Australasian Concrete Repair Association

Australasian Concrete Repair Association - Concrete Connections Autumn 2018

CONCRETE CONNECTIONS

Inside this issue

Photo from Infracorr—Strathfillan Creek Bridge, VIC.

Your Presidents message

Here we are in the beginning of a new year. 2017 was a great year, we had phenomenal turnout in our technical courses, seminars and trade shows in all the states which is a testimony to the continuous dedication, involvement and commitment of our members. The passion continues as ACRA plans to conduct similar events in all the states this year with more zest and zeal as part of our increased efforts to inform the construction industry about the innovative concrete remediation solutions.

The year 2018 is also a time for resolutions, especially for the young engineers, to keep themselves abreast of the latest concrete repair and remediation technologies. The construction world is witnessing exponential increase in the introduction of innovative construction materials. The use of modular construction elements, robotics, construction drones equipped with smart sensors and 3D construction printing has now become a part of the everyday discussions and is revolutionising the construction industry. The exponential mindset is also transforming 'Concrete' to a more innovative building material day by day. I would like to encourage and invite you to attend our scheduled courses and seminars to keep up with the speed of the exponential mindset in the construction industry. New concrete repair and asset maintenance approaches on the Association platform can also help attain your goals and to answer your technical questions.

The numbers of ACRA Corporate members have also witnessed steady growth in 2017.
We welcome the 'Programmed' and the 'State Heritage Office in Western Australia' as the most recent ACRA Corporate Members.

The 10th Biennial ACRA awards will be held at the end of 2018 in Melbourne. We invite our Corporate Members to submit entries for projects that set standard in concrete repair and remediation. Winners will be announced at the ACRA award night in October later this year. Additional details can be found on ACRA website or by contacting the ACRA executive officer.
Finally, I would like to mention that the Association highly values the suggestions of its members. Suggestions act as cornerstones for the improvement of any organisation. Please continue to send your inputs to the board info@acrassoc.com.au

Hamid Khan - ACRA President 2017-2019

ACRA OFFICERS

President, Hamid Khan
Parchem Construction Supplies
hamid.khan@parchem.com.au
Executive Officer, Nicole Raymond
Australasian Concrete Repair Association Inc.
info@acrassoc.com.au

Editorial contributions are welcomed.
Please contact the ACRA (02) 9654 3692
Email: info@acrassoc.com.au
Postal: PO Box 452, Chester Hill NSW 2162
www.acrassoc.com.au

Publisher/Editor
Nicole Raymond 042 9890 761

ACRA Awards For Excellence in Concrete Repair and Protection 2018

The ACRA Awards in Excellence is **NOW OPEN** for corporate members to enter their projects for a chance at this prestigious industry award– Entries close June 21, 2018.

Dear ACRA Corporate Member

On October 19, 2018 will see the 10th Biennial ACRA Awards For Excellence held in Melbourne, Victoria.

In past years, we have seen some of the best projects and entries from all over Australia including a few joint projects.
This year, we want to continue the tradition of showcasing our members' good work.
Following the awards, we will be running an editorial in industry publications to showcase the awards and the winners.

All entries will be acknowledged, with the winners having the opportunity to further promote themselves.

For information as well as the entry form click here or visit the ACRA website www.acrassoc.com.au

We look forward to receiving your entries!
Click the link for the **ACRA Awards Information and Entry Form**

Photo: 2016 ACRA Repair Industry Excellence Award
***ACOR Consultants**-Coal Loader Platform Adaptive Re-use Green-roof Project*

AWARDS FOR EXCELLENCE
IN
CONCRETE REPAIR & PROTECTION

MELBOURNE 19TH OCTOBER 2018

ACRA setting the standards in Concrete Repair since 1991.

A Brighter Future ...
Byron Bay, NSW

Belongil Bridge is a reinforced concrete structure, built circa 1971 with pre-stressed deck planks supported by five concrete headstocks, each supported by five columns. It carries a busy regional road across a saltwater creek near Byron Bay, NSW.

In 2017, Byron Shire Council engaged MCM to carry out repair works, designed to extend the serviceable life of the structure by 30 years. The columns were heavily contaminated with chlorides and in need of repair, and the traffic guardrail sections were heavily corroded and needed full refurbishment.

The work presented a complex set of safety and environmental challenges requiring traffic management and night shifts for the guardrail works.

Works beneath the bridge were carried out without impact to the sensitive watercourse environment, due to an array of controls including encapsulation and periodic inspections by an ecologist.

Following concrete repairs, a hybrid anode system was installed in the columns and silane applied to the concrete substructure. The hybrid system was commissioned successfully in August 2017 and is performing as expected.

The guardrails were dismantled and taken offsite to be abrasive blasted and coating with a high build, abrasion-resistant polyurethane coating, before being reinstalled on site.

The guardrail colour was not finalised at time of award of contract. In June, MCM's Project Manager, Philip Bird, offered to paint the steel in rainbow colours because, as he pointed out to Council, Byron Bay is widely known as an inclusive community and the rainbow painting of the bridge would be an excellent way to demonstrate that to residents and visitors.

