PROUDLY SUPPORTED BY

NATIONAL PRECAST CONCRETE ASSOCIATION AUSTRALIA

CONCRETE INSTITUTE of AUSTRALIA

AUSTRALASIAN CORROSION ASSOCIATION INC.

AUSTRALASIAN FURNISHING ASSOCIATION

australian balustrade association

PROUD MEDIA PARTNER

New South Wales IPWEA

INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA

CONSTRUCTION ENGINEERING AUSTRALIA

OCTOBER 2020

V6.04

CONSTRUCTION ENGINEERING AUSTRALIA cea Combining ACC + MEA

CONSTRUCTION
CIVIL WORKS
CIVIL ENGINEERING

PRINT POST APPROVED - 100001889


LEAP
AHEAD
BUILD A CAREER
WITHOUT LIMITS
Fast track your professional development as a member of the largest and most diverse engineering body in Australia. Benefit from opportunities and networks designed to take your career to the next level.
Duncan Knight
TMIEAust
Member since 2020
WHERE WILL MEMBERSHIP TAKE YOU?
Become a member today and unlock benefits and bonuses designed to help you build your value as you advance through your career.
engaus.org/JoinTheTeam
ENGINEERS
AUSTRALIA

contents

OCTOBER 2020
Volume 6 Number 4

Published by:
Editorial and Publishing Consultants Pty Ltd
ABN 85 007 693 138
PO Box 510, Broadford
Victoria 3658 Australia
Phone: 1300 EPC GROUP (1300 372 476)
Int'l: +61 3 5784 3438 **Fax:** +61 3 5784 2210
www.epcgroup.com

Publisher and Managing Editor
Anthony T Schmidt
Phone: 1300 EPCGROUP (1300 372 476)
Mobile: 0414 788 900
Email: ats@epcgroup.com

Business Development Manager
Lawrence Whiter
Mobile: 0418 543 821
Email: lawrencewhiter@bigpond.com

National Advertising Sales Manager
Yuri Mamistvalov
Phone: 1300 EPCGROUP (1300 372 476)
Mobile: 0419 339 865
Email: yuri@epcgroup.com

Advertising Sales - SA
Jodie Gaffney - AmAgo
Mobile: 0439 749 993
Email: jodie@amago.com.au

Advertising Sales - WA
Licia Salomone - OKeeffe Media
Mobile: 0412 080 600
Email: licia@okm.com.au

Graphic Design
Annette Epifanidis
Mobile: 0416 087 412

Registered by Australia Post
Publication No. 100001889
ISSN 2204-7247

About the Cover

City of Gold Coast has delivered the physical build of the $60.5 million international-standard HOTA Gallery - a new, uniquely Gold Coast and distinctly 21st century platform to express the city and its people.

▶ **Turn to Page 10 for the full story.**

FINDING OPPORTUNITY FROM ADVERSITY (PART 2)

Dear Readers,

For those of you who are long time readers of *Construction Engineering Australia* (CEA) – particularly those with good memories – you may find something familiar in the name of this editorial... hence the 'Part 2' addendum.

To explain, the first time I alluded to this well-worn adage was back in September 2017, when due to a significant increase in acts of urban terrorism and violence around the globe – including a number of truly horrendous incidents on our own shores - we were faced with an exponential increase in the number of heavy duty protective bollards and concrete blocks being placed throughout our cities to protect people in open spaces, pedestrianized areas and other 'vehicle-free' precincts.

In my previous editorial I suggested that a good way to deal with the underlying security and public safety issues - without transforming our urban environment and public facilities into something resembling a demilitarised zone littered with ugly concrete blocks, chain mesh fences and endless rows of bollards – may be to invest in sculptural public art pieces that might also be able to act as barriers to prevent unauthorised vehicular access to certain areas.

In short, finding some form of opportunity from a horrible adversity that was beneficial to both the general public and the arts community.

Now, while I am the first to admit that attempting to draw a direct connection between the horrors of urban terrorism and the impacts of the Covid-19 pandemic would be a long – if not slightly crass – bow to draw, it was that initial editorial that lead me to the following train of thought...

As we move to what is now being referred to as 'Covid-Normal', we, as a nation, are all faced with the gargantuan task of rebuilding our economy on literally every level.

To say that 2020 has been a particularly challenging year for Australia would be massive understatement – especially given that Victoria is only now starting to move out of some of the harshest lockdown conditions anywhere in the world (after almost 10 months) and we're still faced with border restrictions and limitations on many activities.

Be that as it may, even as a Victorian, I still consider myself extremely fortunate compared to many others, especially those in the arts sector - many of whom have been unable to work or even claim Jobkeeper payments due to the nature of their work.

With that in mind, I believe that together with our focus on massive infrastructure and construction spending – which should be lauded - we should also place an emphasis on the development of public artworks to assist recovery across the Arts Sector.

Perhaps most importantly, I'm not suggesting that we provide one or two well-known or renowned artists with couple of multi-million dollar commissions. In fact, I'm suggesting exactly the opposite.

Australia is home (and always has been home) to a vibrant and active arts community. From indigenous art, to street art, contemporary art to traditional art, students to masters, Australia has an abundance of artists. What's more, with arts funding being what it is, many of our artists never get the opportunity to develop and produce as many pieces as they'd like, or for that matter, display them publicly.

While I feel certain that every right-thinking person would have gladly foregone the experience of the Covid-19 pandemic, we must, as the saying goes, make the best of the hand that we've been dealt. As we move towards 'Covid-Normal', I believe we have a unique chance to turn this adversity into an opportunity - an opportunity to give much need boost to arts funding; an opportunity to provide new and emerging artists with a chance to develop public commissions; and an opportunity to enhance our cityscapes with an abundance of art.

Anthony T Schmidt
Managing Editor

Whether it's a TL-2 or TL-3 attenuator, your first question should always be:

IS IT MASH APPROVED?

With the Austroads Safety Barrier Assessment Panel (ASBAP) 'Transition to MASH' final transition date of 31st December 2020 looming large, there's never been a more important time for equipment purchasers to ask the critical question: **"Is it MASH Approved?"**.

When it comes to **Scorpion® TMA's**, the answer is a resounding **YES** – for BOTH TL-2 and TL-3 attenuator.

In fact, the Scorpion II® Metro MASH TL-2 TMA is not only **THE FIRST** TL-2 TMA to be fully tested and approved to the latest MASH Standards, it is currently **THE ONLY** TL-2 Truck Mounted Attenuator to be successfully **TESTED, PASSED & ELIGIBLE** to the current MASH Standards.

So, whether it's TL-2 or TL-3, when it comes to selecting a fully MASH tested, passed and eligible TMA that has also been **ASSESSED, APPROVED & RECOMMENDED FOR ACCEPTANCE** throughout Australia by ASBAP, the only name you need to remember is Scorpion® from A1 Roadlines.

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

A1 Roadlines Pty Ltd | 89 Rushdale Street, Knoxfield, Victoria 3180 | **www.a1roadlines.com.au**
P: 1300 217 623 (A1ROAD) | **E:** sales@a1roadlines.com.au

PLANNING GREENER, HEALTHIER CITIES – FROM THE DATA UP

A new study by the University of South Australia indicates important gaps in urban planning data need to be addressed to ensure key development decisions are evidence-based.

The South Australian Government is working on a new metropolitan planning strategy to make Greater Adelaide more sustainable and liveable, but a new report from the UniSA node of the *Australian Housing and Urban Research Institute* (AHURI) suggests spatial data available to urban planners does not sufficiently support concepts like active transport, such as cycling and walking, and mixed-use land and buildings.

Lead researcher, Professor Stefanie Dühr, says that while intentions to move towards a sustainable future for cities like Adelaide make sense, urban planners require comprehensive, up-to-date and compatible spatial datasets that can inform urban policies and allow planning outcomes to be measured.

"There is currently a gap between the data being collected and the data end users need, particularly for urban planners, and there are important gaps in the data available on certain topics," Prof Dühr says.

"So, for example, where traffic flows are measured, datasets are strongly focused on motorised road traffic use only. Data on other modes of transport, notably movements of pedestrians and cyclists are not collected systematically, and this presents an important blind spot on alternative forms of transport.

"If we don't know who uses public spaces such as walkways and cycle paths, and when and how they use them, we cannot plan adequately for current or future use."

Prof Dühr says public behaviour in response to the COVID-19 pandemic shows that we need robust alternatives to motorised transport, with pavements, walkways and cycle paths in Australian cities becoming overcrowded as demand for walking and cycling has increased.

"If we are serious about making walking and cycling more attractive as transport options for Australians, we need to make the right policy choices, and we need solid evidence to support our policies and be able to measure whether we have achieved our goals," Prof Dühr says.

"This means giving more attention to spatial data at different scales and on topics that have obviously not been given sufficient attention."

Prof Dühr says that, while techniques and technologies for collecting and sharing spatial data are more advanced than ever, systemic problems including the privatisation of collection processes and lack of shared industry standards are preventing optimum data use.

"Data initiatives such as high-resolution, frequently updated remote sensing and LiDAR data offer great opportunities for urban planners, but from a planning perspective, we need to ensure such datasets are accessible and can be tailored to the needs of the specific planning tasks, and that public sector planners have the skills to make use of such advances in data technologies," Prof Dühr says.

Prof Dühr and her research colleagues acknowledge that, as urban planning tasks are increasingly complex, so too is the range of data needed to inform plans and strategies, and they suggest governments need to develop clear techniques to ensure that collection, analysis and application of data can meet official urban development aspirations.

"Bridging the gap between data providers and data users, especially in relation to the requirements of urban planning, will be important if progress towards sustainable development and low-carbon cities is to be made.

"This will require some political acknowledgement of the important role that spatial planning has in achieving positive societal outcomes – something which may be difficult to achieve given the current emphasis on facilitating economic investment and consequently the scaling back of planning regulation."

ABCC TAKES ACTION AFTER COMPANY FAILS TO PAY SUBCONTRACTOR FOR WORK AT PARLIAMENT HOUSE

The ABCC has filed Federal Circuit Court proceedings against NSW company N-Cap Pty Ltd alleging it failed to comply with a compliance notice requiring it to pay a subcontractor for work at the *Australian Parliament House Security Upgrade* project in Canberra. The ABCC initiated an audit of N-Cap to assess its compliance with its security of payment obligations at the project in March 2018.

The subcontractor had made a payment claim to N-Cap under the Building and Construction Industry Security of Payment Act 2009 (ACT). The ABCC's audit alleged N-Cap had failed to comply with the *Code for the Tendering and Performance of Building Work 2016* (Building Code) when it failed to make payment to its subcontractor.

Following the audit, N-Cap was provided with the opportunity to rectify the issue, however, the company declined to do so. On 12 May 2020, the ABCC issued a compliance notice to N-Cap requiring it to pay the subcontractor.

In its statement of claim the ABCC is alleging N-Cap failed to comply with the notice in contravention of section 99(7) of the Building and Construction Industry Improving Productivity Act 2016 (BCIIP Act), resulting in the ABCC commencing legal proceedings.

The maximum penalty for a contravention of section 99(7) of the BCIIP Act is $21,000 for a body corporate and $4,200 for an individual.

The ABCC is seeking a pecuniary penalty be imposed on N-Cap and an order to compel N-Cap to pay the subcontractor in full, plus interest.

These are the first court proceedings that the ABCC has initiated relating to non-compliance with security of payments laws.

VISION FOR A MORE PEOPLE-FRIENDLY CITY A STEP CLOSER TO REALITY

George Street South pedestrian precinct
Image courtesy: City of Sydney

The NSW Government will contribute $1 million to help the City of Sydney create an additional 9,000m² of public space for pedestrians in the heart of the city.

Lord Mayor Clover Moore said the proposed works would extend and permanently convert pedestrian areas at the southern end of George Street.

"The CBD and South East light rail has changed not just how we get around the city, but how we experience the city. It has created more space for pedestrians and provided a calmer, more appealing environment for workers, visitors and residents," the Lord Mayor said.

"By creating people-friendly spaces along and around the light rail corridor, we're delivering our long-held vision of a world-class civic spine in the city centre, while also assisting with Covid-19 recovery.

"As people cautiously return to the city while seeking to maintain physical distancing, wider footpaths and more space will be critical. These new spaces will help businesses operate, attract visitors back into the city centre and ensure everyone can move around the city safely.

"The southern end of the city and Chinatown have always been lively areas, and an expanded and engaging public realm will help to stimulate the local economy. Extending public space will also encourage walking through the city, which contributes to a healthy community and neighbourhood."

The project is funded by the NSW Government's Places To Love program, which partners the Department of Planning, Industry and Environment with councils across NSW to explore ways to unlock or activate public space.

Planning and Public Spaces Minister Rob Stokes said the City of Sydney project will energise the Sydney CBD in the crucial pre-Christmas period while also showing other councils how they can activate their town centres.

"George Street will be a landmark project to show what can be done to improve our streets and public spaces with imagination and collaboration. I commend City of Sydney and Transport for NSW for accepting our challenge," Mr Stokes said.

NSW Minister for Transport and Roads, Andrew Constance, said the Government was supportive of the plans that will work towards the permanent pedestrianisation of south George Street.

"We're excited to be working with council to make this part of the city even more attractive to pedestrians. The result will mean more open space that is not only safer, but more aesthetically pleasing," Mr Constance said.

The pedestrian-friendly streetscape upgrades are expected to attract more footfall for businesses over time and provide more space for people to congregate responsibly while maintaining physical distancing. It will support local businesses such as cafés and store owners, potentially allowing them to trade out onto the public domain in the short term, while attracting investment in the long term.

The works will help generate a 24-hour city economy, making it available for cultural offerings such as busking or creative pop-ups from adjacent venues, boosting the city's identity and encouraging people to come to the city for leisure beyond work and business activities.

Under the proposal, the current pedestrianisation of George Street, between Hunter and Bathurst Streets, will be extended to the southern end of the city between Bathurst Street and Rawson Place. Further pedestrian improvements will also be made along George Street from Rawson Place to Pitt Street, Hay Street, Thomas Street and Ultimo Road in the City Centre and Devonshire Street in Surry Hills.

In July the City announced the first round of temporary road closures. The closures were supported by Planning and Public Spaces Minister Rob Stokes and helped build the case for permanent change.

The temporary closures were implemented and the installation of temporary street furniture and road surface treatments to help activate the space were completed shortly after.

The process for permanent closure of the street to most vehicles is underway and expected to be completed by the end of the year. This will allow permanent works to commence in February 2021, including widening footpaths, installing new street furniture and planting trees to extend the urban canopy in the city.

If the permanent pedestrianisation is approved, the City will work with George Street businesses to minimise impacts during construction. With George Street already closed to traffic, the City anticipates the risks posed from the scope of works will be minimal.

Ideal for Bridge Refurbishment Projects.

ASBAP Approved for use in Australia

DOLRE
LOW STRESS PARAPET SYSTEM

TOWARDS ZERO BRIDGE FATALITIES

- Fully crash tested to European Standards and simulated to US MASH TL4 requirements
- Unique design imparting low stress to bridge deck - protecting water proofing membranes and coatings on the deck
- Easy to install
- Easy to dismantle in times of flood
- Cost-effective bridge rehabilitation solution

INNOVATION TOWARDS ZERO

LB AUSTRALIA

www.lbaustralia.com.au Ph 02 9631 8833

BREAKTHROUGH DISC UNLOCKING THE FUTURE OF SMART HOMES

A revolutionary self-powered triboelectric-based disc, which can control smart devices and enhance home security, could be the death-knell for traditional electrical switches and house keys in the post-pandemic, environmentally sustainable world.

Researchers at Monash University and the National University of Singapore (NUS) have spent the better part of two years working on a solution for human-machine interfaces to control home systems and appliances in response to the rapid growth in smart home technology.

The research team has developed a solar-powered disc that has the capacity to handle eight smart home devices, such as TVs, radios and music players, using Bluetooth. Their device, activated by the swipe of a finger, can also protect home and business owners against would be thieves through a six-digit blind password authentication system. There are more than 262,000 password combinations based on this configuration.

And weighing just 47 grams, the compact size of the device enables it to be attached to walls, windows, tables and desks for wirelessly controlling applications.

