COX ARCHITECTS
NATIONAL INSTITUTE OF CIRCUS ARTS

TOYO ITO
BEYOND MODERNISM

IREDALE PEDERSEN HOOK ARCHITECTS
GIDGEGANNUP HOUSE
Welcome to Steel Profile’s #103

We are always passionate about the creative potential of steel in the country’s new buildings, significant renovations or historical constructions.

All of the projects you will find about have constant spaces via assembly and provide the utmost comfort. Projects provide a key factor in every architectural project.

Discussion and debates were co-curated by the Steel Profile Advisory Panel, with artistic sensitivity and professional debate.

The authors and editors have established an editorial advisory panel to ensure that only projects of the highest calibre are selected for publication.

The panellists are:

- Adam is an elected Councillor of the NSW chapter of the Australian Institute of Architects and a director of SJB Architects in inner-city Sydney.
- He was awarded the 40th Anniversary Churchill Fellowship in 2006, to study alternatives to steel framing in Palestinian refugee camps.
- His work is fuelled by an evolving interest in the diagram and frame as a basis for architectural invention, and the aesthetics of permeability.
- His projects have won numerous awards including AIA’s National Award for Architectural Excellence. Special Jury,” Wilkinson, Achen-Bizet and Frederick Hardenberg.
- The Australian Institute of Architects’ Special Jury, for his, during now regarded as an urbanist, and architectural critic, and architectural critic, and architectural critic.
- The creators of Steel Profile say about architecture – further enriched the conference dynamics.
- who argued that people other than architects have interesting things to say about architecture – further enriched the conference dynamics.
- of hydrotherapy in Victoria – has undergone a renaissance in which respect for water, landscape and the instrumental steelwork has been integral.
- Recital Centre has resulted in a complex and inventive re-creation of an entire block

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Editorial Advisory Panel

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Adam is an elected Councillor of the NSW chapter of the Australian Institute of Architects and a director of SJB Architects in inner-city Sydney.

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‘Island Nine’ of Port Phillip Zoo’s Orang-utan Enclosure provide its residents with robust and stimulating climbing structures that have earned the admiration of international primatologists and architects alike.

Modern architectural master Toyo Ito discusses his quest to find ‘a new roof’ in architecture – one that gave him a greater appreciation for the materiality of steel.

Minimalist Pedersen Hook Architects have imbued this home in Eaglehawk, Western Australia, with the same qualities so admired by the clients after visiting Port Phillip Zoo’s Orang-utan Enclosure

Steel Details
When a family of four approached Perth’s Iredale Pedersen Hook Architects and expressed their desire to live like orang-utans, the architects didn’t flinch. Having undertaken the successful redevelopment of Perth Zoo’s Orang-utan Enclosure, Adrian Iredale was confident that he could imbue their new house with similar qualities.

Words Rachael Bernstone  Photography Patrick Bingham-Hall; Andrew Pritchard
The Cole family first noticed Adrian Iredale’s work in a magazine: a house that he designed for his parents at Dawesville in Western Australia caught their attention. “It’s all COLORBOND® steel, and is elevated four metres at the front and two metres at the back, built on a bed of limestone,” Iredale says. When the family’s search for an architect revealed that Iredale had collaborated in the design of the Perth Zoo Orangutan Enclosure, which they had admired during a visit to the zoo, they decided to follow their instincts and appoint him as their architect.

“Sue Cole said, ‘I love the Perth Zoo Orangutan Enclosure and would love a house that enables us to live like that,’” Iredale recalls. “They wanted to hover above the ground and assimilate with the trees.”

The clients owned a farm at Gidgegannup, 40 kilometres north-east of Perth, and had selected a potential site for their new house beside a picturesque lake on the property. “If we’d built on that site, we would have had to remove existing landscape elements and interrupt the migration paths of native species, so we suggested they shift the house further back into an area that was already fatigued by farming activities,” Iredale says. “We wanted to string the house between a big bunch of trees and two isolated trees, like a line in the landscape.”

“The shift in the slope resulted in a crank in the plan that means the house is both parallel and perpendicular to the contours,” he adds. “That allowed us to reorientate the main living area to face north, and finish the master bedroom with a balcony that enables the clients to reach out and touch two trees in the middle of the field.”