Council agreed and on 2nd August 2017, Mayor Simon Richardson officially opened the new "Rainbow Bridge" with a ceremonial cutting of the rainbow tape.

"The colours on this bridge show Byron Shire Council's support for equality and inclusion," Mayor Richardson said.

"The new rainbow colours on the Belongil Bridge are a welcoming message to everyone and I congratulate Philip Bird and the team from Marine & Civil Maintenance who have been working under the bridge to upgrade the foundations."

Feedback from the community has been overwhelmingly positive, with Council's Facebook page receiving a great number of likes and shares, particularly during the subsequent marriage equality debate.

MCM Marine & Civil Maintenance

Expertise | Planning | Performance

Phone: (02) 9809 0374
Click here to email
Click here to view website

SCOPE & KEY ASPECTS:

Johnston Street Bridge was designed and built in the 1960's and is three span, a two lane bridge approximately 24m long and used by vehicles and pedestrians to cross Loders Creek, Southport, Gold Coast. An engineering report produced in 2014 identified some deterioration in terms of cracked piles at the waterline and it was decided that a more thorough inspection and assessment of the structure was required. In January 2017, NCS were awarded a contract to Inspect, Assess and Remediate the bridge.

After a thorough cleaning process, detailed inspections were undertaken including inspecting the structure below the water line through the use of de-watering oxes. Multiple concrete core samples were taken along with concrete break-outs of areas of concern. An inspection report was then prepared which outlined the condition of the bridge and also recommendations for remediation which would extend the bridge life well into the future.

Once the recommendations were accepted by the client, NCS set about the process of planning the repairs (in accordance with Main Roads Standards) which included: purchase of a purposely designed pontoon vessel for safe access, design and construction of moulds for full structural pile encasement, specialist galvanised reinforcing cage design, concrete mix design and testing, Ultra High Pressure water scabbling and procurement of specialist repair mortars and admixtures.

In August 2017, the NCS team mobilised to site and launched the pontoon vessel. By the end of September 5 full pile encasements had been successfully completed along with the other remediation work including crack injection and the application of specialist concrete protection systems. The work was successfully undertaken: without accident, with a high duty of care to the environment, with zero interruption to traffic or pedestrians and without causing nuisance to the local neighbours. The work undertaken on the bridge by the NCS team will now allow the bridge to be continued to be used for decades into the future.

Industry News

On the 13th of February 2018 Michael Di Cristo from Sika (QLD) and is also on the ACRA QLD Sub Branch Committee, and his beautiful wife welcomed their gorgeous baby girl Ivy Grace Di Cristo to their family.
Mother and baby Ivy are doing well while Michael is enjoying the sleepless nights. On behalf of ACRA we congratulate you both on the delivery of baby Ivy.

Baby Ivy Grace stats:
Born: Tuesday 13th February 2018 at 2.02pm
Weight: 3.29kg
Length: 51cm

Newest ACRA QLD Sub Branch Committee Member Rhett Watters

Rhett joined the ACRA team earlier this year & so far his impute into upcoming seminars & events has been a welcomed breath of fresh air.

Rhett is a Chartered Senior Structural Engineer & Project Manager in the Materials Technology Group at GHD & is based in Brisbane. Rhett moved to Qld from Newcastle following the completion of a double degree of Civil & Environmental Engineering, during which time he held an undergraduate position with Sydney Trains for 3 years as a civil maintenance-engineering cadet.

Rhett is committed to assisting clients in achieving low life cycle cost asset life and durable, deterioration modelling, residual life assessment, life cycle costing, detailed design, proposal of remedial engineering and construction phase surveillance. This experience is applied to a variety of structures, including reinforced concrete, masonry, timber and steel structures.

ACRA-nyms

We recently sat down with the newest edition of the ACRA VIC Sub Branch Committee Member Jackie Matich from BASF and asked her a few 'out of the box" questions so we all can get to know Jackie a little better than we already do. So far Jackie has been a great help along with the other ACRA VIC team with the organising of the 2018 ACRA Awards which will be held later this year in Melbourne. Here's what Jackie had to say…

1. Name. Jackie Matich
2. Position in company. Technical Sales Rep
3. Company name. BASF Australia Pty Ltd
4. How long have you been working for BASF. 3 years
5. What piqued your interest in the remedial industry. Working on assets that are integral to us all.
6. What has been your most exciting project you've been involved in to date. All projects are exciting in their own way
7. What's been your career accomplishment to date. Seeing growth in an industry I am passionate about.
8. We all started somewhere, what do you think your first boss would say about you now, and what was your first real job. Retail sales. My first boss is still in contact with me and he would say to always remember you win more bees with honey than vinegar.
9. What motivates you to keep doing what you're doing. The satisfaction you get when driving past an asset remediated in a project you were involved in. My family gets sick of hearing about it □
10. (now to get personal) what song best describes you. " Eye of the Tiger " (as a female in the construction industry.