It is also completely self-powered. The solar cell can harvest energy from natural and artificial light sources, such as sunlights, downlights, or table lamps. The energy is then stored in a rechargeable battery to power the electronic circuit.

"Smart home technology has been extensively developed and is capturing more attention from researchers. However, digital devices used for smart home connectivity have little or no built-in security, which makes them vulnerable to cyber-attack," Associate Professor Mehmet Yuce, lead researcher in Electrical and Computer Systems Engineering at Monash University, said.

"The COVID-19 pandemic has transformed our work and home lives forever. A user-friendly interface system to control our home systems and appliances, and to keep our homes secure, has never been more critical.

"The technology can also be useful to secure abandoned offices and work stations by enabling an extra layer of security because of this pandemic."

The key to the device's success is its 'sliding' triboelectric nanogenerator (TENG)-based control interface, which generates 3-bit binary-reflected Gray-code. This is developed by integrating copper electrodes, polytetrafluoroethylene (PTFE) film, a photovoltaic cell, and electronic signal processing circuits.

The Gray-code houses eight unique sensing patterns with each pattern used to control one individual smart device. To switch on an appliance, users move their finger across a sensing pattern in one direction. Users perform the same motion in the opposite direction to switch off the same appliance.

Assuming the device operates every 20 minutes, and each operation takes 10 seconds to perform, the average power consumption of the device is about 0.5mW – less than a standard doorbell.

The system can wake from its sleep mode by tapping on the sensor. It can also store this kinetic energy for future use.

Monash PhD researcher, Chunkai Qiu, says this TENG-based device can be an excellent replacement for traditional mechanical switches and traditional home or office security measures.

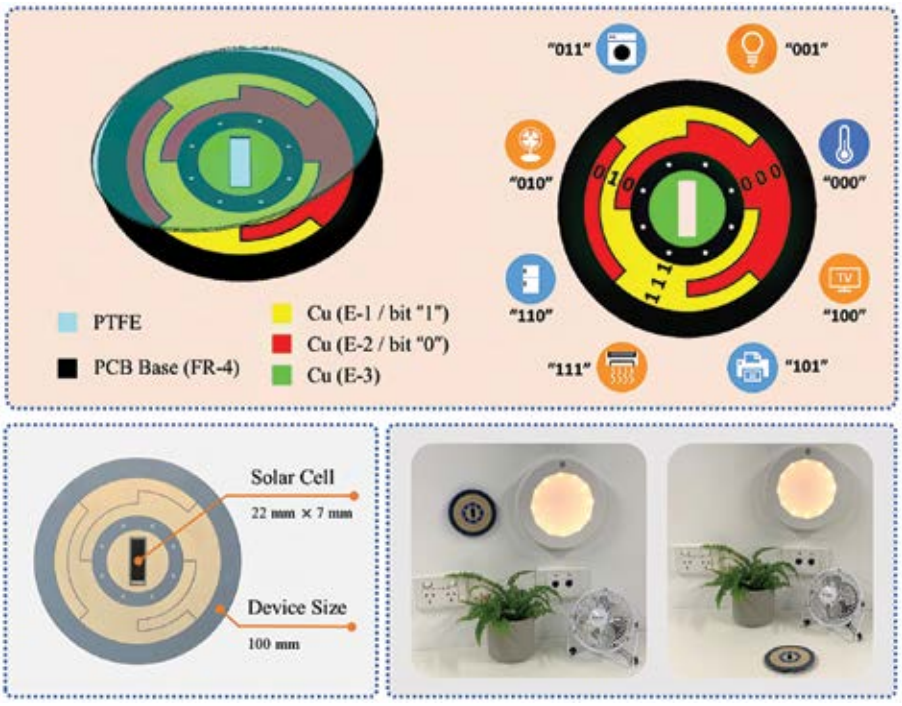
"The TENG-based control disc exhibits exceptional advantages over mechanical and current digital switches, such as being self-powered, portable, multifunctional, reliable, and high scalability and safe," Mr Qiu said.

"Compared with standard numeric keypads, the TENG device has no obvious digits on the interface. Therefore, it is difficult for another person to see the password you have entered.

"A good example is, for instance, when using ATM or shopping keypads, digits can be copied from observation or by using a camera. From our proposed sliding based disc concept, it will be very difficult to identify the codes as the 'numbers' are hidden within the disc."

Up to 50 billion internet-connected devices are expected to be in use across the world by the end of 2020, with this figure anticipated to reach 100 billion by 2030. Developing such secure devices to connect and control our daily electronics devices will enable smarter and safer living environments and processes.

The research titled: *'Self-powered control interface based on Gray code with hybrid triboelectric and photovoltaics energy harvesting for IoT smart home and access control applications'* was led by Associate Professor Mehmet Yuce, with support from Chunkai Qiu and Fan Wu (Monash University), and Chengkuo Lee (National University of Singapore).



ONLINE ASSET MANAGEMENT COURSE TO KICK OFF IN 2021

Enrolment is now open for Australia's only online, industry designed qualification course in asset management.

The *Graduate Certificate in Asset Management* is being offered from Semester 1, 2021 by the *Centre for Pavement Engineering Education* (CPEE), the Australian road industry's not-for-profit provider of accredited training.

The comprehensive course is aimed at both aspiring asset managers and those who already work in the space but want to sharpen and formalise their skills.

"Given its importance, asset management has been relatively under-resourced in terms of education and formal qualification opportunities in Australia," says CPEE CEO Ray Farrelly.

"This new course fills the gap - not just for professionals working in roads, but across a broad range of physical infrastructure assets in local and state government and the private sector.

"It delivers a formal qualification and practical, transferrable skills that are in demand right across Australia and around the world."

The core units of the new online course cover the principles of asset management and the economics of financial management.

Participants can choose two additional elective units from a suite of four, comprising road asset management, sustainable physical infrastructure, project management elements, and the principles, management and risks of contracts.

"The beauty of our online courses is that they offer the flexibility to study when and where it fits around your other commitments," Mr Farrelly says.

The *Graduate Certificate in Asset Management* has been developed with the support and input of CPEE partners' *Austroads* and the *Australian Asphalt Pavement Association* (AAPA), and is accredited by the Federal Government's *Tertiary Education Quality and Standards Agency* (TEQSA).

For more information on this and other online courses, please email: contactus@pavementeducation.edu.au or visit the CPEE website: **www.pavementeducation.edu.au**

NEW GALLERY ESTABLISHES GOLD COAST AS CULTURAL BEACON

City of Gold Coast has delivered the physical build of the $60.5 million international-standard HOTA Gallery - a new, uniquely Gold Coast and distinctly 21st century platform to express the city and its people.

As Australia's sixth largest city, the Gold Coast is well known as the city that doesn't sit still. After putting on the show of a lifetime during the Gold Coast 2018 Commonwealth Games and with more than 900 events in its annual calendar, the city is destined to become a major events capital, continuing to attract millions of visitors each year.

"The cultural evolution on the Gold Coast continues with the transformation of the city's civic heart at Evandale into HOTA, Home of the Arts," said Mayor Tom Tate.

"We recognise that the arts are a big part of everyday life for Gold Coasters, and that arts infrastructure supports the creative and cultural industry and is essential to the ongoing livelihood of the arts sector."

The vision for HOTA was the result of an international design competition launched in 2013 in which 75 design teams from every continent submitted their ideas for turning the 17-hectare site, just behind Surfers Paradise, into a cultural destination. The winning team was led by Melbourne-based, ARM Architecture, who teamed up with Berlin-based landscape architects TOPOTEK 1.

Eight years on and the City has delivered its largest piece of the puzzle – the international standard AAA-rated HOTA Gallery. The striking new gallery is a key project in the City's evolving cultural heart and follows the outdoor stage and green bridge delivered under the 2014 Gold Coast Cultural Precinct Masterplan.

Gallery features

The vertical format gallery will be one of the country's largest regional galleries and aims to be a leader in this space, offering a fresh and unexpected approach to viewing and interacting with art.

Its design cue has been taken from one of the City's most significant pieces of the collection – William Robinson's The Rainforest. The bright colour seen when viewing the painting up close is reflected in the colourful aluminium and glass façade with green, orange, yellow and blue.

"This piece of architecture is a piece of art in itself," Mayor Tate said.

"It really is quintessential Gold Coast - we stand proud, we stand loud, we stand unapologetically. It is bright and welcoming, and it makes the Sydney Opera House look boring."

The gallery spans six levels, with over 2000m² of AAA rated, international standard exhibition space which includes:

- The Main Exhibition Gallery – a 1000m² space, designed specifically for touring exhibitions of an international size and scale. It will be a column free space with soaring six-metre high ceilings.
- A dedicated children's gallery.
- 900m² of exhibition space for the City collection and temporary exhibitions.
- Nearly 1000m2 of collection storage, work-space and crate storage area.

A rooftop experience will top out the building where patrons can enjoy sweeping views of the city skyline and expansive hinterland.

A key feature applied to the masterplan is the voronoi, a naturally-occurring dynamic and generative pattern which links the precinct's buildings and landscape. A metaphoric DNA, the gallery continues this metaphor, using the voronoi to generate its geometry and create a strong link with the broader cultural precinct.

Design process

ARM Architecture's competition winning masterplan was refined with the input of stakeholders during 2014. Concept design for the new gallery began in July 2016 with a brief established by the City and HOTA.

In late 2017, Hansen Yuncken who delivered the technically challenging Museum of Old and New Art (MONA) in Hobart, was appointed managing contractor.

The City as delivery partner and asset custodian and HOTA as the operating entity worked closely with a multi-disciplinary design team and Hansen Yuncken during design development. This successful collaborative approach resulted in 50 per cent detailed design by the end of August 2018 and 100 per cent completed by the end of November 2018, enabling construction to commence on time in mid-2019.

Engineering and construction challenges

Integrated design was paramount to addressing complex issues specific to the site, such as acoustics due to the relation of the gallery with HOTA Outdoor Stage and the complexity of delivering an international gallery with AAA rating for climate control and security. The coloured three-dimensional building façade also presented complicated engineering challenges.

Creating a 'cultural beacon' was a key place-making driver, resulting in the development of façade and structural designs to create a bold and striking colourful building, featuring the voronoi in the façade, structure and pavements. It is seen in the entry, canopy and pop-out on the rooftop, and the distinct shade canopy. A slender skeletal structure of the feature stair is also part of the gallery experience.

Mayor Tate explained that optimal siting of the building was achieved to create and enhance relationships with the existing buildings, maximise budget, while also ensuring that future phases of the project can be realised and fully integrated. The elevated ground level also keeps the building out of the Q100 flood level.

"The main exhibition gallery is positioned so that no direct sunlight will enter the space during operating hours," he said.

Sustainability was also a key objective achieved through a number of initiatives including: Diversion of waste streams away from landfill, section J and Green Star assessments for a non-certified 4-star rating, glazing selection and performance requirements, sediment control basin and active transport modes through cycling, pedestrian movement and public transport.

A rooftop experience will top out the building where patrons can enjoy sweeping views of the city skyline and expansive hinterland.

ABOVE: Pop out steelwork in the shape of the voronoi pattern was the most challenging of all steel elements on this project.

HOTA OUTDOOR STAGE

Welcoming people 24/7, the eye catching Outdoor Stage was the first project to be delivered from the Gold Coast's HOTA masterplan. The highly versatile venue comprises a theatre with a back wall that folds away completely, opening out onto an amphitheatre with seating and lawn space for 5,000 people.

In amphitheatre mode, the Outdoor Stage has the technical infrastructure and event overlays to host major public events. The green roof is an adventure-based place of discovery to be climbed on, explored, sat and picnicked on.

Striking design has seen HOTA Outdoor Stage collect several industry awards including:

- 2019 Australian Institute of Architects National Award for Public Architecture
- 2019 Australian Institute of Architect FDG Stanley Award for Public Architecture
- 2019 Australian Institute of Architects Regional Building of the Year award
- 2019 Australian Institute of Architects Regional Public Architecture commendation
- 2018 Australian Institute of Landscape Architects National Landscape Architecture
- Award – Tourism
- 2018 Australian Institute of Landscape Architects QLD Award of Excellence – Tourism
- 2018 Australian Institute of Landscape Architects

Photo by John Gollings

Constructability

Some of the more specific challenging aspects that the team had to overcome during construction included:

- The requirement for a 4500mm high x 2750mm wide art piece to move freely throughout gallery both horizontally and vertically. One of the strategies put in place was to create a specific block within the project BIM model that aided in clash detection with respect to services.
- Vertical movement: A specific art lift was required (5400mm deep x 3000mm wide at either end) allowing for receiving and vertical movement of artwork throughout the gallery spaces. Such significant sized lifts required a large-scale concrete structure (core) to support the lift and provide stability to the building. The core was erected using a crane assisted 'Climb trac' formwork system which contained crane lifted elements in excess of 9 tonne, which in itself proved extremely difficult to sequence, erect and dismantle.

"We recognise that the arts are a big part of everyday life for Gold Coasters, and that arts infrastructure supports the creative and cultural industry and is essential to the ongoing livelihood of the arts sector."

- Size of the load bearing precast elements: They were typically 1500mm wide, 300mm thick and more than 11000mm high. This required significant temporary works to manage wind loads. Specific temporary works engineers were engaged to design 'deadmen footings' to support the bracing for the precast elements. In total more than 90 lineal metres of 1000mm wide x 1000mm deep reinforced concrete was poured to temporarily support these elements.
- Pop out steelwork in the shape of the voronoi pattern was the most challenging of all steel elements on this project. The steel was transported and installed on site in over 15 separate pieces where all the connections were butt welded. A difficult task to achieve due to the complex angles for the steel to be cut to and configured, and that all members are CHS (high strength, cold-formed hollow steel).

Construction

Mayor Tom Tate said major construction work commenced in mid-2019 with practical completion at the end of 2020.

"I'm looking forward to welcoming residents and visitors to this must see destination where they can engage with art and design on a local to global scale.

"HOTA is readying for the much anticipated early 2021 public opening with a program of international blockbuster exhibitions already in the planning."

While there were some risks related to COVID-19 which the City and the contractor Hansen Yuncken closely monitored and managed, the project continued on time and on budget.

By completion, the HOTA Gallery project will be a major economic stimulus for the City with training and skills opportunities for 28 apprentices and a total of 1,200 jobs.

For more information about the HOTA project, visit: **www.cityofgoldcoast.com.au/hotaproject**

HOTA GREEN BRIDGE

The 2019/2020 financial year marked a significant boost in the city's active travel network, with the highly anticipated $19.5 million green bridge connecting HOTA to Chevron Island officially open to the community.

During the 89,000 construction hours to complete the bridge, 340 jobs were created with 50 per cent taken up by Gold Coasters. The team lifted almost 500 tonnes of steel reinforcement and poured 1,382 cubic metres of concrete.

Design of the infrastructure is a unique example of collaboration between specialist bridge engineering, architecture, landscape architecture and a contracting partnership that resulted in a successful integrated outcome.

The HOTA Green Bridge, a benchmark for future green bridges around the city, is a vital active travel link making our evolving cultural precinct so much more accessible.