The brief contained several other challenges, including the provision of a music room where two teenage boys could play piano, saxophone and trombone. “Sue wanted to be able to see the boys playing from the kitchen, but she also wanted the room to be placed near the entry so that music would filter through the house,” Iredale says. “They also wanted spaces that would open to the outside and to the pool, which was difficult because the house is so far above the ground. We ended up orienting the house to fully open to the pool and views of the lake beyond.”

Having agreed on the site and orientation, Iredale divided the house into distinct zones, which are differentiated by subtle changes in temperature. These become apparent as you traverse the entry bridge and cross the threshold into the main foyer. It can be opened on two sides to allow the pool to act as a cooling sink, in conjunction with prevailing breezes. The 4.2-metre-wide deck and steps that lead down to the pool provide the perfect place to sit and contemplate the valley views.

To capture a farming aesthetic, the architects chose LYSAGHT CUSTOM ORB® made from ZINCALUME® steel for the cladding, roofing, and soffits.

The house reveals the surrounding landscape and the delicate quality that comes out of the use of steel. It is like a line in the landscape that hovers in the junction between earth and sky.

“Sue’s wish was to be able to see the boys playing from the kitchen, but she also wanted the music room to be placed near the entry so that music would filter through the house,” Iredale says. “They also wanted spaces that would open to the outside and to the pool, which was difficult because the house is so far above the ground. We ended up orienting the house to fully open to the pool and views of the lake beyond.”

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To the right of the entry, the main room combines open-plan kitchen, dining and living spaces, with floor-to-ceiling charcoal-framed aluminium windows. “We wanted to definitely treat the landscape as a piece of art,” Iredale says. “We didn’t want them to forget to see the view.”

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At the far end of that wing, the master bedroom contains an ensuite with a bath that takes full advantage of the views, and a cantilevered balcony which juts out into the foliage. “It gives them a sense of living in the trees,” Iredale says. “They can lie in bed and look out over landscape.”

A carport, home office and spa are located underneath the house. “Because David Cole works from home sometimes, we wanted to provide a sense of leaving home to go to work,” Iredale explains. “The black-clad external stair that leads down to his office has open treads and is warmer or cooler than the main house, depending on the weather.”

“The spa is separated from the pool so that you can use it at different times, such as when it’s raining, or the kids could use the pool while the adults use the spa,” Iredale says. “The whole house has different zones that you can use depending on the seasons or weather, giving it a lot of flexibility. “They enjoy the flexibility of the design: they’ve had parties where they open up the living space and decks and host 80 people, or they can retreat to the undercroft for privacy if the boys are entertaining. It functions equally well as a party place and an intimate retreat.”

The main design challenge arose from the fact that the house is elevated 30cm off the ground at its eastern extremity, and five metres above grade at another.

“Steel was fundamental to solving that problem, because we wanted to minimise the amount that we touched the ground and minimise disturbance to the landscape,” Iredale says. “We only cut the ground in one spot, and that fill was used around the pool.”

The steel frame was designed by the builder Richard Tinniswood and Goldfields Steel Framing (GSF), based in Kalgoorlie. It was prefabricated using galvanised steel SHS columns, UB beams and C purlins, and delivered to the site ready for installation. “The major challenge on this project was being able to perfect the walls and presentation of the frames, because the external walkway was clad in clear polycarbonate sheet, thus opposing the raw frame profile,” says GSF managing director Craig Patu.

For the cladding, roofing, and soffits, the architects chose LYSAGHT CUSTOM ORB® made from ZINCALUME® steel to create “a sophisticated version of the farm aesthetic of sheds and other buildings,” Iredale says.

“We were not trying to create a ‘shy slickness’, we were trying to create something that is appropriate for that place. We wanted to value and emphasise the very things that make that place unique, by making a house that appears like an abstract line in the landscape.”

Iredale says he couldn’t have realised his vision without steel. “If it had been an absolutely – from a distance it needs a zinc-clad line sitting on columns,” he says. “It would have been a very difficult build in timber because we were able to achieve that very refined, thin material using steel.”