11. What are you looking forward to doing when you retire, what's your retirement dream? To travel the world on the back of a motorbike experiencing different cultures and places.

Its always great to get to know ACRA Members on a more personal level and we've already started the search for our next ACRA-nyms interview….who will it be? Stay tuned for the winter edition of *Concrete Connections*.

Concrete is the most popular construction material.
The repair of concrete costs billions worldwide.
HB84-2018: Guide to Concrete Repair and Protection

ACRA's updated one-day **training course** is based on the new edition of HB84-2018 and designed for those requiring a thorough and independent understanding of the theory and practical aspects of the industry.

The ACA/ACRA two-day course is the perfect next step in your career. Designed for post-graduates and experienced professionals.

To learn more about these courses contact ACRA.

Go to

www.acrassoc.com.au

for a searchable list of Consultants, Contractors and Material Suppliers in Australasia

acra Australasian Concrete Repair Association Ltd

Setting the standards in concrete repair for 27 years!

Email: info@acrassoc.com.au

Be one of the first to gain access to the new and improved ACRA Full Day Technical Training Course.

Each course is limited to a class of 20 people only and the cost is $495 for members and $595 for non members, with a 20% discount for anyone who registers 3 or more people.

Upcoming dates are:

March 16 in Canberra ACT—5 spots left

April 12 in Perth WA– 6 spots left

May 11 in Parramatta NSW

Another VIC, SA and QLD to come. If you would like to have your name placed on the re-served list please email ACRA with your preferred state you wish to be kept up to date with info@acrassoc.com.au

Feedback from a recent attendee at the QLD course regarding one of our speakers Peter Johnsson:

"You certainly conveyed a great deal of information in a compressed time frame .

We appreciated your professionalism and the depth of knowledge in the course.
– Steve Thornton from Bells Property Services Pty Ltd

ACRA also holds inhouse course for companies who are interested OR if perhaps you feel you don't have enough people for an inhouse course you could find another company to share the course with and share the costs. Give ACRA a call today for a tailored inhouse course, the savings will surprise you. (02) 9645 4692 or email info@acrassoc.com.au

Drone Inspection

Will drones revolutionise bridge inspection?

There are now over 800,000 kilometres of roads and over 30,000 bridges in the Australian transportation network. Millions of commuters rely on the transportation network. Thus, the reliability and safety of these infrastructure elements are critical for the Australian economy.
To ensure the desired serviceability of the asset components and required level of safety maintained, it is critical that detailed information about the bridge deterioration be recorded. Further analysis of the gathered data enables the asset manager to identify the deterioration rate and pattern and therefore, allocate resources for maintenance or remediation work.

Currently, bridges are inspected through conventional methods including traditional bridge access methods such as under-bridge inspection units, mobile scaffolding, boom lifts and cherry pickers for all traffic control is a pre-requisite. Whilst this approach to bridge inspection facilitates inspection to be undertaken close to the point of interest in the structure, it requires considerable time for planning and execution and also very resource intensive as well as causing interruption to traffic flow in some instances.

Remotely Piloted Aircraft (RPSs) commonly known as drones offer substantial potential in undertaking visual inspection with high accuracy and reduced risk to bridge crew, allowing a bridge to be visually inspected without the need for inspectors to walk across the deck or utilise under-bridge inspection units. This can significantly reduce the overall inspection costs and disruption caused to the general public. In addition to this, the use of air borne Aerial Photogrammetry enables engineers and asset managers to analyse a situation through the 3D spatial model offered by RPA systems.

Our Bridge Engineering and Asset Management (BEAM) team at the Centre for Infrastructure Engineering (CIE), has collaborated with RMS to trial remotely-piloted aircraft (RPA or drones) for bridge inspections.
As part of this feasibility study, qualified pilots from our team and RMS used a high-end drone at St Albans Bridge. The effective use of drones will help manage the technical risks associated with bridge assets inspection more efficiently and safely.

Dr. Maria Rashidi from Western Sydney University and Mr. Houman Hatamian, the senior welding engineer from RMS, presented the progress of the trial at the 12th RMS's Bridge Conference which was held on December 2017

Project Head: Dr. Maria Rashidi
m.rashidi@westernsydney.edu.au
Western Sydney University are a Corporate Member of ACRA.

WESTERN SYDNEY
UNIVERSITY

infracorr

AN EFFECTIVE TREATMENT FOR AN ASR–AFFECTED RAIL BRIDGE

Strathfillan Creek Bridge, Victoria

CLIENT: V/LINE PTY LTD

Project Highlights

- Extensive Alkali Silica Reaction (ASR) cracking to un-reinforced rail bridge piers and abutments.
- Condition assessment, design/specification and supervision of works.
- Four (4) stage remediation process including carbon fibre plates and wrapping.

infracorr

STRATHFILLAN CREEK BRIDGE RECTIFICATION WORKS

Strathfillan Creek Bridge, Victoria

CLIENT: V/LINE PTY LTD

The Strathfillan Creek Rail Bridge lies on the Dunolly - St Arnaud rail line. The bridge has four spans, each approximately 9 metres in length. The three bridge piers and the two abutments, which are constructed predominantly of unreinforced concrete, were suffering from severe Alkali Silica Reaction (ASR) induced cracking. V/Line required a remediation treatment to be designed to stabilise the deterioration.