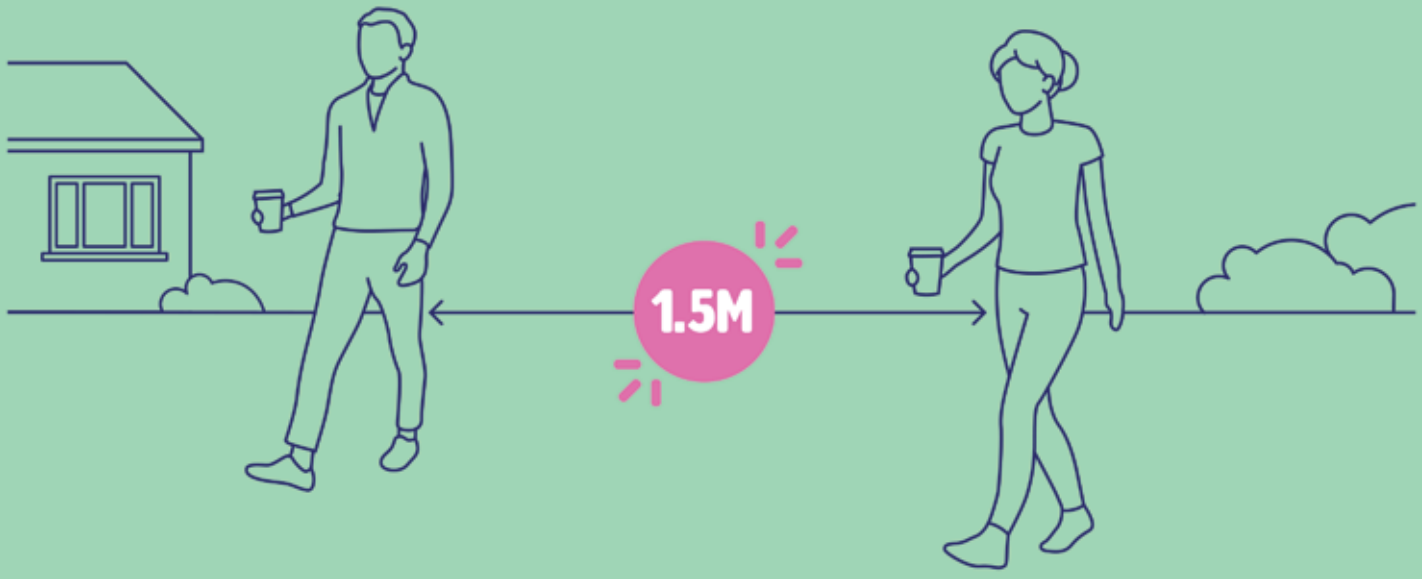
BELOW: The HOTA Green Bridge delivers an ideal blend of functionality and aesthetics.

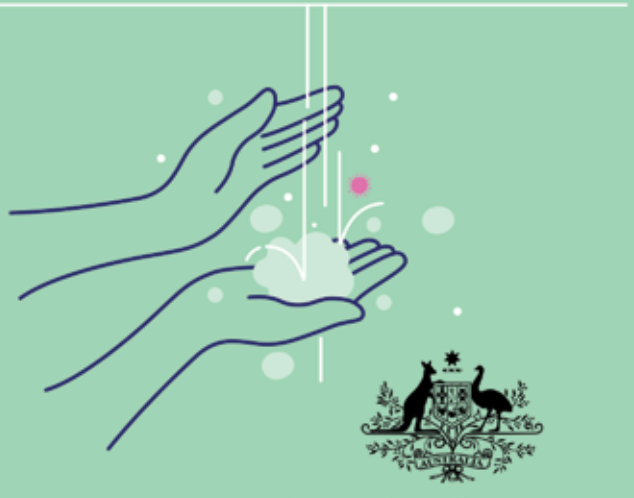
RIGHT: Topping out of the new HOTA Gallery building was marked with Topping Out Ceremony where City of Gold Coast Mayor Tom Tate and Deputy Mayor Cr Donna Gates left their handprints in a special ceremonial block on the roof of the building.

Keep physical distancing and **BE** COVID**SAFE**

Physical distancing is working to help keep us all COVIDSafe. Remember, whenever you go out, stay 1.5 metres apart and avoid physical greetings. Follow guidelines in shops and businesses and always practise good hygiene. This will help stop the spread of coronavirus.

Together, let's **BE** COVID**SAFE.**
Visit **health.gov.au** for more information.





Australian Government

How the Digital Twin is reimaging the construction industry

By Damien McDade, Head of Pacific AVEVA

Digital Twin Technology is increasingly being deployed by organisations in the construction industry as part of their digital transformation journey. In this article, Andrew McCloskey from AVEVA discusses the benefits that this technology can bring in terms of delivering organisational cost savings and operational efficiencies.

Worldwide, construction is already one of the largest industry sectors. According to PwC's, *Global Construction 2030* forecast, the volume of construction output will grow by 85% to $15.5 trillion worldwide by 2030, with three countries, China, US and India, leading the way and accounting for 57% of all global growth[i]. However, the sector is still dealing with four on-going challenges:

(1) poor productivity and profitability;
(2) project performance – primarily timing and budget issues;
(3) skilled labor shortages; and
(4) sustainability concerns.

An answer? Digital Twin technology.

Digital Twins provide the ability to create a virtual replica of potential and actual physical assets, processes, people, places, systems and devices that can be used for various purposes.

Companies use Digital Twins for many reasons including testing new assets or procedures before launching them in the real world where it becomes more expensive and complicated to fix any issues, the improvement of ongoing operations or training employees.

In practical terms, this type of technology can help improve the safety on an oil rig, improve the efficiency of a production plant, or ensuring buildings meet sustainability, efficiency or regulatory requirements. Additionally, and perhaps more importantly, a Digital Twin can help predict potential failures before they happen and suggest ways to prevent those failures.

UNTAPPED OPPORTUNITIES AND GAINS

The concept of Digital Twins is becoming relevant to an increasing number of industries and possible use cases. This is a result of the growth of digital transformation. Consequently, buildings and cities are becoming smarter – all fuelled by data and application of that data.

Gartner estimates that by 2021 there will be over 25 billion Internet of Things (IoT) endpoints and Digital Twins will exist for potentially billions of scenarios[ii]. Benefits will include asset optimisation, competitive differentiation and improved user experience.

Digital Twinning is fast becoming essential to IoT deployment as many more IoT platform providers and analytics companies are investing in Digital Twin technology. These cover functions from initial ideas, through to design, development and construction.

Construction design and developers are often forced to limit their creativity because if a new building design or concept is created, it must be approved to match the necessary safety requirements. Timescales may also prohibit developers from being too experimental with ideas. However, developers can test out their ideas rapidly through digital simulation that involves all the necessary real-world factors such as scale, gravity and weather for example, the total timeframe during which they could share their ideas and get them approved would be cut 100x.

Furthermore, the safety, practicality, and sustainability of the new building designs can now be tested in a simulation and the feedback will be just as accurate as it would be if the test was executed in real life because the simulation directly derives data from the world. There are gains to be made, for example, energy represents approximately 19% of the total expenditures for a typical building, so proactive, data-driven energy management can make a big impact on the bottom line and the environment – a digital twin helps makes this possible.

AUGMENTED OPERATIONS AND MAINTENANCE

When assets are deployed or construction is commissioned, a Digital Twin can be continually updated with ongoing operational and process data such as maintenance and performance records, and) Industrial Internet of Things (IIoT) sensor information. During the operational stages, variations from optimal process and asset design are captured during run-time, and the Digital Twin is automatically updated with this information.

Knowing the current state of an asset, the digital model can use predictive learning technology to proactively identify potential asset failures before they occur and even suggest ways to prevent those failures. In other words, the Digital Twin can predict when its physical counterpart will break, well before that happens.

The Digital Twin can also utilise artificial intelligence with advanced process control, control strategy design and process optimisation. These tools incorporate necessary variations from process and asset design into the engineering asset or plant data, enabling a complete and efficient digital value loop and unified life-cycle management. As organisations scale-up to a Digital Twin of the enterprise operating model, inefficiencies and opportunities in their ongoing operations can be identified and executed upon in real-time.

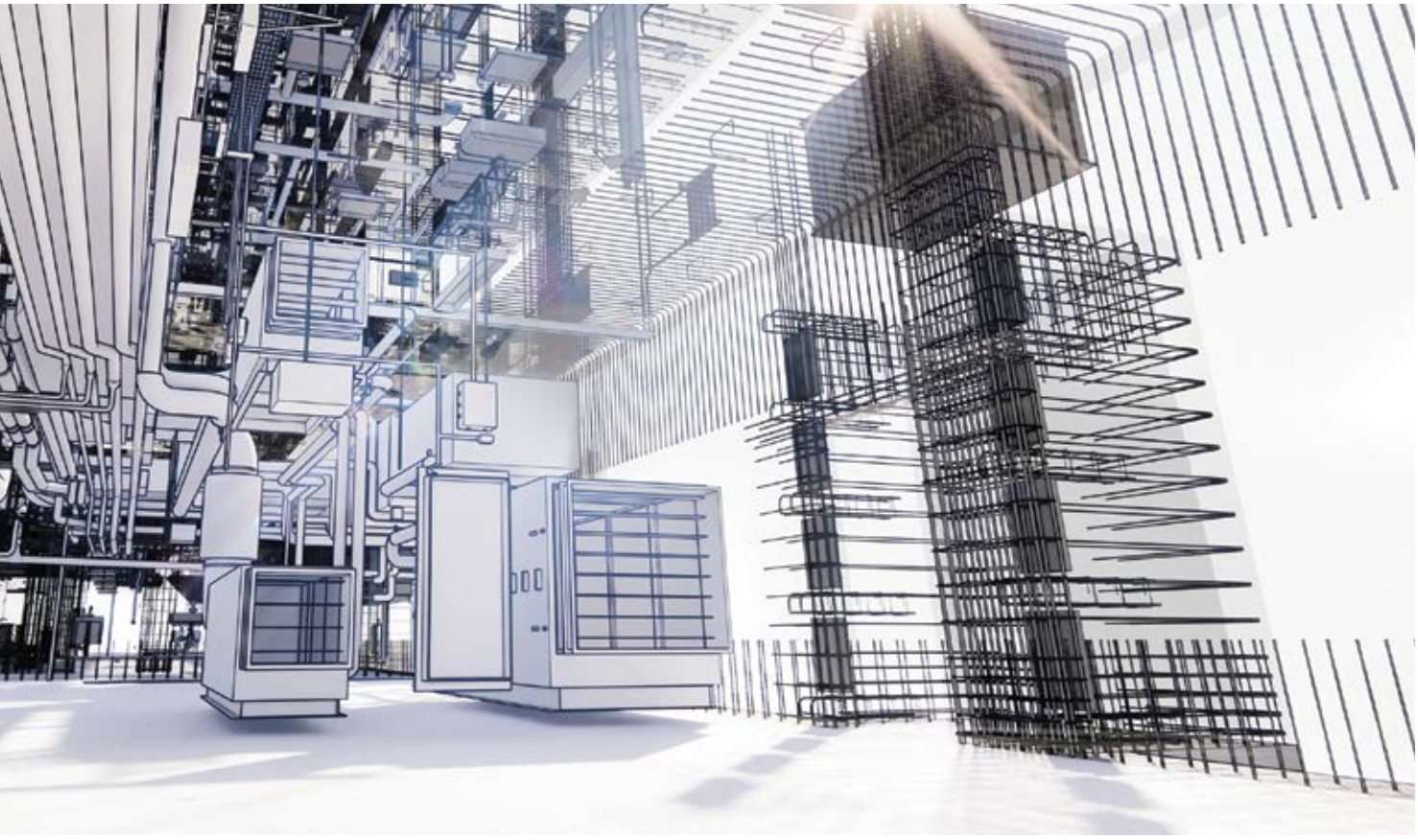
DEVELOPING AN EFFECTIVE DIGITAL TWIN STRATEGY

Digital Transformation merges the latest innovative tools and processes with organisational in-house domain expertise. This enables not only the contextualisation of new and existing data but also delivers actionable insights and information. Enterprises can then execute upon these new insights and close the loop towards continuous process improvement. For this to occur, every Digital Transformation journey needs to begin with the critical understanding that information and data have become a priceless and strategic asset to the enterprise.

To establish an effective Digital Twin strategy, each asset requires a different set of asset data services, together with engineering master data, effective visualisation tools, plus collaboration and workflow procedures:

1. Create a Digital Twin model that uses accurate data feeds to help understand product or operations performance and

"Knowing the current state of an asset, the digital model can use predictive learning technology to proactively identify potential asset failures before they occur and even suggest ways to prevent those failures."



adjust critical control points to deliver short- and long-term value.
2. Identify where Digital Twin simulations and predictive maintenance can deliver the best value, for example, improvements in operations or processes, reduction in costs or risks.
3. Build a Digital Twin architectural roadmap that enables program and project planning for digital transformation.
4. Data insight is king. Use a Digital Twin for deployments or projects as this will expose how the organisation or project connects with its current state and how it is likely to respond to internal or external changes.

A Digital Twin incorporates data from these diverse data points, and creates a myriad of potential benefits, including the ability to test changes to processes before they are implemented, making better and accurate decisions based on data. Construction companies that succeed in realising the potential savings from effective intelligent master data management will reap the transformative benefits of Digital Twin technology and have a lot to gain through unlocking the boundaries of creativity without the burden of risk.

ABOUT THE AUTHOR

Damien McDade is the VP Pacific for AVEVA, where he focuses on strategic direction, revenue management and market development of the entire portfolio across the Pacific region. His career spans more than 20 years in technical and commercial roles, having held various leadership positions in Schneider Electric which merged with AVEVA in 2018.

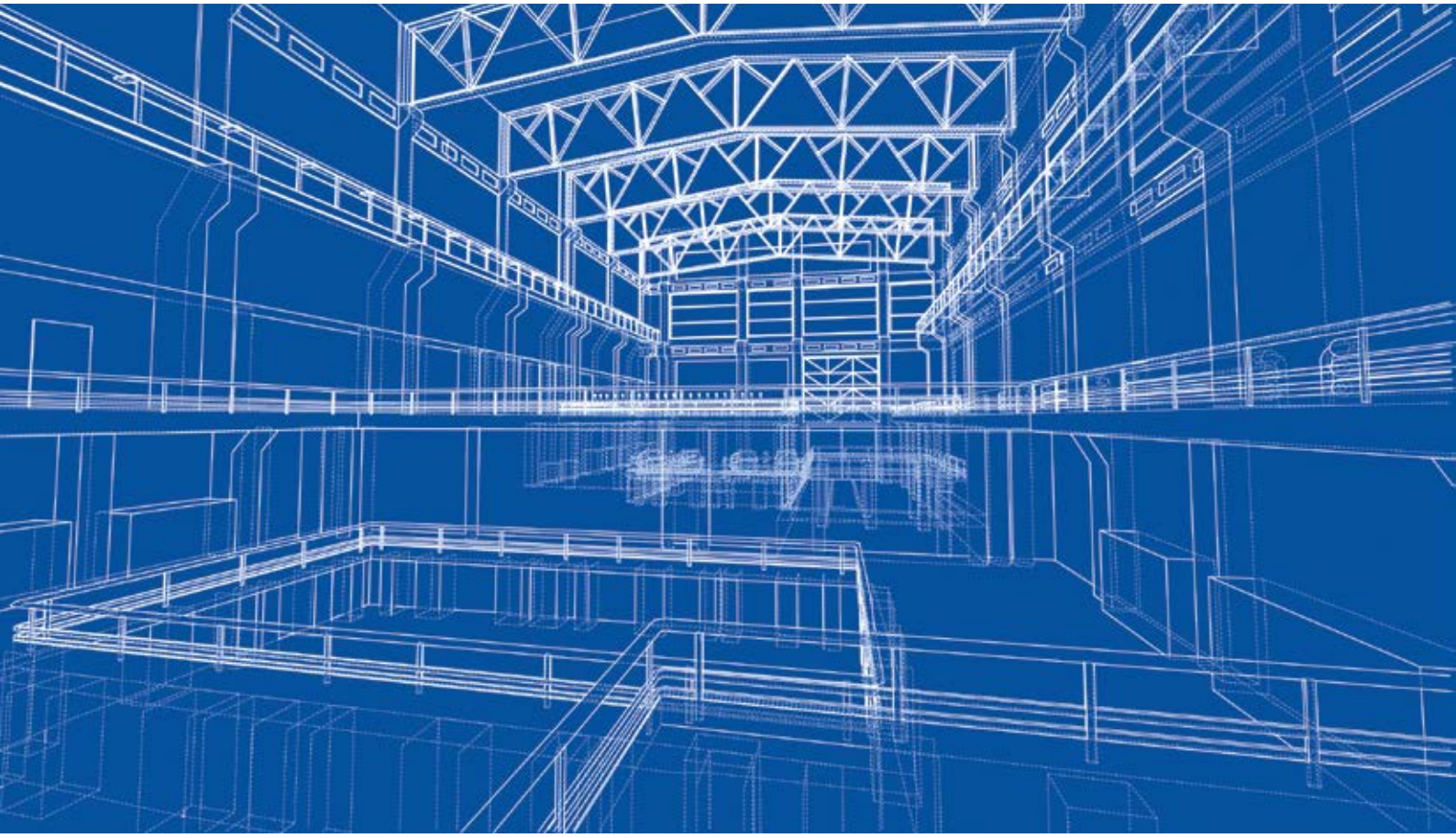
AVEVA Group plc provides innovative industrial software to transform complex industries such as Mining, Oil & Gas, Construction, Engineering, Marine, and Utilities. AVEVA's software solutions and platform enable the design and management of complex industrial assets like power plants, chemical plants, water treatment facilities and food and beverage manufacturers – deploying IIoT, Big Data and Artificial Intelligence to digitally transform industries.

