may be reduced when low resistivity mortars are used and the remaining adjacent concrete has a high concentration of chlorides. Unless all this chloride contaminated concrete is removed, which is generally impractical, rapid deterioration adjacent to patch repair can occur due to the incipient anode or halo effect. In a short space of time this can lead to additional spalling repairs at considerable cost.

With the introduction of the New Monotop repair mortars, Ferrogard galvanic sacrificial anodes and Protective coating and Silane range Sika provides the most durable repair solutions available.

SIKA MONOTOP REPAIR MORTARS

Sika is a world leader in concrete repair by providing long term durable solutions for the repair and refurbishment of concrete structures for many decades. To reflect advancements in our technologies and our growing market knowledge we have further developed our range for concrete repair. Sika products also comply with the EN1504 European concrete repair code.

Sika's repair options include:

- Hand and wet spray high build mortars
- Dry spray Guniting solutions
- Form and Pour micro concrete repair
- Ferrogard corrosion inhibitors
- Sikagard Silane creme and liquid
- Sikagard Protective coatings
- Ferrogard Galvanic Anode range



SIKA FERROGARD GALVANIC ANODES

The use of sacrificial galvanic anodes, incorporated into traditional patch repairs, is proven to increase the life of the adjacent areas to the patch and reduce on-going maintenance costs and extending the life of the structure.

In 2014 Sika has launched the Sika FerroGard range of sacrificial galvanic to provide asset owners with even greater protection against reinforcement corrosion, further reducing ongoing maintenance costs and further extending the life of assets.

Sika FerroGard galvanic anodes are a cost effective addition to the range of concrete repair options, and can be used locally in patch repairs, targeted at specific high corrosion risk areas of structures, or installed over large areas for widespread corrosion protection and control.

Contact: Grant Dowling Dowling.grant@au.sika.com 0400 746 957

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Project Profile

HMAS Platypus Hybrid CP

The former submarine wharf at the historically significant HMAS Platypus site in Neutral Bay, NSW, was suffering from concrete cracking and spalling due to reinforcement corrosion, and required concrete repairs as part of a major remediation project to transform the wharf into a public waterfront location. In conjunction with concrete repairs, a Hybrid Corrosion Protection system was designed by Infracorr to protect selected areas of the deck, services duct, and headstocks from further corrosion related deterioration.

The reinforced concrete wharf was constructed around 1967, when the waterfront industrial site was commissioned as a naval base for the Royal Australian Navy's recently established submarine fleet. The wharf deck is approximately 14 metres wide, 213 metres long, and is supported by 111 pylons.



The HMAS Platypus wharf in Neutral Bay is approximately 213m long.

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A dilapidation survey prior to major remediation works identified spalling concrete caused by reinforcement corrosion on the piles, headstocks, underside of the concrete deck, and service duct walls. Infracorr Consulting was invited by specialist repair contractors Marine and Civil Maintenance P.L. to design corrosion protection to complement concrete patch repairs to the wharf and to supervise the construction works.

Almost 5000 Hybrid type internal anodes were installed to selected areas of the front and rear faces of the services duct, headstocks, and the underside of the deck, along with 30 embedded reference electrodes and junction boxes to allow monitoring of system performance from the top of the deck.



Installation of Duoguard 500 anodes to the corner of an actively corroding capping beam.

Special Points of Interest:

- Hybrid CP to protect the historically significant wharf.
- Hybrid CP areas targeted corroding zones identified by corrosion survey.
- Almost 5000 hybrid type internal anodes installed.
- Four distinct anode types to cater for structural variations.
- Works conducted in waders from partially submerged suspended deck.
- Client Marine and Civil Maintenance Pty Ltd for Sydney Harbour Federation Trust.

Contact: Infracorr Consulting P/L

1300 805 089

info@infracorr.com.au

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Project Profile Arthur Ave, Cronulla – Concrete Repairs



ACRA and SCA member Andersal Pty Ltd had recently been contacted by the new owner of an apartment after he had begun his renovations by upgrading the carpet and sprucing up the place before re-leasing. An innocuous area of some spalled concrete adjacent to a sliding door in a unit at Cronulla Beach that led out to a suspended balcony slab ended up being a serious risk to the owners Corporation with the balcony possibly collapsing without warning.

The premises were constructed as a multi-storey block of residential units. External walling was of cavity brickwork with internal walls of rendered single skin brickwork. The majority of internal areas in the units had Magnesite material that had been placed over the upper surface of the concrete flooring in the 70's to level the floors and provide sound insulation under carpet.