The Strathfillan Creek Bridge before the repair works.

Concrete column being prepared for crack injection.

The bridge after the completion of the repair works.

CHALLENGES

As the deterioration was being caused by the concrete itself, the main challenge was to develop a repair solution knowing that the problem could not be solved in its entirety. Knowing that deterioration would continue, the aim was to ensure that the repair solution minimised the extent of future deterioration and provided additional ongoing support. A further challenge was to ensure that the rehabilitation works were designed so as to allow the bridge to remain in service while the works were in progress.

SOLUTION

Infracorr developed a four stage remediation process to provide both added support to the bridge and waterproofing of the concrete piers and abutments.
The stages consisted of:

- Extensive crack repairs via epoxy injection;
- The installation of 'Near Surface Mounted' (NSM) Carbon Fibre Reinforced Polymer (CFRP) Plates;
- Encapsulation of the piers with a CFRP Wrap to provide added support; and
- Application of a waterproofing coating to minimise moisture penetration and thereby slow the progress of ongoing ASR.

RESULTS

V/Line requested specialist repair contractors to provide quotations for the repair works to be performed in accordance with Infracorr's design and specification. Under the watchful eye of Infracorr's onsite quality assurance and off-site support services, CPR successfully completed the project works from June to September 2015.

INFRACORR CONSULTING PTY LTD
p: 1300 805 089
e: info@infracorr.com
www.infracorr.com
20 Business Park Dve
Notting Hill, Victoria
Australia, 3168
MELBOURNE | SYDNEY | MACKAY
ABN 61 107 906 678

Warning issued over unsafe work at heights, following multiple falls

Two serious workplace falls in the last few weeks have prompted a WorkSafe warning about the dangers of working at heights.

A 19-year-old was injured when he fell from scaffolding at a Dandenong building site, while a man in his 20s was seriously injured when he fell about 6 m at a construction site in Fitzroy.

A total of 11 serious falls have been reported to WorkSafe since 1 January, including:

- a 21-year-old man who suffered a neck fracture after he fell through a suspended floor while carrying out renovation work in the Geelong suburb of Bell Post Hill;
- a 61-year-old worker who fractured his hip after slipping off a 1.5 m ladder at a multistorey development in Southbank;
- a worker in his 20s who was taken to hospital with a head laceration after falling almost 2.5 m while installing battens on the roof of an office building in Colac.

WorkSafe Head of Hazardous Industries and Industry Practice Michael Coffey said falls are a leading cause of serious injury and death on construction sites.

"Employers have a responsibility to identify the risk of falls from any height and make sure the appropriate safety control measures are in place to control the risk," Coffey said.

"WorkSafe is asking all employers, principal contractors, contractors and workers who are undertaking work at height to review and if necessary revise their Safe Work Method Statements to ensure their fall prevention controls are adequate."

Earlier this month, Ballarat construction company Myrti Pty Ltd was convicted and fined $25,000 for ignoring a WorkSafe directive to fix unsafe scaffolding.

"Our inspectors have zero tolerance for sites which do not take the risk of falls seriously," Coffey said.
"Any of the 11 incidents so far this year could have ended tragically, and what is frustrating for WorkSafe inspectors is that they see similar incidents over and over again.

"The majority of incidents occur on housing construction sites and involve falls through open stair voids, from or through roof trusses or battens, from frames, or from scaffolding and ladders.
"The control measures to reduce the risk of falls are well known and readily available, so there is no excuse for not having them in place."

Employers should control the risk of falls from height by:

- eliminating the risk by doing all or some of the work on the ground or from a solid construction;
- reducing the remaining risk by using fall prevention devices like scaffolds, perimeter screens, guardrails, elevated work platforms or safety mesh;

travel-restraint systems, industrial rope-access systems, catch platforms and fall arrest harness systems can also be used to reduce the risk of falls.

Construction work involving a risk of a fall from more than 2m is considered high-risk work and a Safe Work Method Statement (SWMS) is required.

Falling objects targeted by safety inspections

Falling objects at construction sites will be the target of WorkSafe inspections during a three-week blitz.

More than 860 construction workers have been injured by falling objects such as bricks, tiles, concrete and timber since 2010.

Almost 1000 inspections will be carried out at commercial, residential and industrial construction sites.

WorkSafe Executive Director Health and Safety Marnie Williams said ensuring loose building materials and tools were secured at building sites could make the difference between life and death.

“Each year, WorkSafe investigates serious injuries and countless near misses involving falling objects at construction sites,” she said.

“We know that even a small tool or a bolt falling from a building site can cause life-threatening injuries. That’s why every builder must assess their site throughout the day and identify materials or objects that could fall in or outside of the site boundaries.”

Materials placed close to the edge of an incomplete upper level or left unsecured pose a particularly high risk as they can be blown by the wind or knocked down, posing a threat to both workers and the general public on the street below.