For further information, please visit: **www.AVEVA.com**

ABOUT AVEVA

Listed on the London stock exchange, AVEVA services more than 16,000 companies worldwide with over 4,400 employees across 40+ countries. Mining giants BHP, Rio Tinto and Glencore form part of its expansive client portfolio in the APAC region. AVEVA delivers end-to-end value chain optimisation software, helping organisations redefine processes to enable deeper collaboration, reduce value leaks, sustain productivity and innovation, and ultimately make better and more robust decisions quicker across the operations lifestyle.

i PwC - *Global Construction 2030 forecast*
ii Gartner - Gartner Identifies Top 10 Strategic IoT Technologies and Trends

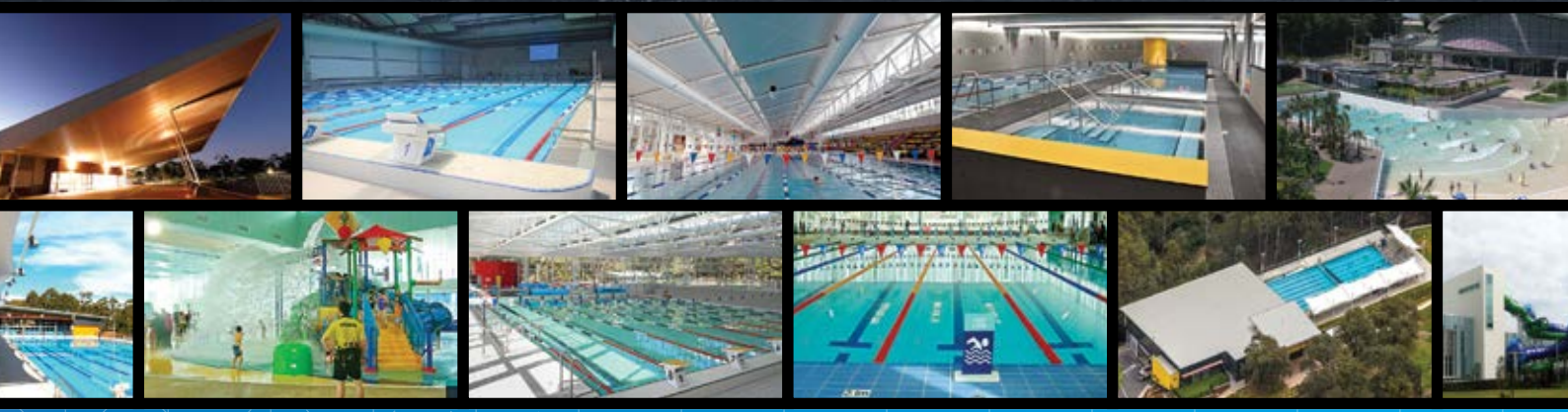


IS YOUR AQUATIC ENGINEER TRULY INDEPENDENT?

There's no such thing as a 'one size fits all' solution for commercial pools and aquatic centres. From pool design, construction, heating, filtration, HVAC and any other number of factors, EVERY pool and aquatic centre design needs to take into account not only the clients specific needs, but also the very specific engineering requirements of the site.

Making sure you get the right planning, design and engineering advice from a fully independent, professional aquatic engineer – free from any conflict of interest - is paramount. It's the ONLY way to be sure that you're getting **ALL THE FACTS** and **ALL THE AVAILABLE OPTIONS** to meet your needs.

When it comes to choosing and Aquatic Engineer – choose wisely... it may end up being one of the most important choices you make.



GEOFF NINNES FONG & PARTNERS

Geoff Ninnes Fong and Partners

SYDNEY
68-70 Crown Street, Woolloomooloo NSW 2011
T: (02) 9332 5100 E: sydney@gnfp.com.au
Contact: Brad Fong or Gordon Smith

PERTH
L2 Cedar House, 1321 Hay Street, West Perth WA 6005
T: 0418 678 993 E: perth@gnfp.com.au
Contact: Geoff Ninnes

STRUCTURAL & AQUATIC ENGINEERING

WWW.GNFP.COM.AU

So too, the Engineer can use the vast capacity of Finite Element analysis to validate, optimize and adapt data to create the finest design solutions.


Just as the Conductor uses all the instruments
at his disposal to create the finest music...
if3
GDTECH
engineering
www.if3.com.au

An eye in the sky keeps projects progressing during pandemic

by Austen Pepper, Global Digital Technology Manager Spatial, Cardno

With the construction industry scrambling to adjust in the wake of COVID-19 lockdowns and the introduction of social distancing requirements, we needed a big picture solution to keep our projects progressing. As a global infrastructure, environmental, and social development company which operates in more than 100 countries, our teams have embraced technology tools like aerial imagery and derived products such as elevation surfaces to keep our projects moving and while ensuring staff remain safe.

This technology enabled us to carry out tasks remotely, reduced the number of staff required on site, and ensured business continuity at a time of great uncertainty across the globe. For us, digitisation has been the key to future-proofing our business to be readily adaptable in unstable times.

TECHNOLOGY WINNING NEW FANS DURING COVID

Until recently, the traditional method of physically travelling to a site remained a popular option for on-site inspections, despite the availability of a range of virtual methods. However, those who were once hesitant to embrace high-resolution aerial maps integrated with GIS software have well and truly seen the value during COVID-19. We are now seeing a greater uptake of these tools across the industry with an aim to increase safety and reduce site visits.

Even at Cardno, where our team already widely use Nearmap technology from the initial concept, through the design phase and into the construction process, there were some who hadn't fully integrated the technology into their workflows or seen the full value of its potential – until now. Those who were already using mapping software are now looking more closely at all the tools available within Nearmap, such as 3D and oblique views, which are revolutionising the way we work. For instance, the oblique tool allows us to better understand obstacle heights, such as the heights of cranes near airports to ensure they don't breach the airspace for incoming and outgoing planes. When we're able to make these assessments at the early stages of the project, it reduces to need for changes, which would cost time and money later on.

EYES IN THE SKY – THE KEY TO REMOTE WORKING

For our teams, understanding the context of projects, that is, what surrounds the site, is crucial. Understanding where the site is located and any issues that can be identified from the imagery – some of which may not have been spotted from the ground – means that the teams haven't needed to stop working during COVID-19. Aerial mapping software tells us in seconds whether the site is neighboured by a school or public transport lines, and the instant access to an archive of images is imperative when detecting changes at a site over time. The temporal coverage allows our urban development and contaminated land teams and project managers to better understand the change in the area and also communicate that back to our clients.

Our design, engineering, and planning teams also rely on Nearmap for frequently-updated aerial image and elevation datasets to understand site context when they haven't been able to do physical visits. Elevation models and the ability to plot elevation profiles of the land allows our civil teams to conceptually quantify site slopes and design drainage systems prior to stepping foot on site. We're able to continue assessing the safety of transport infrastructure such as footpaths, road furniture and bike lanes for projects in any location that is represented with Nearmap imagery.

GIVING CLIENTS TOURS WHEN THEY CAN'T GO TO SITE

Providing clear communication with clients at each stage of the project is crucial – but bringing clients to site became difficult with lockdown and social distancing restrictions. The ability to provide high-resolution images of the site to clients with relevant data, terrain or surface elements highlighted and integrated with additional design software has provided useful insights about site context and project updates. This has enabled us to keep stakeholders well-informed and happy throughout each stage of a project.

As the lockdowns took place in Australia, we continued with a transport infrastructure development project in Sydney, with a client that was keen to see what was happening on the ground. High resolution aerial imagery, which we integrated with site photos and an additional 3D mesh layer, allowed us to give our clients a detailed and immersive view of the project and how it would operate, which they found very impressive.

"Our industry is fundamentally trained to understand the flat-lay of projects, but aerial maps and 3D meshes are more informative and engaging..."

Our industry is fundamentally trained to understand the flat-lay of projects, but aerial maps and 3D meshes are more informative and engaging, by providing an in-depth analysis of different landscapes, terrains and elevations.

BUSINESSES FOCUSSED ON FUTURE-PROOFING

This period has presented quite a test in resilience for many construction and engineering companies, and the focus for many has switched from the initial survival mode to a longer-term future proofing strategy. By adopting aerial imagery and derived products, we have reduced our reliance on having staff on site, maintained client communication, ensured employee safety, and reduced our overheads. Even prior to the COVID-19 lockdown, we were sharpening our digital skills as site visits became difficult when Australia faced flooding and its worst recorded bushfire season.

While we can't predict the future, we do know that up-to-date information and the right tools and systems is absolutely critical to keep a business thriving in a rapidly-changing environment. Construction can keep moving forward as long as planes keep flying and continue to provide current, high-resolution images that keep clients and companies informed.

The new Fuji SMBE Macquarie Switchboards (left) were modular in construction to fit into the curvature and tight confines of the room at the MLC Centre (right).

Powerful new energy technology fits old spaces to futureproof MLC centre

Sydney's 67-storey MLC tower has upgraded a series of switchboards, to ensure continued reliable supply as tenant power requirements continue to change and accelerate.

Lead electrical contractor on the MLC upgrade project, Barnwell Cambridge, chose Australian-manufactured Fuji SMBE Macquarie switchboards due to their reliability and modular construction.

"We were contracted to replace the main switchboards, generator switchboards and PLC switchboards, and they needed to suit the tight confines and unusual shape of the room," explained Mr Peter Silsby, Director, Fuji SMBE Macquarie.

"The existing switchboards had been operating reliably for years, but as more and more tenants moved in, and electronic needs continued to change and advance, MLC was forward-thinking enough to look at the future and make sure reliable supply, as well as back-up power, was always available," said Mr Silsby.

"New switchboard technology has the ability to monitor every circuit via a high level modbus interface utilising the latest Schneider Micrologic 5.3E circuit-breakers, which provides benefits to building and facility managers, as well as tenants," he said.

"There were installation challenges, with components having to go through a load-limited goods lift, and the switchboards reassembled inside the switch room. It took a lot of cooperation between stakeholders for it all to come together successfully."

COMPACT, MODULAR SWITCHBOARDS

Fuji SMBE Macquarie specified its iNTELECT™G3 switchboard systems, because they are compact and modular, allowing them to be reassembled on site.

The iNTELECT™G3 system is the 3rd generation of the company's iNTELECT system, and it has been engineered in Australia for Australian conditions. Major advantages over previous technologies include adaptability, versatility, safety, strength, and compact size.

"MLC's Switchboard components were unloaded in the loading dock and Barnwell Cambridge used specialised hydraulic furniture movers that fix to each side of the switchboard tier. This meant that they could be moved safely and efficiently to the appropriate rooms on levels 4, 26 and 54, ready for reassembly," said Mr Silsby.

To safely and efficiently remove all the old switchboards and install the new ones with minimal disruption to the building's tenants and visitors, a staged approach was adopted.

Firstly, the old switchboards were disassembled and removed in sections. The new units were then loaded into the appropriate rooms where they were reassembled on site by Fuji SMBE Macquarie's qualified technicians.

"We'd like to acknowledge the vital assistance of the team at ER&D Consulting Engineers, who provided a comprehensive specification detailing the existing installation and exactly what was required in the new switchboards," said Mr Silsby.

"Another key supplier was Schneider Electric, who supplied reliable, proven circuit-breakers for the switchboards. The collaboration between all companies involved in this project was world class," he said.

PROJECT SUCCESS LEADS TO FURTHER WORK

The MLC switchboard upgrade project was successfully completed on-time and on-budget, with all stakeholders working seamlessly together to deliver the best outcomes.

The project was such a success that MLC has decided to use Fuji SMBE Macquarie switchboards on two further ongoing upgrades – their high voltage and retail centre upgrades.

"To be rewarded with further work straight away is a testament to the hard work of our entire team, and the other stakeholders in this upgrade project. We're delighted that MLC was happy with the job, as well as confident that we could deliver further favourable results in the future," said Mr Silsby.

For further information, please visit: **http://smbemacquarie.fujielectric.com**

Compact new speed gate stylishly protects valuable small spaces

Global security entrance and architectural revolving door leader Boon Edam has introduced a compact new speed gate to provide valuable facilities with extra security in smaller interior spaces.

Building and facility managers are increasingly aware of their Duty of Care towards employees and visitors, to protect them from harm from unauthorised personnel, or theft of valuable equipment, property or data.

"While many responsible companies have entrance security in place at the front of the building, there are often further benefits to installing an additional layer in areas containing valuable equipment, data, or where people gather in larger numbers and may be the target of attacks," said Boon Edam Australia Managing Director, Michael Fisher.

THE SHORTEST SWING BARRIER GATE

To address the increasing need for a layered approach to security, Boon Edam's new Speedlane Compact – which measures just 1200mm long by 990mm high by 150mm wide – is one of the smallest speedstiles on the market to still feature the combination of reliable security and elegant aesthetics that Boon Edam is known for globally.

The Speedlane Compact is fashioned to fit into small areas, making it ideal for high-value real estate properties. It does an effective job within a very small space – relieving security personnel and ensuring that only authorised people can enter the designated area. Its small footprint does not compromise on quality or design.

The Speedlane Compact has been designed to provide all the fundamental functions needed in a security speed gate, to provide reliable performance in tight spaces.

THE 'NO-NONSENSE' SWINGING SECURITY SPEED GATE

The Speedlane Compact's cabinets allow for integration with many types of technology and access control, including biometrics and facial recognition. Third-party integration is simple and collaborative technology is even more accessible.

Simple installation and maintenance have been designed into the new speed gate, which is comprehensively backed by Boon Edam's service and support network. One of Boon Edam's key focuses is creating and maintaining future-proof facility management solutions that meet the diverse requirements of sustainability, security, and service while also being aesthetically outstanding. All Boon Edam work is covered by its industry-leading warranty.

"The Speedlane Compact uses advanced algorithms to detect tailgating, piggybacking and other forms of misuse. The sensors also detect objects – people carrying briefcases and trollies through the speed gate – they are recognised as such, and the product's behaviour adapts accordingly," said Mr Fisher.

For further information, please visit: **www.boonedam.com.au**

Aussie GMP self-priming pumps simplify maintenance for batch plant operators, slashing costs and saving time.

Self-Priming Pumps Simplify Maintenance

With the new budget and the Government's expansive plan to rebuild the economy, the concrete industry can confidently look at a major increase in demand. Surface mounted pumps play a key role in the ready mix batching process, being used for recycling batch water, plant washdown and a wide range of other duties.

Self-priming pumps installed in these applications have many advantages over their conventional end suction equivalents. The ability to self-prime eliminates the time-wasting process of filling the supply hose or line before start up.

Australian Pump Industries are leaders in this field with a wide range of self-priming centrifugal pumps. These pumps perform well in both high pressure and high flow applications with the ability to self-prime through a vertical lift of as much as six metres.

Australian Pumps' Aussie GMP range of semi trash pumps are designed with a large tank incorporated in the pump's casing. A check valve on the suction inlet prevents water escaping from the pump body.

The priming process is simple - here's how it works:

1. The operator fills the pump body with water through a priming port on top. The check valve holds the water in the pump.
2. When the motor starts the water in the body is expelled through the delivery port.
3. The vacuum created opens the check valve and water is drawn up through a suction hose, like drinking through a straw.

The beauty of this system is there are no attachments required to prime the pump. It is a very simple process and vacuum pumps, or compression priming devices are completely unnecessary.

Aussie GMP concrete batch plant pumps are cast iron and are first world production, built to ISO 9001 standards.

Best of all, to assist plant maintenance, the pumps incorporate a clean-out port built into the front of the body. This enables any chokes inside the pump to be cleared without disconnecting pipework.

"The opening front port makes it a piece of cake to wash down the pump internals," said Aussie Pumps' Chief Engineer, John Hales.

"We also built a drain plug into the pump sump to easily drain silt and settled material," he said.