Iredale says the house is actually very refined, “For example, the windows have a simplicity about them that belies their complexity.”

Thenasi laures the innovation: it’s a design solution unique to this landscape and context, so that the house doesn’t resemble a “countryside from the city,” Iredale says.

“In terms of how to achieve a house on a sloping site, this is a simple and economic, but it manipulates the contours with dramatic effect,” he adds.

“At you drive along the first street you see fragments of the house through the trees, and it appears to be almost launching into space. On arrival, you see the way it relates to the distant horizon, and as you enter, you see the pool and lake and how they are integral to the design.

“I love the manner in which it reveals the surrounding landscape and the delicate quality that comes out of the use of steel,” Iredale adds. “It really is like a line in the landscape that honours the junction between earth and sky.”

Despite the delicacy of its appearance, the house is hardy and functional from the family’s perspective, Iredale says. “It looks delicate but it is actually very robust. They have a dog, and they sometimes come from the farm with muddy boots, so the design process you don’t have to have a concrete floor to cope with life in a rural environment.”

The Coles are happy with the way the house affords them the Linkedin lifestyle they sought, and their guests are equally captivated by their new abode. “People who used to just drop in for coffee now want to stay and won’t leave,” Iredale laughs. “Just like those orang-utans who are so content with their new home.”

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A s the first job that forging Perth-based architects Indale Pedersen Hook ever won, this ‘apian project’ has combined many of the architects’ interests and proved to be a challenging and stimulating design task over a 10-year period.

Their brief for the orangutan enclosure was to provide climbing opportunities similar to those the orang-utans would encounter in their natural environment – using robust materials in place of trees, which would have been destroyed very quickly. Taking their cues from primatologists and scientists, the architects developed several schemes, eventually settling on a series of steel, pre-cast concrete and timber tree-like structures for the orang-utans, with indoor viewing platforms around the perimeter.

The climbing apparatus resembles a ‘tunable’ forest with steel branches and ropes that can be adjusted by the keepers to suit different sized orang-utans. “Orang-utan brains are – or, being by the arms – from tree to tree, but the enclosure is a circular space which made that difficult, so we now aimed to provide a complexity and variety of climbing movements, rather than linear ones,” Adrian Indale says.

“Initially we tested our designs in drawings, working out the circles of reach, because we wanted to place the viewers as close to the orang-utans as we could without them touching, as there is no physical barrier between them,” Iredale continues. “There is very little documented research on orang-utans – so we held weekly meetings and workshops with keepers, whose more and more information was revealed and we kept refining our design.”

The main structural elements – comprising fixed and adjustable poles and platforms – were constructed from recycled power poles, hot-dipped galvanised steel and recycled jarrah timber. The complementary behavioral enrichment devices – puzzle boxes, water cannons and steel dip tubes – encourage skills orang-utans would use to source food and play in the wild. Steel was chosen for its long-term durability, resistance to orang-utan play, flexibility, and ease of installation. Much of the structure was prefabricated offshore and erected quickly to minimise disturbance to the animals.

A combination of factors keeps the steel cool to the touch, so that the orang-utans don’t burn their hands. These include the elevated position of the platforms, which are subject to prevailing breezes, the galvanised finish that reflects heat, and the thickness of the steel elements that minimise heat retention.

After the installation of the first elevated nesting platforms, the architects and primates carried out scientific post-occupancy evaluation studies to gauge the orang-utans’ responses.

“There is scientific evidence that the structures we have introduced have improved the behaviour of the orang-utans,” Indale says. “There is a diabetic male among the group and he has become much more active and consequently his sugar levels have dropped, and this condition has improved. His evidence that design can have a positive impact on health.”

IPH is currently working on the final stage of the project – the viewing areas and landscaping – which aims to emulate the orang-utans’ jungle habitat.

“There will be a sense of removal from the rest of zoo,” Indale explains, “so that you’ll be immersed in a landscape with a rainforest quality, above the ground on a series of ramps.”

The final stage will also incorporate new interpretive and educational materials, further enhancing private keepers’ resources for communicating with visitors about their orang-utan projects.