“Any object, no matter how small, can be deadly if it falls from a height, so builders need to constantly assess the work being undertaken to ensure these kinds of materials are secured,” said Williams.

ASSET PROTECTION – THERMOGRAPHY AS A TOOL

As an advocate of quality, BELLS know quality facade reports result in quality repairs. Thermography is a tool that is showing rapid growth and an ability to provide end users with an **Empirical Data-Driven snapshot of their assets health**.

Quality facade inspections that deliver a greater understanding are paramount to enabling rectification specialists to select the most effective techniques, products and access methods. Equipped with the right information contractors can ensure the results are of a high quality, long lasting and cost effective; saving the client's time and budget.

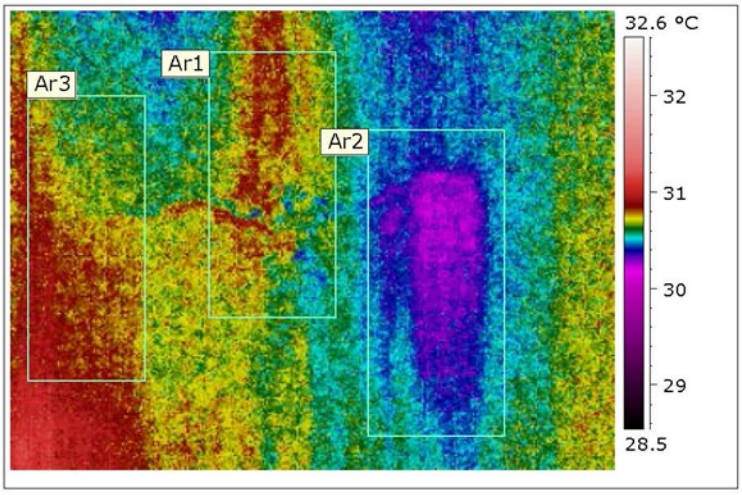
Thermographic technology and its applications has grown rapidly over the past decade, with the use of thermal imaging we can study heat distribution in structures giving a better insight into a facade's structural properties than traditional and potentially destructive hammer (tap) tests.

THERMOSCAN
FOR ASSET, FOR LIFE

BELLS
Quality. Safety. Value.

LOCATION	Poolside Southwest Face - Above Fire Stairs
ELEVATION	Level 8 Below Pool
BUILDING COMPONENT	Wall
OBSERVATION	Crack & Calcium

Date:	3/02/2017	Time:	8:37:27 AM



Results Table

Ar1 Min. Temperature	30.3 °C
Ar2 Min. Temperature	30.0 °C
Ar3 Min. Temperature	30.3 °C

Recommendations

The temperatures recorded in the Results Table are what were present at inspection time.

Maintain regular Thermoscan Inspections:

How does Thermography compare?

	Partial Hammering (tap) Inspection + Visual Inspection	Thorough Hammering (tap) Inspection	Thermographic Infrared Inspection
Compliance to BCA Facade Inspection Requirements			
Informative quality			
Recording of Results			
Cost			
Rope Access			
BMU			
Scaffold			
Safety			
Impact on Building Occupants			
Impact on Building			
Impact on weather conditions			

Barely Effective	Adequate	Most Effective
		

The Process and Advantages of Thermography

Damage detection of concrete infrastructure

The deterioration of concrete infrastructure is a growing problem worldwide; many structures are approaching the end of their service lives and need maintenance or rehabilitation in order to remain functional. In spite of recent increases in public infrastructure investments, infrastructure is deteriorating faster than it is being renewed. Various factors can contribute to the deterioration of concrete infrastructure; mechanical stress and fatigue, and chemical and environmental conditions are among the major causes concrete distress