The pumps all come with heavy duty single or three phase electric motors rated up to 22 kW. The pumps will handle flows up to 2,300 lpm and heads as high as 78 metres!

Aussie semi trash pumps are fitted with silicon carbide mechanical seals and big open impellers to enable solids to be passed. They also feature a stainless steel wear plate to protect the internals of the pump's body. The company also specify 316 stainless steel motor shaft as standard equipment.

"These pumps perform well in both high pressure and high flow applications with the ability to self-prime through a vertical lift of as much as six metres."

All pumps, over 4 kW are mounted on a powder coated steel base. Galvanised or stainless steel bases are also available for particularly corrosive applications. An abrasive resistant 316 stainless steel impeller can be supplied as an option for most models.

For further information on Aussie GMP batch plant pumps, contact your local authorised Aussie Pump distributor or visit: **www.aussiepumps.com.au**

THE CHOICE IS YOURS!

RANGE OF MODELS
IN STOCK
NOW
SET UP & READY TO GO

At A1 Roadlines we understand that our customers have a range of preferences when it comes to fleet vehicles. That's why we fit and service the Scorpion II TMA across a full range of suitable host vehicles from world-leading manufacturers including **ISUZU, UD, FUSO** and **HINO** to name a few.

So, when it comes to selecting a fully MASH tested, passed and eligible TMA that has also been **ASSESSED, APPROVED & RECOMMENDED FOR ACCEPTANCE** throughout Australia by ASBAP (Austroads Safety Barrier Assessment Panel), the only name you need to remember is **Scorpion II® TMA** from **A1 Roadlines**. When it comes to the brand of host vehicle... that's up to you!

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

A1 Roadlines Pty Ltd | 89 Rushdale Street, Knoxfield, Victoria 3180 | **www.a1roadlines.com.au**
P: 1300 217 623 (A1ROAD) | **F:** (03) 9765 9499 | **E:** sales@a1roadlines.com.au

INFINITY TESTING

'Infinity Testing' is without a doubt the harshest method of testing the performance of a Truck Mounted Attenuator (TMA) during an impact.

NO RELIANCE ON ROLL-AHEAD DURING AN IMPACT
Rather than relying on some of the impact energy being absorbed by the forward movement of host vehicle on which the TMA is fitted, with 'Infinity Testing' the host vehicle is anchored to the ground to prevent any forward movement during an impact.

'WORST CASE' SCENARIO TESTING
Compared to standard testing with an unrestrained host vehicle, Infinity Testing a much tougher testing regimen. It is considered 'worst-case scenario' testing which makes it much more difficult to meet the pass criteria for IS values, as all of the Ridedown Acceleration must be provided by the TMA absorbing the energy from the impact.

TMA ABSORBS & DISSIPATES 100% OF THE IMPACT ENERGY
Testing the TMA on a host vehicle which is anchored in place, tests – and for both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMAs – confirms the capacity of the TMA to absorb/dissipate 100% of the impact energy - without the benefit of the host vehicle roll-ahead.

NO UPPER LIMIT FOR HOST VEHICLES
From a practical standpoint, the fact that both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMAs were successfully tested to MASH Standards using the 'Infinity Testing' method, means both units are MASH certified with no upper weight limit for the host vehicle.

A1 ROADLINES

www.a1roadlines.com.au

THE ULTIMATE TEST OF ATTENUATOR PERFORMANCE

HOW IT'S DONE

With 'Infinity Testing' the host vehicle is anchored in place during the impacts to assess the TMAs capacity to absorb/ dissipate 100% of the impact energy without the benefit of roll-ahead.

WHAT ABOUT ROLL-AHEAD DISTANCES?

Importantly, to emulate 'real world' operating conditions, both the Scorpion II® TL-3 and Scorpion® II METRO® TL-2 TMA have also been successfully tested and MASH certified using standard 'non-anchored' host vehicles, with both units posting impressively low roll-ahead distances.

Scorpion® II TL-3 TMA
Crash Test: MASH Test 2-53
Impact Angle: 10.3 Degrees
Roll-Ahead Distance: 5.1m
Impacting Vehicle Weight: 2266kg
Impact Speed: 103.8km/h

Scorpion® II METRO® TL-2 TMA
Crash Test: MASH Test 2-53
Impact Angle: 9.9 Degrees
Roll-Ahead Distance: 12.4m
Impacting Vehicle Weight: 2295kg
Impact Speed: 81.6km/h

THE EQUIPMENT YOU NEED – THE SERVICE YOU EXPECT

A1 Roadlines Pty Ltd | 89 Rushdale Street, Knoxfield, Victoria 3180
P: 1300 217 623 (A1ROAD) | **E:** sales@a1roadlines.com.au

A1 ROADLINES

VERIFIED STEEL CONFORMITY

FROM SOURCE TO SITE

WITH ACRS 2-STAGE CERTIFICATION

From the structural and reinforcing steels used in the construction of buildings, public facilities, stadiums, bridges and other infrastructure, through to the reinforcing steel used in slabs, piling cages or precast concrete components, ensuring that the construction steels being used conform with all relevant Australian and New Zealand Standards and Building Codes - irrespective of their country of origin - is of paramount importance.

Notwithstanding the potential issues that can result from using non-conforming construction steels - including structural failure and the serious health and safety ramifications - in these days of widespread litigation and strict 'chain of responsibility' legislation, using materials that don't conform with all of the relevant Standards and Codes can spell disaster for engineers, specifiers, suppliers, builders and contractors in more ways than one.

Importantly, when it comes to conformity of construction steels, it's not only about the steel manufacturer. Philip Sanders, CEO, Australasian Certification Authority for Reinforcing and Structural Steels ("ACRS"), explained:

"When designers and procurement officers specify steel to particular standards, steel suppliers, builders, and building surveyors not only need to actively confirm that the steel they receive and sign-off for is the right steel - they also need to confirm that this conforming steel was cut, bent, and welded so it is still compliant when it is delivered and installed on the project."

"In short, even the best steel in the world can easily be ruined by inappropriate processing or fabrication - and if the steel was the wrong steel in the first place, the best steel processing, or fabrication won't make it right… and that's why ACRS 2-Stage steel certification is so important," he added.

THE BENEFITS OF ACRS 2-STAGE CERTIFICATION

Adapted for Australian and New Zealand conditions from European best practice for high-risk building materials, ACRS' integrated, 2-stage certification system certifies both the steelmaking at the mill and again the last point at which the steel properties can be changed before delivery and installation in the structure.

Known as a "bookended" system, this type of 2-stage certification is far more robust than a single point certification of either just the mill, or just the processor or fabricator (or of one stage being certified by one certifier and the second stage by another).

As ACRS steel certification covers both ends of the supply chain, the ACRS 2-stage system inherently includes full materials traceability - not just for reinforcing and prestressing steels, but also for structural welded sections manufacture, covering CC1 to CC3 to AS/NZS 5131, which are increasingly used in construction.

Philip Sanders commented: "You cannot just accept certification of the steel mill (Stage 1). You need to know what arrives on site. Is all the steel as you expect? If it is, has it then been properly processed or fabricated?"

"Historically, Australia and New Zealand have accepted a more relaxed product verification regime at the processor or fabricator (Stage 2) level than most developed countries, and these less onerous requirements have saved builders significant time and money in checking and testing costs."

"However, in today's dynamic market with global sourcing and supply, we can only maintain our traditional approach by the use of expert and independent certification systems to provide the minimum necessary assurance of both steel manufacture and equally the supply of that steel to site," he added.

"If not, as shown increasingly over the past few years, there will be more poorly performing structures as non-conforming materials are substituted for those the customer, and the public have been led to expect."

"Over the last 20 years, the ACRS 2-Stage certification system has been developed and expanded this to meet the specific needs of Australian and New Zealand construction industries, governments and public," Philip Sanders explained.

CERTIFYING STEEL FROM SOURCE TO SITE

If you only have certificates from the steel mill, it means you only have half the story. The ACRS steel scheme certifies both the steel mill (Stage 1) and steel reinforcement ("rebar") processor, mesh manufacturer, or structural welded section manufacturer (Stage 2) - providing a rigorous mechanism covering the two critical aspects of steel supply, and the traceability of materials between them.

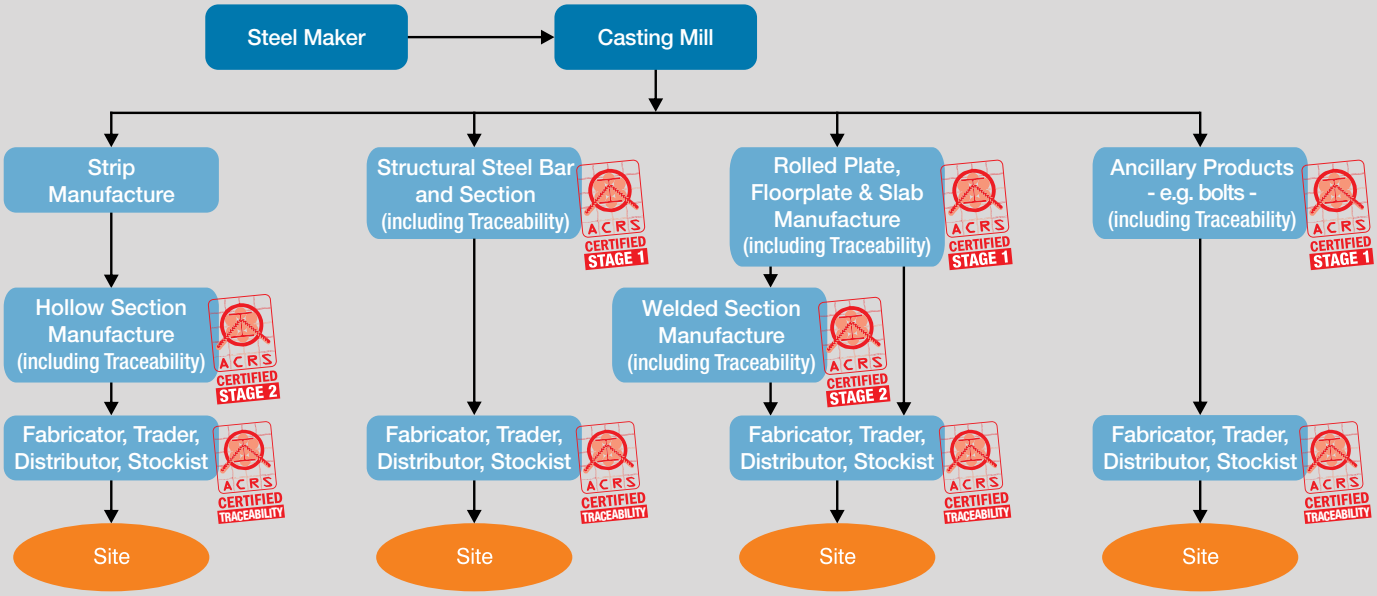
This 2-Stage 'chain of certification' provides a vital link between the steel producer, the reinforcement processor, or welded structural section fabricator, the steel supplier, and the construction site.

ACRS Stage 2 certification of the reinforcement processor, or welded structural section fabricators is the vital link between the steel producer (ACRS Stage 1 certified) and the end-user on the construction site, ensuring that:

- All steel is from an approved source and satisfies the requirements of the relevant product Standard(s).
- Steel is correctly handled and processed so materials performance is not compromised during subsequent rebar processing or steelwork fabrication.
- The necessary procedures and documentation are in place to ensure full product traceability from steel mill through materials scheduling and fabrication to delivery to site.

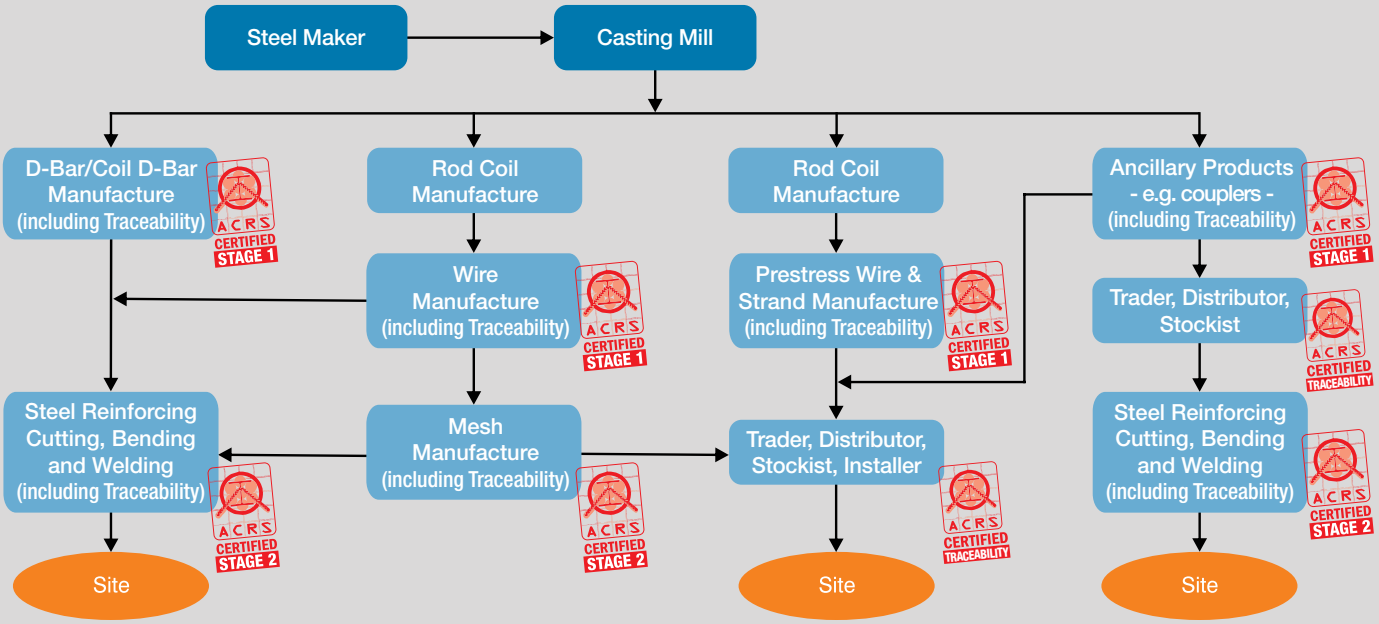
For your steel to be ACRS certified, it must be covered by both ACRS Stage 1 and ACRS Stage 2 certification. Any break in the 'chain of certification' between the steel mill and the processor or fabricator means the steel delivered to site is not ACRS certified.

ACRS Structural Steel Chain of Certification



For structural steels, ACRS certifies BOTH the steel mill that manufactures the steel AND the manufacturer or fabricator of any welded structural steel sections. Verification of the outputs of both these supply streams is essential for any structural steels and steelwork claiming to conform with AS/NZS 5131. ACRS has worked with the ASI to deliver "end-to-end" certification from steel mill to construction site via the ASI's Steelwork Compliance Australia fabricator scheme to provide consumers confidence in structural steelwork from the purchase of verified and traceable ACRS certified structural steels, through the supply chain to ACRS certified welded section fabricators and then through supply, delivery and erection of all finished fabricated steel on the project site.

ACRS Reinforcing Steel Chain of Certification



For reinforcing steels, ACRS certifies BOTH the steel mill that manufactures the steel AND the steel reinforcement processor and mesh supplier. Verification of the outputs of both these supply streams is essential for any steel reinforcing materials claiming to conform with the Standards.

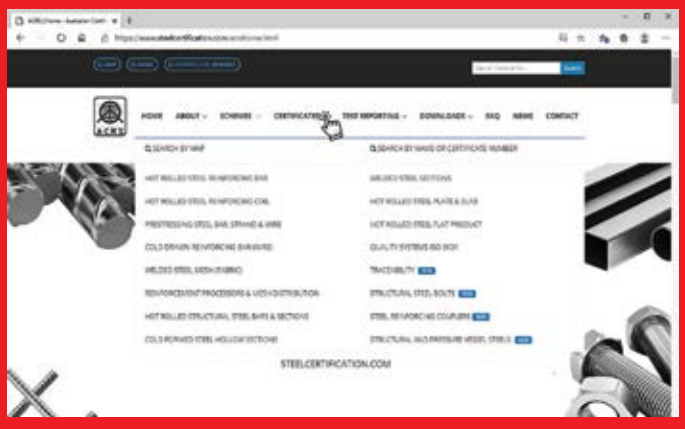
STAY UP-TO-DATE AT **WWW.STEELCERTIFICATION.COM**

Just because your supplier was previously ACRS Certified, don't take it for granted that they still are. Their ACRS Certification status may have changed due to factors including:

- Changes in ownership
- Changes in manufacturing locations
- Additional products
- Discontinued Products

That's why ACRS' comprehensive program of annual audits and rigorous 3-monthly data analysis is so important. It ensures that standards and quality are maintained, so you can have confidence in your construction steel supplies.