A small area of concrete was already spalled, with visible sections missing or which appear to be ready to break away. Cracks and rust spots were also visible on the concrete surface.

Acumen Engineers, a consultant that was called to review the damage, believed that the location and proximity to the cantilevered balcony presented a potential hazard if the corrosion was more significant than initially imagined. So the Consultant organised temporary propping of the balcony until a proper tender process could be undertaken

“In the unit, the depth of magnesite effect (chloride migration out of the magnesite and into the concrete) may have reached the top steel for the balconies. The effect of which would lead to the instability for the balcony” and as it relies on the internal steel to provide the necessary tensile forces to counteract the weight of a concrete slab that overhangs driveways below. “The top steel in the balcony does depend upon sound structural condition of the lounge room slab and it is fair and reasonable to have propped the balconies”.



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After some interaction with the Consultant, the client and the contractors, the contract was awarded to Andersal and the demolition of the magnesite revealed corrosion that extended under the sliding balcony doors. These balcony doors had in the past been replaced with new powder-coated aluminium glazing system but the installers had not created a waterproof hob or step under the door frames but had simply placed some sand and cement as well as some pieces of timber that had almost rotted away.



This resulted in rain water being able to saturate the internal concrete and drive the electro-chemical corrosion process when steel reinforcement is exposed to a damp environment with high levels of chloride; producing substantial corrosion and loss of steel thickness. The results were as anticipated by the consultant, such that a significant amount of augmentation and additional strengthening was required to repair the structure.

Although it was a delay for the unit owner, the end result was a substantial benefit for all Owners in the building, as it allowed further examination of other unit holder's balconies and minor repairs undertaken this year will be significantly less than if they had been allowed to continue unabated.

The recommendation is to undertake a thorough investigation and to expect the worse sometimes when dealing with magnesite in units.

Andersal Pty Ltd
www.andersal.com.au



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INDUSTRY CALENDAR OF EVENTS 2014

1 September	International Conference on Concrete Repair	Belfast, Northern Ireland	www.rilem.org
3 September	ACRA Concrete Repair and Protection Course	Melbourne, VIC	www.acrassoc.com.au
16 October	ACRA Award in Concrete Repair	Sydney, NSW	www.acrassoc.com.au Open to Corporate Members Only.
24-25 October	SCA Convention	Sydney, NSW	www.stratacommunity.org.au
29-30 October	ACA/ACRA Corrosion & Protection of Reinforced Concrete Course	Singapore	www.corosion.com.au under the Training Calendar tab
27-28 November	ACA/ACRA Corrosion & Protection of Concrete Structures	Brisbane, QLD	www.corosion.com.au under the Training Calendar tab

NEW CORPORATE MEMBER.....



REMCON boasts over 50 years of combined experience in the Remedial Field of our construction industry and our reputation precedes us. REMCON offers a range of specialist services to Builders, Property Owners, Owners Corporations, Water and Power Authorities, Other Contractors and Local/State/Federal Governments. We at REMCON have a comprehensive

understanding of the behavioural characteristics of concrete when exposed to different elements, levels of deterioration, structural forces and in extreme environments. Contact: 040 0840 577 Anthony Jenkins
<http://www.remconconstructions.com.au>



CE Industries Pty Ltd produces a unique range of products for the repair, protection and rehabilitation of concrete technology. Contact: 02 6280 7220 Daniel Rowley
<http://ceind.com.au>

AkzoNobel

Our Australian business focused on the manufacture and supply of products into numerous markets including Commercial and Civil Construction, Mining, Oil and Gas Downstream and Waste Water

- Ø Protective coatings for steel
- Ø Concrete repair and coatings for concrete
- Ø Fire protection for steel and concrete

Contact: 08 8359 4333 David Johnston Web: <https://www.akzonobel.com>

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NEW INDIVIDUAL MEMBER.....

Wayne Mitchell (NSW)

Marek Kazmierczak (NSW)

Robert David (WA)

Raghu Pendayala (VIC)

Stephen Waite (QLD)

Jason Nguyen (WA)

Alex Wolokon (PNG)

David Tatler (NSW)

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ARUP
BAAM Consulting
Bellmont Façade Engineering
Costin Roe Consulting
Diagnostech
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Roads & Maritime Services NSW
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Interflow Pty Ltd
Marine & Civil Maintenance
MDP Group
Metrocorp Technologies
Mulford Holdings Ltd (NZ)
National Concrete Solutions
Portolesi Structural
Preservation Technologies
RCW Group
Recom Constructions
Remedial Building Services
RM Watson
Structural Systems (Remedial)
Water Infrastructure Group

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a corporate member
of ACRA?