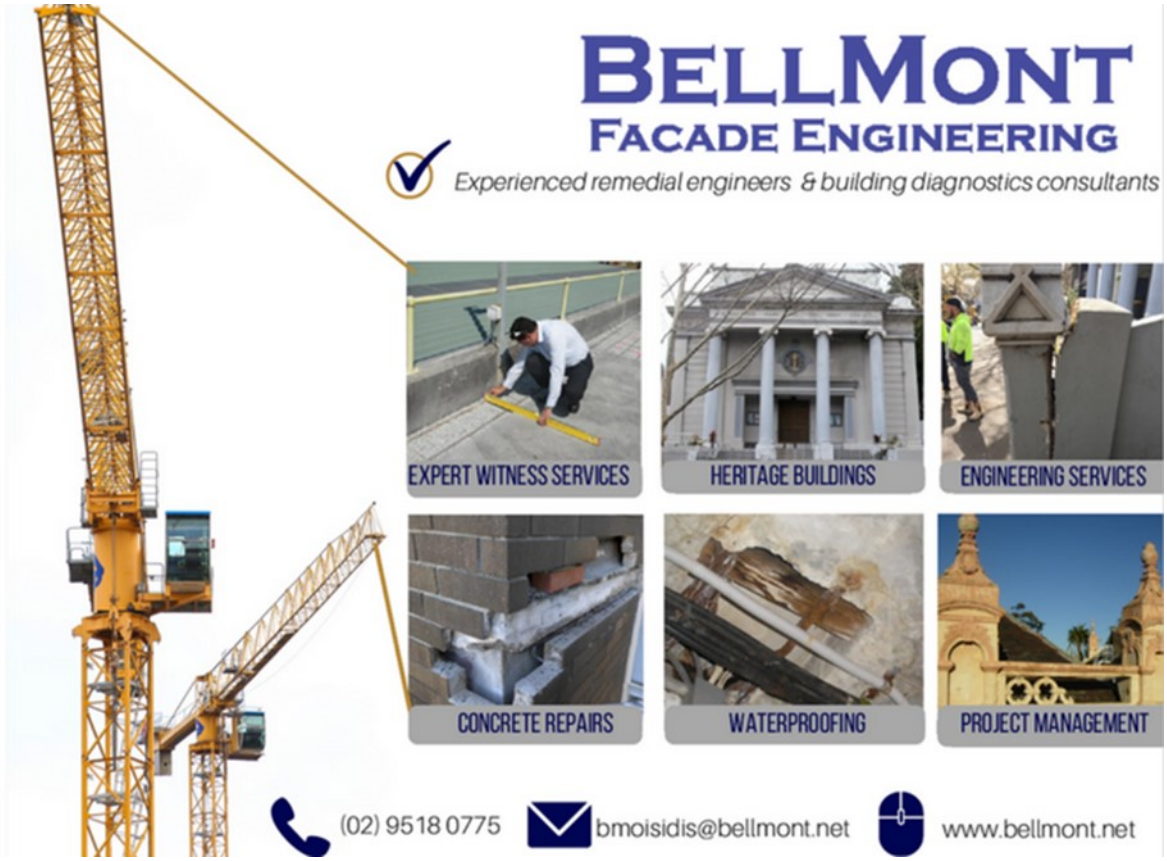
Advances in thermography imaging for sub-surface damage detection

Visual colour and greyscale imagery of concrete greatly extend natural vision capabilities in terms of colour and greyscale perception. Human vision is relatively poor at differentiating the brightness and colour features in the scene being viewed, whereas greyscale digital imagery can provide hundreds of levels of grey and colour digital imaging allows the quantitative differentiation of millions of different colours.

Looking at the table above, it is quite clear that a Thermographic inspection far exceeds the conventional visual and tap test that most inspectors will employ. The reduced impact on the buildings render, concrete, sealant and cladding as well as the buildings occupants takes a lot of strain and pressure off contractors and building owners/managers alike. Different access methods makes this technology an efficient and effective means of developing an accurate image of your structure or buildings problems.

However, to obtain a quality and informative Thermography inspection ensure your contractor uses:

- experienced personnel with experience to determine what areas of the facade should be analysed,
- well trained and certified camera operators to capture data – there are many niche facets underpinning accurate thermal data acquisition, and
- finally an operator familiar with structural materials and infrared technology to analyse and draw accurate conclusions; preferably an Engineer



Over 2 days in March Sydney will host the Build 2018 Expo on March 15-16.
The Construction Expo for Sydney. Earn CPD points for attending conference and workshops and it features over 200 exhibitors.
Registration is free. Click here.

On day 1 of the expo on March 15 at 11am ACRA will have a speaker there—Grahame Vile from BAAM Consulting.

Grahame's topic is **How to get it right the first time…..so you don't need us.**

- Concrete deterioration stages – from birth to death. This includes overview of issues in quality that are introduced during design, construction, operation and remediation of concrete assets.
- Why take "an apple a day" approach when concrete lasts forever…? Discussing the relative value of early intervention – de Sitter's Law of Fives
- Exploiting concrete and taking care of it: Compaction, Cover and Curing (take the High C's to quality).

Click here for Grahame's bio and for more info.

REPAIR IN THE AIR
QLD SEMINAR

15 March 2018

KURRAWA SURF CLUB
'BEACHSIDE' OLD BURLEIGH ROAD
BROADBEACH QLD 4218
Registration from 5.45pm Seminar starts at 6pm

Concrete remediation and protection to high rise buildings can be very challenging as defects pose a significant threat to public safety and the service life of the structure.

Successful remediation requires correct diagnosis, an adequate understanding of the extent of defects and specification and use of appropriate repair materials and methods.