Importantly, checking and confirming that ACRS certificates for products/suppliers are current is quick and easy on the ACRS website. Visit: **www.steelcertification.com** for full details of all current certificates.



INDEPENDENT, EXPERT, THIRD-PARTY CERTIFICATION

The only way to be truly sure that the materials being used conform fully with the appropriate Australian and New Zealand Standards and are fit for purpose, is through independent, expert, third party validation and certification.

ACRS provides a fully independent, expert assessment and certification for both Australian and internationally sourced construction steels, including reinforcing steels, structural steels and prestressing steels.

ACRS certification makes checking for compliance with the relevant Australian and New Zealand Standards easy. It demonstrates INDEPENDENTLY and EXPERTLY that the supplier consistently meets the Standards stated on the certificate. By using ACRS certified construction steels, builders and contractors can be confident that they are getting the AS/NZS compliant materials that they ordered, and engineers and building certifiers can be confident that steel meets the requirements of the Building Code and associated Standards.

Beyond checking the supplier's ACRS certificate, product markings and tags, there's no need for you to make any further checks on ACRS certified materials.

- No more checking materials properties against technical specifications;
- No more checking batch numbers against the test certificates.

All ACRS auditors are fully qualified metallurgists with many years of experience working with steels.

In addition to factory production control audits and independent testing, the ACRS scheme provides regular review and analysis of all products manufactured and supplied by the certified supplier. This makes matching material to conformity documentation simple and effective for the customer and for any verifier.

HOW DO I SPECIFY ACRS CERTIFIED STEELS?

The easiest way to manage and minimise the risk of non-conforming construction steels, is to specify ACRS certified steels.

FOR STRUCTURAL STEELS

"Structural steels shall comply with AS 1074, AS 1442, AS 1579, AS/NZS 1163, AS/NZS 1594, AS/NZS 3678, AS/NZS 3679.1, or AS/NZS 3679.2, as appropriate. Structural bolts shall comply with AS/NZS 1252.

Where applicable, materials shall be fabricated in accordance with the "Fabrication" requirements in Section 14 of AS 4100 or Appendix G of AS 5100.6, or AS/NZS 2327, or NZS 3404, and the requirements of AS/NZS 5131.

Acceptable manufacturers of structural steels, structural bolts, and the fabricators of structural welded sections must hold a valid certificate of approval issued by the Australasian Certification Authority for Reinforcing and Structural Steels Ltd (ACRS), or to such other accredited product certification system as shall be demonstrated by the supplier to be directly equivalent in scope and technical rigour to ACRS and approved as such in writing by the specifier.

Evidence of the supplier's compliance with this clause must be obtained when contract bids are received."

FOR STEEL REINFORCING MATERIALS

"Steel reinforcing and steel prestressing materials for concrete shall comply with AS/NZS 4671 or AS/NZS 4672, respectively.

Where applicable, materials shall be cut and bent in accordance with the requirements of the "Material and Structural Requirements for Reinforcing Steel" clauses in AS 3600 or AS 5100.5, or the "Reinforcement" clauses of NZS 3109.

Reinforcing couplers shall comply with RMS specification RMS SF2013/184115 Approval of Mechanical Reinforcing Bar Splices, or NZTA SP/M/022 Bridge Manual (technical approval sections), as specified.

Acceptable manufacturers and processors of steel prestressing and steel reinforcing materials, including both manufacture and application of reinforcing couplers, must hold a valid certificate of approval issued by the Australasian Certification Authority for Reinforcing and Structural Steels Ltd (ACRS), or to such other accredited product certification system as shall be demonstrated by the supplier to be directly equivalent in scope and technical rigour to ACRS and approved as such in writing by the specifier.

Evidence of the supplier's compliance with this clause must be obtained when contract bids are received."

ACRS 2020 CERTIFICATES AMENDED FOR ADDITIONAL CLARITY AND AVOIDANCE OF MISUSE

ACRS 2020 certificates have some important changes to protect builders, engineers and steel purchasers.

ACRS not only certifies steel at manufacture (Stage 1) and then the rebar processing/welded section fabrication of that steel (Stage 2), but also assesses materials' traceability between the two certificate holders. ACRS Stage 2 certificate holders can only source and use ACRS Stage 1 approved materials, and this is regularly checked by ACRS.

To assist Builders' personnel make their determinations, from 1 January, 2020 the wording on ACRS certificates was amended to state clearly that "ACRS certified" may only be applied to steel that arrives on the project with both ACRS Stage 1 (mill) certificates and ACRS Stage 2 (rebar processor, or structural welded section) certificate.

Ensure your staff are aware of these important changes to ACRS certificates and make sure your specifications call up ACRS certification not only for Stage 1 (mill manufacture) but also Stage 2 suppliers (processing and welded section fabrication) to manage your risk of inadvertently accepting non-ACRS approved materials.

If your staff have any questions, get them to email ACRS for assistance at: info@steelcertification.com

Flatlining Sales?

ADVERTISING WORKS!

(After all, you're reading this aren't you?)

epc

CALL US TODAY and find out how we can help you

t: 1300 EPC GROUP (1300 372 476) **e:** ats@epcgroup.com

www.epcgroup.com

Engineering marvel emerges from Morwell construction site

Enormous steel structures set to transform Latrobe Valley GovHub

Progress on the $30 million *Latrobe Valley GovHub* took a dramatic step forward recently with the installation of 18 prefabricated steel façade modules, each weighing a hefty 4 tonnes.

The modules – measuring 14.5 metres high and eight metres wide – form a key architectural feature of the three-storey building's distinctive façade and roofline.

Each structure is made from 2.2 kilometres of steel, making them the largest 'light gauge steel façade' modules in the world, according to fabricators, Dynamic Steel Frame. The structures were clad in Australian steel on site by Industry Cladding before being erected into their final location.

On hand to witness the first modules being craned into place was Adam Bronts of property company Castlerock, which is developing the building to be leased to the Victorian Government upon completion.

Mr Bronts said the milestone was an important step forward, with the completed project expected to generate a forecast annual $15 million economic boost for the Latrobe Valley.

"It's wonderful to see this flagship project on track to revitalise the Valley when it opens later this year by supporting economic growth, creating jobs and driving the industries of the future," he said.

The Victorian Government's investment in the *GovHub* is part of the $266 million Latrobe Valley transition package, designed to boost local jobs and encourage the decentralisation of roles and services from Melbourne.

The purpose-built regional employment centre will be the first of its kind in Victoria and will house approximately 300 public sector staff.

Mr Bronts, who was raised and educated locally, said the *Latrobe Valley GovHub* project would be a key employer in Morwell throughout construction, with around 100 jobs expected to be created.

"We have committed to sourcing at least 75 percent of all building materials, services and trades locally, including earth works, concreting, electrical and plumbing," he said.

He added that despite needing to employ COVID-19 social distancing measures and extra cleaning regimes on site, construction of the 4,000-square-metre building remained ahead of schedule.

Steve Tillinger of WMK Architecture said he was proud to see the eye-catching structure – an homage to the region's industrial heritage – taking shape.

"The local community provided clear feedback early in the design process that the project needed to celebrate Morwell's rich history and industrial identity," he said.

"The roofline, for example, was inspired by the repeating 'teeth' of bucket wheel dredgers traditionally used to extract coal for Latrobe Valley power stations."

Continuing the focus on the local community, Castlerock has commissioned a local craftsperson to create five timber tables for the *GovHub's* ground-floor meeting rooms.

"The building will be one of the most energy efficient in the Valley, using the latest technology and modern workplace infrastructure."

In collaboration with *The Torch** program, the tables will be adorned with unique Aboriginal designs through a special burning process. Local Traditional Owners have also been engaged to create artwork, reflective of the area's past and present Indigenous culture, to enhance the building's interiors.

The *Latrobe Valley GovHub* will feature modern office spaces, shared meeting rooms, a community hub, business incubator zones, an exhibition space and a locally-run café.

The building will be one of the most energy efficient in the Valley, using the latest technology and modern workplace infrastructure.

It has been designed to achieve a 5-star NABERS energy rating and promote alternative modes of transport by including CBD-style end-of-trip-facilities and bicycle parking.

The Victorian Government has committed to a 15-year lease (with two, five-year options) with plans for several agencies to be relocated to the premises including Parks Victoria, Earth Resources Regulation and Solar Victoria.

Castlerock will retain ownership of the *Latrobe Valley GovHub* as a flagship asset within its Auslink Property Trust No. 2. It will also manage the building once completed.

For further information, please visit: **www.castlerockproperty.com.au** or **www.rdv.vic.gov.au/latrobe-govhub**

ABOUT THE TORCH PROGRAM

In partnership with The Torch program, each ground floor meeting room table created for the Latrobe Valley GovHub will be delivered to Fulham Prison to undergo a burning of a traditional Aboriginal design by an incarcerated Aboriginal artist. The time invested in each burning will attract an hourly rate, which will be invoiced to Castlerock. Full payment will be forwarded to the inmate upon their release. The intent behind The Torch program is to upskill inmates and build self-confidence so their skills can be translated into art-related pathways within the broader community.

For further information, please visit: **www.thetorch.org.au**

SOPHISTICATED LIVING IN **ST LEONARDS**

Project: St Leonard's Square
Location: Pacific Highway, St Leonards NSW 2065
Master Precaster: Advanced Precast
Client: Mirvac
Architect: Mirvac Design & Sissons Architects
Builder: Mirvac Design
Engineer: Van Der Meer

Just 5km north-west of Sydney's CBD is St Leonards. It is the home to some of Sydney's most respected and prestigious public and private schools. Commercially, it complements nearby Chatswood, Lane Cove and North Sydney. It contains one of the city's suburban skyscraper clusters, housing well-known companies like Toyota Financial Services and IBM.

Knowing that the suburb's population is expected to double in the next 15 years, developer Mirvac hopes that its new high-end development St Leonards Square will lead the transformation of the sometimes soulless area into a dynamic residential suburb with superb amenity.

Set across two towers, the complex also features a vibrant ground floor plaza and 527 apartments – some with harbour and city views – which sit atop the retail and commercial complex. As well, a large swimming pool, gym, natural mineral sauna and spa, and large outdoor terrace equipped with a kitchenette, barbecues, cinema, lounge setting and dining facilities, allow occupants to socialise and network while enjoying the views of the harbour and city.

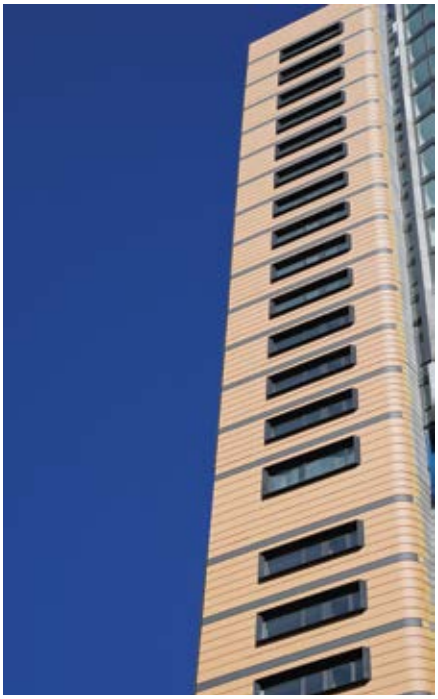
OFF-SITE PREFAB TO MINIMISE WASTE, MAXIMISE EFFICIENCY

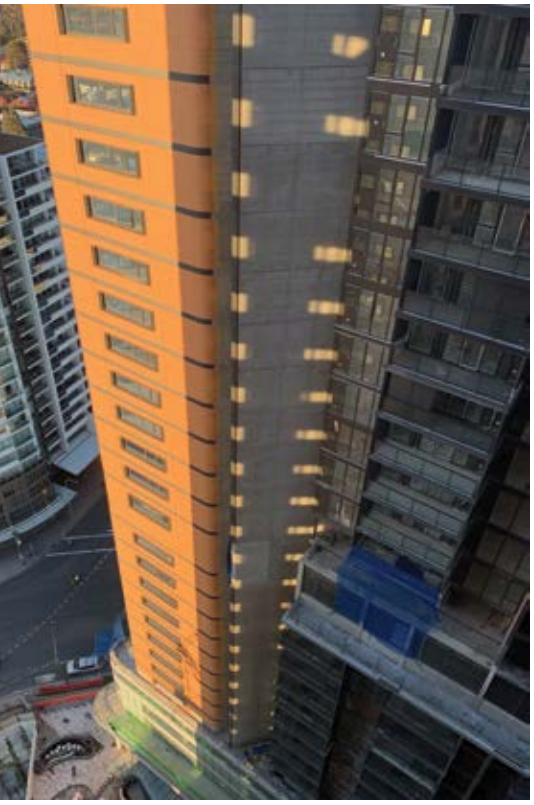
Site constraints including a relatively tight footprint and an adjacent concurrent development demanded an innovative approach.

Maximising the use of off-site manufacture using precast panels and prefabricated bathroom pods and air-conditioning condenser decks, increased programme efficiency and reduced site waste and labour during construction.

QUALITY AND FIRE SAFETY UNDERPIN DESIGN

As well, the focus on prefabrication and in particular the specification of precast concrete, ensured that Mirvac's reputation for quality would be upheld. That extended to offering residents comfort in knowing that this development would not be plagued by engineering and construction quality controversies such as those recently experienced in some other towers. Neither would it be bothered by the potential dangers of combustible cladding.





The two towers – one a 35-storey triangular tower and the other 27 storeys - feature high quality precast concrete supplied by National Precast Master Precaster, Advanced Precast.

Established in Melbourne in 1982, Advanced is one of Australia's market leaders particularly when it comes to precast panel manufacture. With operations in VIC, NSW, ACT and QLD, it supplies Melbourne, Sydney, Canberra, Brisbane, the Gold Coast and the surrounding areas.

ANGLED AND CURVED PRECAST PANELS DIFFERENTIATE FUNCTIONALITY

For St Leonards Square, a total of 1,164 precast concrete off-form panels were manufactured in Advanced's highly sophisticated Wetherill Park factory, resulting in a high level of accuracy and exceptional quality. The panels covered a total area of 17,526m^2, most of which feature window openings.

The striking angles of the precast residential forms transition to gentle curves at ground level to differentiate functionality and merge with the open plaza. The curved forms required custom curved panels, also manufactured by Advanced in purpose-built moulds.

STAINED PANELS INSPIRED BY NATURAL SURROUNDS

With inspiration for the bold orange hue of the building and organic shaped landscape architecture drawn from the natural surrounding native bushland, St Leonards Square was designed with its context in mind. Its warm colour palette and bold orange exterior were inspired by the local history and natural native bush landscape of the Lane Cove River.

To suit the required colour palette of the finished project and achieve their orange hue, panels were stained with a specified Nawkaw finish.

Advanced Precast has made a significant contribution to the transformation of St Leonards. What was once a sombre commercial site is now a lively and sophisticated space. The innovative use of prefabrication, competent construction and the use of enduring materials, will afford investors and residents high value through superior longevity.

SURGE OF MEMBERSHIP DESPITE UNUSUAL TIMES

According to National Precast CEO Sarah Bachmann, the organisation's membership has surged in recent times, following a recent influx of new membership applications.

"Who would have thought that in such uncertain times, companies would be reaching out to industry associations to strengthen their market position. It makes sense though, as association membership offers an efficient way to reach an audience of members, via just the one contact point," she comments.

"We are delighted to welcome a number of new members."