Conservation in the wild is one of the zoo’s key aims, and it has achieved considerable success to date. An important milestone was the release of Tama, a Perth Zoo-born orang-utan, into a protected national park in Sumatra, Indonesia, in November 2006.

As well as generating a positive response from its inhabitants and their keepers, the new enclosure drew strong praise from renowned primatologist and conservationist Dr Jane Goodall. She visited last year and described the enclosure as “absolutely wonderful” and “the best I’ve seen”.

“I love it that they’re all in their separate family groups and not kept in an artificial way,” she added. “I love the structure of it, so that’s it’s resembling the elements of a tree canopy.”

The project has also picked up several international architecture accolades, including an honourable mention at the international Architectural Review (AR) Awards for Emerging Architects in 2009.

Their brief was to provide climbing opportunities using robust materials in place of trees, which would have been destroyed very quickly.
Toyo Ito experienced an epiphany during the course of his Sendai Mediatheque project in Sendai City, Japan. Completed in 2001, this set him on a new direction in design. Prior to winning the design competition in 1995 for a complex to house a library, art gallery and audio visual centre, Ito had sought to incorporate technology explicitly in his buildings, creating structures that “nobody could touch”, that were “impossible to grasp and hold”. His Tower of Winds (1986) in Yokohama and Tokyo’s Egg of Winds (1991) were described by Tokyo-based architect Andrew Barrie as “interactive landmarks, whose design seeks to represent the invisible electronic world as a parallel to our physical environment”.

Following Ito’s experiments with materiality during the Sendai project, he now aims for “an architecture that you can touch and feel”. The ground-breaking Sendai project marked the start of Ito’s search for the new ‘real’ in architecture, in which he hoped to overcome some of the perceived limitations of Modernism.

Speaking about The New ‘Real’ in Architecture exhibition in Tokyo in 2006, Ito explained his shift: “Twentieth-century cities sought economic performance, so the same kind of buildings were constructed everywhere all over the world,” he said. “More and more, however, such architecture strikes me as no environment for vibrant human life, so I’ve turned my attention to other possibilities in architecture. I feel there’s a need to reassess the relationship between materials and people in order to reclaim a more fully human sense experience.”

“I found myself attracted to the strength of steel and its sense of substance”
Ito imbues his buildings with a sense of being in nature. In the Sendai Mediatheque, the natural world is evoked by the 13 steel ‘tubes’ that punctuate and support the seven steel-concrete slab floors. “The strong contrast between organic shaped ‘tubes’ and flat, highly abstract ‘planks’ almost seems to plant a grove of trees across an otherwise man-made expanse,” he says. “Or rather, it suddenly brings pure geometries into nature and sets them up in striking counterpoint.”

The steel ‘tubes’ are verticalcirculation routes that convey natural light to the ground floor (thereto that mirrors the few of several of the shrubs, fresh and conditioned air, and people moving on stairs or elevators between floors. The precision welding that connects columns to floor gives the impression that ‘tubes’ pass through ‘planks’ without touching, resulting in very flexible spaces that enable users to choose how they use them.

The exuberance of the result may give an impression of ease, but the project’s realisation was far from simple. In fact, the act of watching the site workers connect steel plates to steel tubes changed his way of talking about architecture. “At the time when I was doing the design, there was regular commentary on the project from local newspapers about the architectural ideas,” he says. “I felt like a voodoo doll with lots of needles in me. Initially I had designed a gentle lightweight structure, but because of the negative comments, I decided to create an architecture that would become much stronger, so I decided to give much more prominence to the steel during construction.”

Ito’s most recent projects feature impossibly thin and light concrete structures that owe their delicacy to the steel within. At the Meiso no Mori Municipal Funeral Hall in Gifu (2006), the 20cm-thick white light concrete structures that owe their delicacy to the steel during construction. “At the Meiso no Mori Municipal Funeral Hall in Gifu (2006), the 20cm-thick white light concrete structures that owe their delicacy to the steel during construction. “The site welding of steel plates was delicate because if we had too many joins, the steel would bridge and bend. There were constant arguments between the structural engineer and the site workers. That was a very difficult aspect of the job, but I really enjoyed the construction process.”