Price: $55 for members
$77 for non-members
Students are free
RSVP: 8 March 2018

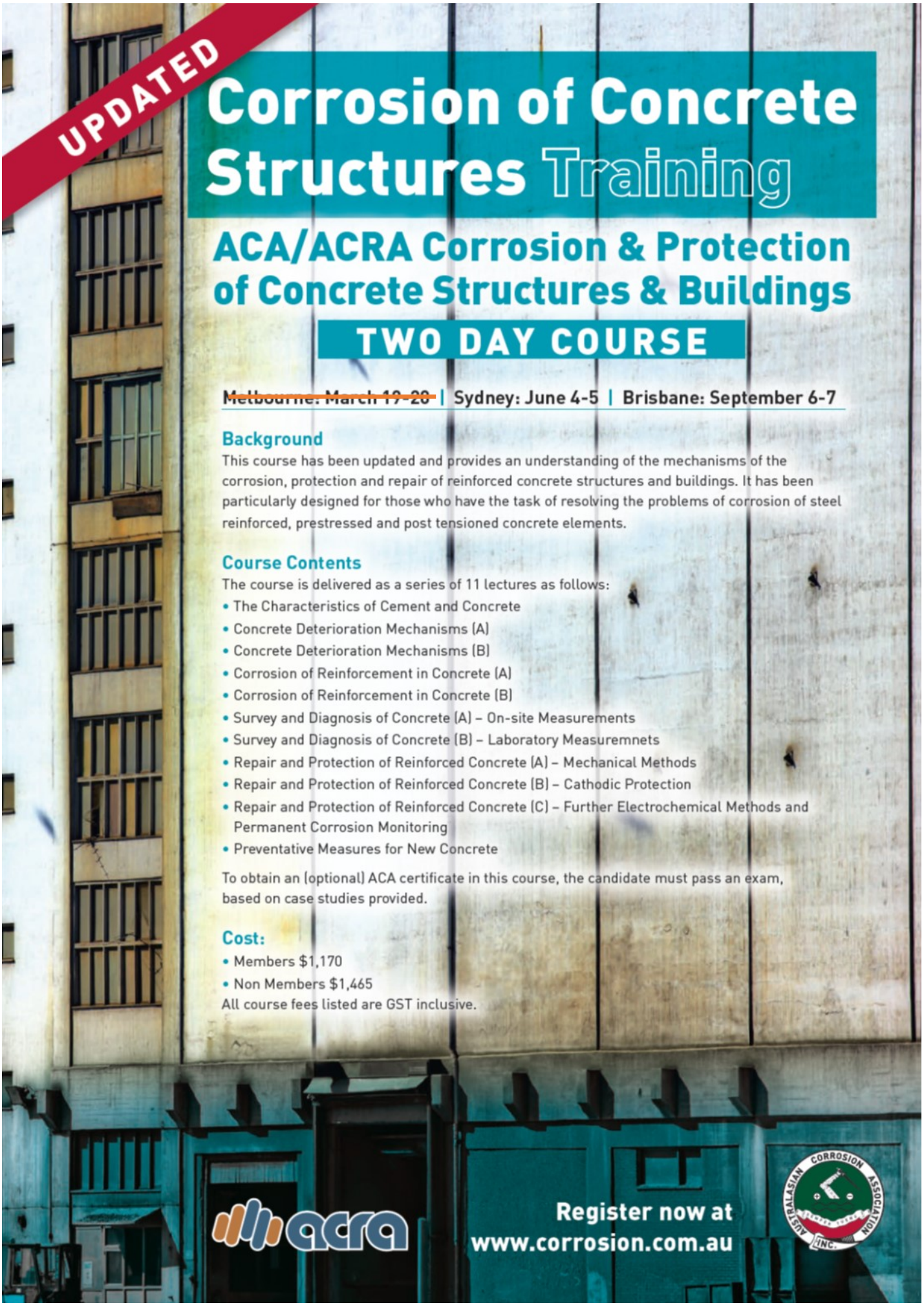
CLICK HERE FOR MORE INFO AND TO REGISTER

Your Speakers are:

Andy Caddy from Absafe

Stephen Waite from SWConsult to present on balustrade access and balcony loading

Matt Lamb-Johnson from Concrete Diagnostics to present on both on-site and off-site testing.



UPDATED

Corrosion of Concrete Structures Training

ACA/ACRA Corrosion & Protection of Concrete Structures & Buildings

TWO DAY COURSE

~~Melbourne: March 19-20~~ | Sydney: June 4-5 | Brisbane: September 6-7

Background

This course has been updated and provides an understanding of the mechanisms of the corrosion, protection and repair of reinforced concrete structures and buildings. It has been particularly designed for those who have the task of resolving the problems of corrosion of steel reinforced, prestressed and post tensioned concrete elements.

Course Contents

The course is delivered as a series of 11 lectures as follows:

- The Characteristics of Cement and Concrete
- Concrete Deterioration Mechanisms (A)
- Concrete Deterioration Mechanisms (B)
- Corrosion of Reinforcement in Concrete (A)
- Corrosion of Reinforcement in Concrete (B)
- Survey and Diagnosis of Concrete (A) – On-site Measurements
- Survey and Diagnosis of Concrete (B) – Laboratory Measuremnets
- Repair and Protection of Reinforced Concrete (A) – Mechanical Methods
- Repair and Protection of Reinforced Concrete (B) – Cathodic Protection
- Repair and Protection of Reinforced Concrete (C) – Further Electrochemical Methods and Permanent Corrosion Monitoring
- Preventative Measures for New Concrete

To obtain an (optional) ACA certificate in this course, the candidate must pass an exam, based on case studies provided.