Recent new National Precast members include:

- Dulux AcraTex (Industry Partner - textured coatings);
- Ozcast Precast (Provisional Precaster);
- Fine Form Pre-cast (Precaster);
- Reoweld (State Industry Supplier);
- 1Breadcrumb (Professional Associate Organisation); and
- BOSFA (National Industry Supplier).

"We look forward to working with these companies as they become part of the National Precast community. Already we are assisting a couple of them with Standards and manufacturing issues," Bachmann says.

For more information on National Precast's members, visit **www.nationalprecast.com.au**

FIRST INDUSTRY PARTNER MOVES TO RESTORE POSITION UNDER CORE BRAND

As National Precast's very first Industry Partner member, ramsetreid has been a strong supporter of the Association for many years.

According to National Precast's CEO Sarah Bachmann, the company was instrumental in the development of the new membership category, realising the potential of exclusively occupying a nominated product category. It has also been a very active member in a number of other spaces including one of its senior employees representing the Association during the revision of the 2015 version of *AS 3850 Prefabricated concrete elements.*

"Previously, ramsetreid has occupied the 'lifters and connectors' Industry Partner product category, but this year moves to 'manufacturing accessories'. We are delighted to have them continue at this premium level of membership," Bachmann comments.

But some big changes are in store for the ramsetreid company.

Determined to increase their support and ongoing commitment to the precast industry and in particular, National Precast, ramsetreid will return to an integrated model where engineering, marketing, sales are focused under the one common brand, namely, Reid.

According to Business Manager – Reid, David Barnes, the Reid team's commitment is as strong as ever.

More to come soon so watch this space!

IMPROVED SOLUTIONS FOR TEXTURED PRECAST COATINGS

National Precast's newest Industry Partner Dulux AcraTex has developed two new products for the precast industry to deliver long term protection.

According to National Precast CEO Sarah Bachmann, Dulux AcraTex has joined National Precast as Industry Partner, exclusively occupying the 'textured coatings' product category within that membership space.

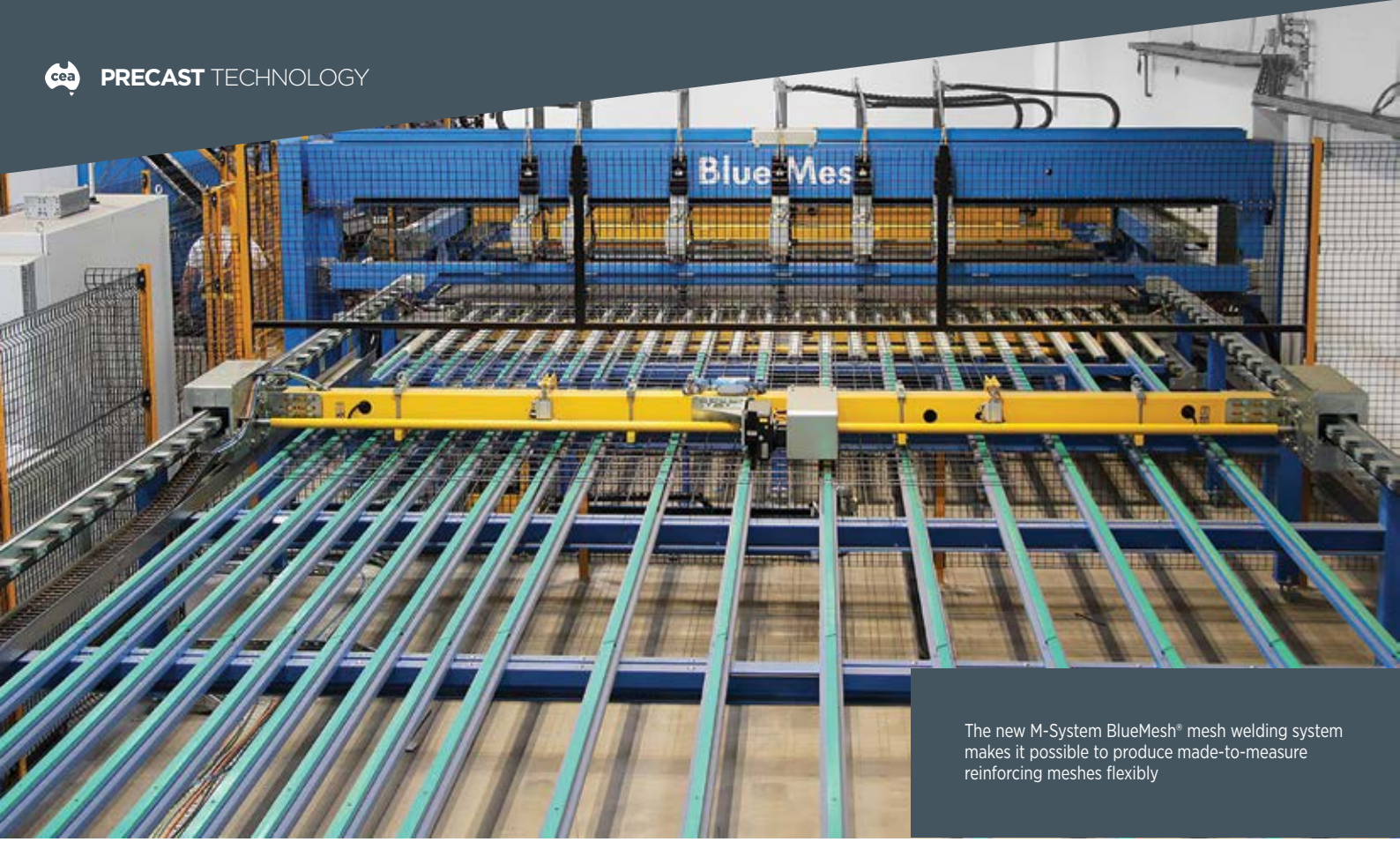
"With the use of high quality steel moulds, precast concrete manufactured by our Master Precaster and Precaster members is at an all-time high quality of finish. And that has required specific coating development to meet the evolving market needs and to ensure longevity," Bachmann says.

"We are excited to have Dulux AcraTex on board, and have been working with Marketing Manager Briana Keenahan on perfecting the Dulux range of bond-breaker remover and textured coatings to today's smooth precast concrete surfaces.

According to Briana, two new products have been introduced.

AcraTex BondFree Concentrate removes typical barrier-type form release agents to ensure adhesion of coatings, and **AcraTex AcraTilt** has been developed as a medium-build texture coating for precast and tilt up concrete to provide long term durability.

"We look forward to being an integral part of National Precast and working with members to encourage take-up of the products," Keenahan comments.



The new M-System BlueMesh® mesh welding system makes it possible to produce made-to-measure reinforcing meshes flexibly

Mesh welding plant with totally integrated bending system brings precast production facility up to state-of-the-art

The Habau Group is active as a full-range supplier in the business fields of civil engineering, underground mining, precast element production, as well as the construction of pipelines, timber and steel structures plus other systems. At its headquarters in Perg, Upper Austria, Habau Hoch- und Tiefbaugesellschaft operates one of most productive precast element manufacturing facilities in Austria. To enhance automation at its factory, this family-run business is now banking on the new M-System BlueMesh® mesh welding plant made by Progress Maschinen & Automation, a Progress Group company.

The precast facility in Perg (Upper Austria) has been in existence since the beginning of the 1970s and currently employs between 150 and 200 people. The company manufactures precast elements, including supports, beams, floor and façade panels, balcony slabs, partition walls and bridges, in all variations exclusively to order for industrial, commercial, residential and infrastructure construction work.

Continuous growth over the last decades brought about substantial new investment in 2014, when a cutting-edge carousel plant was commissioned. The carousel plant's production capacity has now been further bolstered through the addition of a new state-of-the-art mesh welding machine.

"Purchasing the automatic mesh welding machine from Progress was a logical complement to be able to exploit the great capacities of the carousel plant," explains Hubert Wetschnig, CEO of the Habau Group.

Reinforcement for panel-shaped precast components had formerly been carried out manually at the plant – a time consuming and onerous task requiring at least two to three skilled employees. Together with the time required to complete these processes manually, the difficulty of finding suitable skilled workers had also underscored the need for certain work processes to be automated at Habau. The new mesh welding machine's specially integrated bending system, with two beam benders and two single bending machines, generates appreciable savings on time and staffing requirements.

The efficient beam benders were specifically designed for manufacturing bent end products automatically. Their hardened bending tools have been equipped with a special double cam which allows two different diameters to be bent with one matrix.

"Purchasing the automatic mesh welding machine from Progress was a logical complement to be able to exploit the great capacities of the carousel plant."

For full flexibility, the beam benders were supplemented with travelling rotating single bending machines. The two integrated bending units permit work to be carried out simultaneously and can thus bend spacing stirrups upwards even in the small interstices of a mesh. The automated bending rotor diameter changing system boasts a particular special feature: five matrices have been installed for greater flexibility instead of the customary three matrices.

ABOVE: Beam bender in operation manufacturing bent end products automatically.

LEFT: Individual steel wires can be welded at any distance desired using the Progress spot welding process.

BOTTOM: Travelling rotating single bending machines make for full flexibility.

Habau originally wanted to carry out bending the meshes solely with single bending machines. In the meantime, the company has been convinced that the additional beam benders generate considerable savings on time and that this extra investment has paid off. The overall concept with its extremely flexible mesh welding system plus beam benders and single bending heads represents a very high degree of automation in manufacturing reinforcement in a carousel plant for solid walls.

Automated production started at the beginning of May.

Walter Preisinger (Division Manager for precast element construction) expressed his satisfaction: "The straightening quality is outstanding, and the rebar is extremely straight even over 8 or 9 metres."

The company is very broad-based and can cope with the uncertain perspectives for the coming months thanks to its successful development.

Seamless communication between the companies has played a crucial role in their successful cooperation alongside the positive impression that Progress systems have left after diverse viewings. Progress scored points and was able to supply an impressive all-round package as it has gained much relevant expertise through operating its own precast element production facility.

One distinctive characteristic in particular unites both partners – developing innovative, tailor-made solutions for each individual customer.

For further information, please visit: **www.progress-m.com**

LEFT: Walter Preisinger, Division Manager for precast element construction, expressed his satisfaction with the new system.

BELOW: Assembling special precast concrete elements at a construction site.

The new mesh welding plant is set up for one shift production with a target of 100 % capacity utilisation. Total production capacity for slabs is approximately 200 m² per hour.

Habau also manufactures some very special, exceptionally large components with recesses that demand specialist expertise from the planning side. Reinforcement meshes can be up to 5.10 m wide, while reinforcing cages with a maximum width of 3.90 metres can be manufactured with upward bends on both sides. The plant allows reinforcing steels with diameters ranging from 6 to 16 mm to be processed directly from the coil without off-cuts.

Welding without grids according to individual CAD specifications generates very great flexibility in manufacturing. Automatic labelling and the possibility of transferring straightened steel via a roller conveyor are other special features of the system.

Habau is looking optimistically to the future despite the current difficult situation on the market due to the Corona crisis.

EBAWE

WE FORM YOUR CONCRETE

Complete solutions from a single source

- Highly automated carrousel plants
- Customized solutions
- Excellent precast products

EBAWE designs, engineers and installs complete production plants for the manufacture of the most varied precast concrete panels.

We are the ideal partner for your projects – regardless of size and kind.

www.ebawe.de

The next evolution in edge protection

Health and safety cannot be compromised in high-rise construction. Greg Warren, Managing Director for Australia at RMD Kwikform, considers how the latest safety screen solutions have overcome common challenges and issues of previous systems, and the problems this solves for contractors.

Debris protection and on-site health and safety is a top priority for Australian contractors in high-rise construction. Particularly with cast concrete construction, where concrete slabs extend beyond a building's footprint, the opportunity for debris to fall over the edge is high unless the right edge protection systems are in place.

To highlight the damage that a falling piece of debris can cause, an M20 nut falling 12 floors gains 50 joules of kinetic energy – enough to fracture a human skull.

Safety screens are widely used in Australian high-rise projects to protect against falling debris. But how do the latest safety screen solutions address some of the challenges associated with previous systems?

First of all, many screens in the past could often not be lifted until the concrete slab had cured and the falsework had been struck. The screens would often not be big enough to cover two storeys, meaning column construction would stop just over one storey above the last cured level. This meant that column construction would have to be carried out above the protection of a screen, or workers had to wait until the screen could be lifted.

In contrast, the latest systems can be removed and lifted while the slab shoring is still in place. A lot of systems now also span two full storeys above the wet deck level, which enables work to be carried out on multiple levels at any one time. This ensures the slab and the columns above can also be cast. The safety screens can then be lifted up, with typically at least a metre of protection available. Screens that span two storeys can halve the amount of lifts required on a job, a drastic improvement on site productivity.

Another common problem was that many previous safety screens relied on cranes to be lifted into position and subsequently lifted as each floor cycle was completed. This would completely utilise

site cranes whilst the repositioning of the screens took place. This would have a big impact on the availability of the crane for other tasks, often slowing down other trades on site. The latest solutions take advantage of state-of-the-art hydraulics, removing the need for crane lifting improving general site productivity as the crane is available to support other aspects of the construction process.

One aspect of modern safety screens that is often overlooked is the trailing levels that can be covered. By providing up to 1m of clear access to the façade the training levels can be used to provide access to slab edge and building facade. The ability to begin work early on these areas can see huge improvements in build times for contractors.

Many modern safety screen systems also have loading platforms built into them, which can help with the logistics of transporting materials to levels below the slab which are under construction; again, further reducing the reliance on cranes. This can have a significant impact on site productivity, reducing labour requirements between floors.

Another issue with safety screen systems in the past was that large screens had to be assembled on site. For this, contractors had to take into account any space and time constraints, as well as store all the loose materials needed for the job. Screens that were assembled off-site were restricted to being only three metres wide and would generally not stack well for transportation. Often, only one or two screens would fit onto a trailer.

By contrast, the latest safety screen systems take advantage of telescopic width adjustment, which enables screens that are over five metres wide to be built off-site. These can then be closed down to three metres wide for when they are being transported to site. The fact that the latest solutions can be fully assembled before being delivered to site saves valuable time, too. Modern systems have also been designed so they can be stacked more efficiently as well, reducing transport costs for contractors and ensuring better on-site storage.

Another common problem in the past was that screens would often struggle to close corners or would not be well sealed between modules. There were many instances where the gap between the lower slabs and the screen would not be sealed properly. Because of this, some older safety screens could not be relied upon to provide sufficient edge protection, which meant independent systems had to be specified, adding to costs.

The use of small aperture steel mesh or nylon mesh also ensures that even very small debris particles are kept safe within the screen. Whist keeping debris in the small aperture mesh allows ventilation, helping to ensure safe working conditions for the site teams.

The latest safety screen systems available today, however, benefit from features such as rotating cladding beam ends and compression edge seals to help eliminate gaps. To seal lower slabs and the screen, plywood cladding flaps and flexible joint seals also help.

The Australian construction industry is very aware of their duty to make the health and safety of its workers and the general public its top concern. By taking advantage of the latest advances in edge protection systems, contractors can make sure on-site perimeter protection is assured.

For more information, please visit: **www.rmdkwikform.com**

Site Safety Alliance Toolbox Talk addresses the hidden mental minefield of COVID-19 impacts

A company dedicated to providing engaging safety messages to construction sites Australia-wide, the Site Safety Alliance, has introduced a special *"HEADSPACE COVID-19"* Toolbox Talk pack to help companies address the mental wellbeing of workers and the issues they are facing, such as financial, family and pressures at home.

Site Safety Alliance, which typically supplies comprehensive monthly Toolbox Talk packs to the building and construction industry, has prepared and produced specific content for site managers and safety managers to support workers on site who might be finding it difficult to cope with increased pressure or a change in routine created by the current circumstances.

The special *'Headspace COVID-19'* Toolbox Talk packs are available immediately for building, construction and infrastructure companies operating under new on-site procedures during COVID-19. They are designed to ensure that workers feel that support is available to them if they feel more stressed and distracted at this time.

"We know this situation is only temporary, but we need to make sure we all stay focused and remain vigilant around site safety. COVID-19 has brought numerous additional procedures to the everyday workings of a site and while everyone is complying with these requirements, we should continue to reinforce our ongoing focus on safety and wellbeing of our workforces during this time." says Site Safety Alliance Co-Founder Garry Mansfield, who has more than 15 years' experience in executive safety roles in the construction industry.