Call us today or click
on the link to register
online for membership
and to view all
corporate membership
entitlements.

[Click here to join](#)

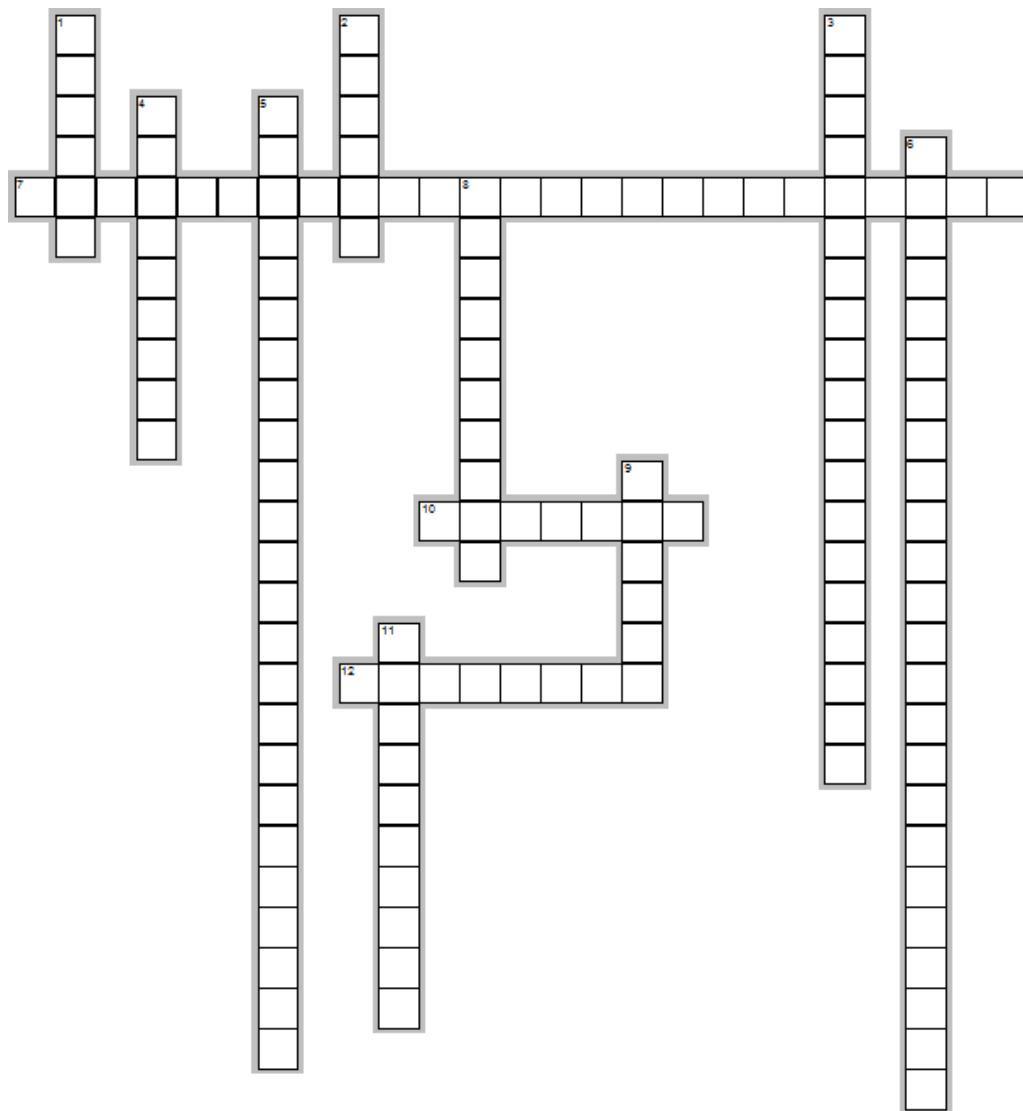
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Feel like testing your concrete repair and protection knowledge? Give this quick puzzle a go.

[CLICK HERE](#) FOR AN ONLINE INTERACTIVE VERSION



Across

7. UPV
10. The elastic ----- of concrete can be determined from at least three core samples removed from different locations in the structure.
12. Happens in all concrete

Down

1. ----- silica reaction
2. Fix
3. CP
4. ----- of steel reinforcement is by far the single most common cause of structural damage.
5. GPR
6. FRP
8. Preventative
9. An important factor governing the quality of concrete is -----
11. ----- coatings are used after repairs not only for finishing but more often to provide additional protection to the concrete adjacent to the repair.

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