Cost:

- Members $1,170
- Non Members $1,465

All course fees listed are GST inclusive.

acra

Register now at www.corrosion.com.au

AUSTRALASIAN CORROSION ASSOCIATION INC.

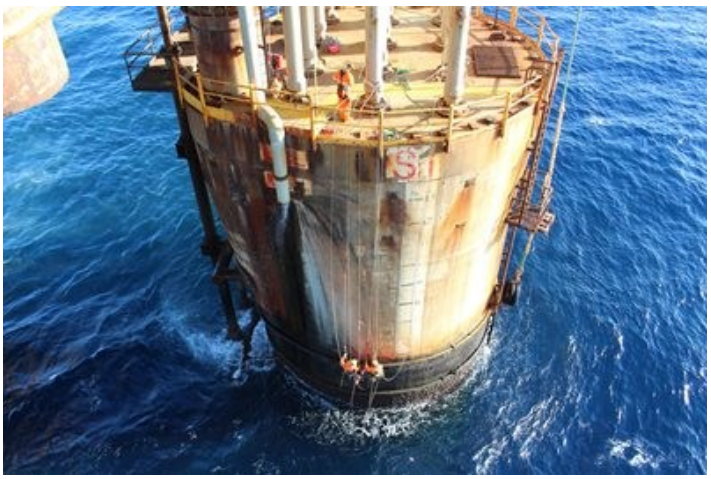
Condition Assessment & Service Life Evaluation

NSW Seminar

Wednesday 11 April 2018

This seminar is being held in conjunction with the CIA

Prices: $77 for members
$99 for non members and free for students



Presenters

Dr. Farhad Nabavi - Snr Tech Director — Xypex Australia

Kieran Smith - Buildings Remediation Manager - Freyssinet Australia

Paul Jurdeczka—Partner - Mills Oakley Lawyers

Sponsored by Fosroc

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TO REGISTER!

TIME TO MAKE ROOM FOR THE NEW HANDBOOK

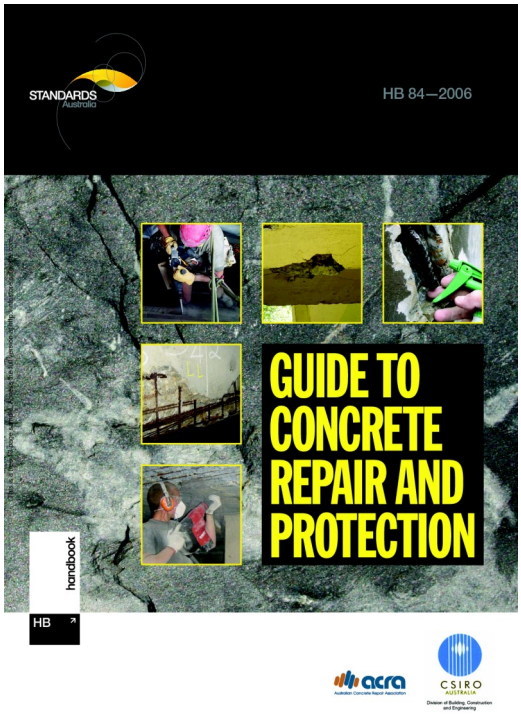
So the current ACRA Guide to

Concrete Repair and Protection is on sale until stock runs out

1/2 price $45 + postage

Order your copy via email

info@acrassoc.com.au



Building owners and managers, consultants, builders and repairers will welcome publication of Guide to Concrete Repair and Protection.

The Guide, which is published as a Standards Australia handbook, is the result of over a year's work by the Australasian Concrete Repair Association (ACRA) and the CSIRO's Division of Building, Construction and Engineering. The aim of the reference is that it "...can be read and understood by a diverse group of persons, ranging from professionals and technicians to those engaged in specifying or carrying out repairs to concrete structures, and those involved with the management of buildings and structures".

In short, the Guide is indispensable for all those who have a stake in ensuring high standards of concrete repair and protection. With over 50 illustrations, tables, graphs and diagrams, the 80-page A4 book imparts an understanding of sound practices and quality workmanship in the light of the state-of-the-art in both diagnostic equipment and remedial techniques.

The book comprises seven chapters and three appendices. Each chapter ends with a list of recommended reading for more in-depth study of the subjects covered. The Guide begins by discussing concrete as a material and the causes of its deterioration. It categorises cracks and how they form.

A chapter is devoted to inspection including advanced techniques using electrical and ultrasound technologies. Another details protective and remedial systems from simple patching to the latest advances such as cathodic protection, chloride extraction and realkalisation. Details are also given on repair practices. Case histories are included for a high-rise building, a marine structure, commercial complex, apartment building and retaining wall.

Also presented, are repair strategies for both carbonation-induced and chloride-induced steel corrosion.

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Contact Us

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PO Box 452

Chester Hill NSW 2162

Australia

+61 2 9645 3692 (wed-fri)

042 9890 761 (Nicole)

info@acrassoc.com.au

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