Site Safety Alliance's new HEADSPACE COVID-19 Toolbox Talk addresses the hidden impacts of COVID-19 – the effects it can have on the mental health and wellbeing of tradies who may be facing increased financial, family and home pressures during these unusual circumstances.

"These are strange and sometimes stressful times for everyone. Mental wellbeing on site is imperative to ensure that incidents do not occur through distraction or lapse of focus, while the site gets on with its productive day-to-day activity," he said.

"To their credit, the construction industry and the Australian Government have both supplied ample information to the sites about the physical management of the virus, but what Site Safety Alliance adds to this is an understanding of the mounting pressure being felt by workers and teams, which can take its toll on mental health. We have a number of resources for construction sites to assist workers with maintaining wellbeing during COVID-19, and maintaining it during once things settle down to 'Covid Normal'," Garry added.

INNOVATIVE APPROACH TO SITE SAFETY

Safety initiatives are a wonderful thing, but with so many voices talking safety to the building, construction and infrastructure industries, there is a danger of workers switching off if the messages aren't engaging and relevant to the worksite.

Site Safety Alliance aims to address this issue Australia-wide by introducing a world-first platform that makes it simple, cost-effective and time saving for site managers and safety supervisors to engage and empower workers in a collaborative culture of safety.

Site Safety Alliance's approach is totally new – it's not just messages percolating from the top down that may not be sharply relevant to current and critical issues at ground level.

"Construction companies today typically approach safety communication through consultation and usually through a meeting called a "Toolbox Talk", but it can be challenging for management to meaningfully connect with workers, when there are so many rules and regulations messages coming 'from the top down'," Garry Mansfield said.

"Our aim is to democratise safety, and make it relatable to workers on all levels. We provide the tools to allow managers and supervisors to work collaboratively with workers to achieve mutually beneficial safety outcomes," he added.

Site Safety Alliance's new HEADSPACE COVID-19 Toolbox Talk addresses the hidden impacts of COVID-19 – the effects it can have on the mental health and wellbeing of tradies who may be facing increased financial, family and home pressures during these unusual circumstances.

"Our aim is to democratise safety, and make it relatable to workers on all levels."

SITE SAFETY ALLIANCE TOOLBOX TALKS

Site Safety Alliance's Toolbox Talk packs are designed to provide clear messaging to construction site staff, so that all workers feel engaged in a culture of safety and looking out for each other's mental and physical wellbeing.

"These talk packages save time and cost by providing site managers with everything they need to present an engaging, effective and consistent safety and wellbeing message for one or multiple sites," Garry said.

Site Safety Alliance Co-Founder, Michael Blumberg, says that what sets their messaging apart is that it's not 'telling' workers 'what to do', but instead, it's engaging them in the content and connecting them in positive ways to the messaging. Mr Blumberg has more than 30 years of experience in behavioural marketing and advertising, and has spent the last 5 years focusing particularly on the construction industry as CEO of Target Tradies, the on-site visitation company focussed on safety and wellbeing of the workforce.

"It's important to note that all the Toolbox Talk pack programs are designed to engage, not to instruct. The content aims to entice and intrigue viewers and encourage them to take the time to consider and understand the content and more importantly act on it" Michael said.

Site Safety Alliance has developed monthly safety packs for the building and construction industry focussed around these Toolbox Talk meetings. Each pack deals with a specific top priority issue around safety on site that is based on industry research and statistics. The packs are produced, packed and delivered directly to site (or head office) ready for presentation to construction and infrastructure workers on the job.

ABOUT SITE SAFETY ALLIANCE

Site Safety Alliance was developed to give construction and infrastructure site managers and supervisors the tools and messaging they need to create a culture of safety and physical and mental wellbeing.

Through engaging talks, posters and social media activity each month, Site Safety Alliance reaches all tradies and workers at a practical level and encourages them to look out for each other and 'shift the dial' on safety and wellbeing on-site.

For more information, please visit: **www.sitesafetyalliance.com.au**

CRASHWORTHINESS RULES HAVE CHANGED...

DO YOUR CRASH CUSHIONS COMPLY?

The new rules requiring MASH tested & approved crash cushions came into effect across Australia on January 1st, 2020

In accordance with the Austroads / ASBAP '*Transition to MASH*' process, crash cushions installed on Australian roads are now required to be tested and approved under the AASHTO MASH guidelines, rather than the superseded NCHRP350 guidelines.

Both the **SMART CUSHION SC100** and **SMART CUSHION SC70** have been successfully tested to MASH-2016 Standards, with both models **ASSESSED, APPROVED & RECOMMENDED FOR ACCEPTANCE** throughout Australia by ASBAP (Austroads Safety Barrier Assessment Panel).

SMART CUSHION speed dependent crash attenuators have been used in the USA for almost two decades and in Australia for over 5 years – delivering outstanding life-saving performance and significant savings on repair costs in many thousands of impacts.

SMART CUSHION

Speed Dependent Crash Attenuators

SMART CUSHION

Speed Dependent Crash Attenuators

MASH TESTED & APPROVED ✓

SAVE TIME...

For most impacts up to 100km/h (by vehicles up to 2,270kg) the SMART CUSHION can usually be repaired and reinstated into service in under 60 minutes.

SAVE MONEY...

In 90% of all impacts in Australia, the only spare structural parts needed for repairs are 2 shear pins (COST <$5). After 59 impacts in Australia, the average cost for each reset was $169.

SAVE LIVES...

After more than 20 years of successful service internationally and over 5 years successful service in Australia, SMART CUSHION has been directly credited with saving numerous lives and significantly reducing the severity of injuries in literally thousands of impacts.

LB AUSTRALIA

Ph 02 9631 8833

www.lbaustralia.com.au

ONLY WHAT YOU WANT...

and nothing that you don't!

When it comes to digital subscriptions, **WHAT YOU DON'T GET** is as important as what you do get!

When you subscribe to Construction Engineering Australia online **YOU DON'T GET:**

- JUNK EMAIL
- SPAM ADVERTISING
- UNWANTED EDM'S
- 3RD PARTY EMAILS

WHAT YOU DO GET:
A single email notification, 6 times per year, to let you know your new issue is ready to download or view online... **THAT'S ALL!**

What's more, our digital subscriptions are **100% FREE!**

All of data is managed in-house and **WE NEVER** sell, rent, borrow or distribute any subscriber data - including email addresses - to anyone... **EVER!**

UNWANTED EDM'S

SPAM

THIRD PARTY EMAIL

CONSTRUCTION ENGINEERING AUSTRALIA
cea
Combining ACC + MEA

SUBSCRIBE TODAY! www.epcgroup.com/subscribe

2020 IPWEA NSW State Conference moves to 2021!

Each year IPWEA NSW look forward to connecting and celebrating the Public Works community. However, after careful consideration and in light of the ongoing COVID-19 developments, we have made the difficult decision to postpone the *IPWEA NSW Annual State Conference* and *Engineering Excellence Awards*. We felt this was the best way to proceed during such an unprecedented global situation.

We look forward to returning in 2021 with numerous speakers, technical presentations, a bustling exhibition hall, the revered *Engineering Excellence Awards Gala Dinner* and much more.

Rescheduling this prestigious event will enable us to provide the experience that you deserve and expect in a safe environment.

The Conference will now be held on **Tuesday 23rd – Thursday 25th March 2021** at the Crowne Plaza, Hunter Valley.

For the latest updates, please head to our website **https://www.ipweansw.org/state-conference**

ABOUT IPWEA NSW & ACT

The Institute of Public Works Engineering Australasia (IPWEA) NSW Division is the professional membership organisation who provides services and advocacy for those involved in and delivering public works and engineering services to the community.

IPWEA has been established as a charity with the purpose of advancing the public works sector in Australia, particularly in NSW and ACT. Our mission is to enhance the quality of life of NSW and ACT communities through excellence in public works and services. We seek to inform, connect, represent and lead public works professionals in NSW and ACT.

Many of our members are engaged in local government, the tier of government that has at its heart the provision of public infrastructure, works and services, management of roads, bridges, community health, road safety, sport and recreational facilities, water and sewer, emergency management which are all key areas of responsibility for local government engineers.

To become involved in this prestigious membership organisation, go to our website and sign up via our new system and membership portal or contact us via email at: **nsw@ipweansw.org**

Don't miss out on the opportunity to be a part of something special.

New South Wales
IPWEA
INSTITUTE OF PUBLIC WORKS ENGINEERING AUSTRALASIA

Do you need assistance with pre-audit preparation? Or Asset Stock in accordance with Fair Value Compliance?

Download the complimentary IPWEA NSW Fair Value Pre-Audit Checklist

The Fair Value Pre-Audit Checklist was produced by the IPWEA NSW Asset Management Panel. The purpose of this document is to provide NSW Local Government Agencies with an approach that supports Pre-Audit Preparation with items to consider whilst undertaking revaluation of their Asset Stock in accordance with Fair Value Compliance.

A Council's Annual Financial Statement provides general purpose users with information regarding the current financial status and performance of the organisation during the previous financial period. It is therefore essential that financial statements reflect a "true and fair view" of the financial position of the fair value of the organisations non-current assets and as well as the amount of loss of value the entity expects to experience in the next financial period via consumption (depreciation).

For an individual asset, if the rate of consumption is expected to be greater than the previous year, the depreciation method employed should also reflect an increase in the rate of consumption. If the rate of consumption is expected to be constant till the end of life, the adoption of a straight-line method would be appropriate.

The development of a detailed methodology manual for valuation purposes can greatly assist your agency to demonstrate compliance with accounting standards and provide an outline of the processes and assumptions used to develop the asset register and undertake the valuation. The methodology should detail as much of the information an auditor is likely to investigate during the audit as possible, to assist in a smooth and time efficient audit.

Download the complimentary IPWEA NSW Fair Value Pre-Audit Checklist from: **https://www.ipweansw.org/resources/fair-value-preaudit-checklist**

Be Inspired... with abilox®

abilox®
Concrete Colours For Life!

Why have plain, drab and uninspiring uncoloured concrete, asphalt and mortars, when you can take your project to the next level with high quality abilox® UV resistant mineral oxide powder pigments from Ability Building Colours?

Available in a choice of over 70 standard colours OR in your own custom colour, abilox® is ideal for use in premixed concrete, asphalt, mortars, paints, surface coatings, caulks, sealants, applied finishes and a range of other construction products - delivering extremely high quality, consistent, reliable and permanent colours that won't fade or degrade.

Call us today on: 1800 337 324 (Toll Free)

Ability Building Colours
133-135 Northern Road
West Heidelberg
Victoria 3081

Postal address:
PO BOX 391
West Heidelberg
Victoria 3081

P: 03 9457 6488
F: 03 9458 4683
E: service@abilityproducts.com.au
www.abilityproducts.com.au

ABILITY BUILDING COLOURS
DIVISION OF AUSTRALIAN OXIDES PTY LTD
FINE COLOURS & PRODUCTS FOR CONSTRUCTION

Why Managing Water On-Site Is Best Left to Outside Experts

By Rafi Tchopourian, General Manager - Engineering Solutions, Coates Hire

Chances are good that at some point in your construction career you've come across water on site which needs to be removed. If so, you've likely also faced the conundrum of how to remove it or treat it quickly and cost-effectively. For many, it comes down to two clear options: buy additional equipment and manage the process in-house, or partner with a water management specialist and borrow their expertise.

It seems like a simple "this or that" decision, but this is not just a capital expenditure versus an operational expenditure discussion. While purchasing equipment is a good long-term investment for some businesses, particularly if they consistently encounter similar water issues across any number of sites, owning equipment and delivering these services also comes with considerable risk.

In addition, while water management can be predictable in some instances, it's the ones that aren't where the benefits of bringing in an expert to take the reins become apparent.

EXPECT THE UNEXPECTED

Sometimes managing water is a planned exercise, but there are times when the need to remove or treat water comes as a surprise. Major weather events can create water hazards on construction sites, and geotechnical studies sometimes reveal contamination that customers weren't expecting.

For instance, the Bureau of Meteorology recently announced that 'La Niña' has begun in Australia for the first time since 2011 and with it comes potential for a wetter spring and summer than usual, which should provide some respite for a nation coming off a season of bushfires and a prolonged drought. But La Niña might play havoc with the construction sector locally in the next few months, with torrential downpours more common and harder to predict.

Very few construction businesses have the right equipment available onsite at a moment's notice, and unpredictable weather patterns combined with other unexpected water discoveries can lead to sites falling behind schedule. In addition, those without the required equipment more than likely wouldn't have the necessary experience to deal with those issues.

Most organisations only encounter a need for on-site water management occasionally, and it makes sense to look

afield and lean on companies who know what to do regardless of the situation. It is much more affordable in the short term than purchasing equipment and the additional purchasing expenses (training, storage, and maintenance) are nullified by outsourcing the management of water issues to the experts.

Furthermore, there are a set of assurances which a company can come to expect when outsourcing water management:

- Support from trained water technicians and diverse teams of qualified engineers
- Automated solutions requiring minimal training and customer input
- Water flow analysis to inform pump selection; water bypass design; and the impact of dewatering on construction and neighbouring assets
- Access to ancillary support services like temporary works to prevent groundwater seepage
- Detailed laboratory testing to determine water quality and optimal water treatment methodology
- Detailed reports and samples to confirm discharge water quality
- Confidence that water treatment results will meet all requirements and stand up to scrutiny

Of course, there are nuances to consider when it comes to outsourcing, and companies need to undertake due diligence and research which company – or companies – can best help and will be ready to go in a pinch.

THE POWER OF ONE PO

When designing a water management solution companies will need to weigh up working with one supplier, against outsourcing individual project deliverables to individual providers.

When customers are faced with this choice, oftentimes they find it much easier to work with a single supplier who can deliver a reliable, turnkey solution, with the added benefit of reducing as much unnecessary admin as possible through the creation of just one purchase order (PO) for the entire water management project rather than multiple POs for several companies.

This approach also gives customers the assurance that when issues arise there will be no finger pointing among organisations – issues will simply be resolved.

Water management can be a complex process, requiring a diverse set of specialist skills and experience. Some companies will be tempted to buy equipment and build the expertise, particularly if their water management needs can be somewhat predictable.

But for many, outsourcing water management rather than buying the requisite equipment makes the most sense. In doing so, companies can avoid the hassle and expense that comes with equipment ownership: the time and expertise to manage water issues: the investment in maintenance and process management: and accountability for the overall success of the solution.

Furthermore, streamlining the approach with a single turnkey solution ensures additional benefits, such as reduced admin, that will be felt everywhere from the back office to the site.

NOT ALL CERTIFICATION SCHEMES ARE CREATED EQUAL

ACRS is a steel certification scheme for steel users, and independent of product suppliers - so you know ACRS is working for you.

Our comprehensive and rigorous audits include random sampling from standard production and 3-monthly checks on production data by qualified and experience auditors and technical staff, with independent testing conducted at selected laboratories to ensure accurate results independent of the supplier.

ACRS provides EXPERT, INDEPENDENT, THIRD-PARTY steel certification to Australian and New Zealand Standards - giving you confidence in the conformity of your steel supply.

Talk to us TODAY about how ACRS Certification gives you confidence in your steel supply.

www.steelcertification.com

Ph: (02) 9965 7216 | E: info@steelcertification.com

ABN: 40 096 692 545

ACRS - Independent, Expert Third Party Certification & Verification of Reinforcing, Prestressing and Structural Steels for Compliance with Australian and New Zealand Standards

PROGRESS GROUP

COMPLETE PRECAST TECHNOLOGY WORLDWIDE

- Highly automated and customized carrousel plants
- Reinforcement machinery and mesh welding plants
- Battery moulds, tilting tables, various mould systems
- Slipformer, Extruder, equipment for production on beds
- In-house precast production and in-house testing plant
- Software for machinery and complete ERP systems

www.progress-group.info

EBAWE WE FORM YOUR CONCRETE · progress Maschinen & Automation · tecnocom CONCRETE IN FORM · ECHO PRECAST ENGINEERING · ULTRA SPAN EXPERIENCE PERFORMANCE · PROGRESS Bauen mit System · Costruire con sistema · PROGRESS SOFTWARE DEVELOPMENT