Ito’s recent projects have been similarly challenging, and Ito has again played a central role. The Serpentine Pavilion in London’s Kensington Gardens (2002), for example, features a steel frame and white aluminium panes that blur the distinction between inside and outside, and floor, roof and walls. In Japan, the flagship store for Tod’s in Tokyo’s Omotesando (2004) exemplifies Ito’s desire to create surface using structure. It uses steel-formed reinforced concrete and glass to produce a facade that mimics the Zelkava trees of the picturesque avenue.

For the nearby Mikimoto Ginza building (2005), Ito employed a similar method but eschewed concrete in favour of steel skins. All four facades comprise two 58-metre-tall steel towers that were manufactured in sections before being welded together on-site. These were installed about 20cm apart before concrete was poured between them to support the nine-storey building.

Mikimoto may appear as a sprawling, protean beast for retail therapy, but in reality, the process of constructing it and its furnishings was complicated and manual. “The site is filled with steel – countless slabs and pipes are suddenly introduced into the middle of the urban space,” he says. “Gradually they are being assembled to become one massive steel sculpture.” The sound of dozens of welders echoes from morning until night as sparks fly from their torches, and the steel dust dances in the air like smoke belched from a chimney. This work seems too primitive for a construction site in the computer age, bringing things into evidence seems like a violent act.

Although the skin is built with 12mm steel plate, when you look everything tends to bend,” Ito continues. “Furthermore, if you don’t do it perfectly, at the end you see the weld joints. To achieve a perfectly flat surface we had to work a lot. We, the engineers, the workers, we had to experiment with a lot of different solutions. “Working with the Taisei Corporation was fundamental. There is the typical attitude of the Japanese craftsman – they do not like to do difficult things and they have an impossible task. If the duty is impossible, then the craftsman generates incredible strength and energy. I think: ‘I am the only one who can do it.’”

Ito’s recent projects feature impossibly thin and light concrete structures that owe their delicacy to the steel within.

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MASTER ON MASTER

During his recent visit to Australia, Toyo Ito met with Glenn Murcutt, whose work he particularly admires, and who is well known for his experiments with steel. So do the two architects have much in common? “I try to say how he works and his attitude,” Ito says. “He works only with himself, which means that he has to convinced even himself that his design will work.”

“I feel in Murcutt’s work is there is a strong connection between our two countries,” Ito adds. “Glenn’s wife’s mother lived in Japan for 10 years and he was also educated in Finland, and there are strong links between Finland and Japan. There are some very similar aspects in terms of culture and language. While it is very far from Japan or Finland to Australia, I think there is a close connection between Glenn and Helsinki.”
Celebrating an industrial aesthetic and a newfound public presence, Melbourne’s Swinburne University of Technology continues to innovate in lightweight steel architecture with its new National Institute of Circus Arts (NICA) building at the Prahran campus.

Words: Christine Phillips  Photographs: Dianna Snape, Paul Bradshaw
The campus already comes with an impressive collection of steel-clad buildings. The NICA building, however, with a blue-glazed ribbon motif that dances around the facade, stands out as more than just an elegant shed.

The $7.5 million facilities were designed by Cox Architects. The centre expands on NICA’s existing facilities to create a suite of lightweight steel structures that add character to the Green Street neighbourhood. In many ways, the project can be seen as a counterpoint to Cox’s sports and recreation projects – such as the Rod Laver Arena and Sydney Football Stadium – that have become synonymous with white steel expressions.

This building proves Cox’s versatility in approach to both program and context.

NICA had a humble start in 1995 when its founding students trained in an unrenovated warehouse in Melbourne’s Docklands. This space was superseded by the construction of the Sidney Myer Circus Studio, (designed by Bates Smart and completed in 2001), the first of NICA’s buildings at Swinburne’s Prahran campus. As contemporary circus arts continue to grow in popularity and demand, so too do NICA’s needs. The institute now offers a Bachelor of Circus Arts program for more than 80 students and has outgrown its not-so-old facilities, making expansion crucial.

The brief for the new facilities called for a highly flexible, purpose-built venue to house training and performance spaces for NICA students, as well as the wider circus community. Contemporary circus or cirque nouveau is far removed from the image often conjured up by traditional circus art. Lions or tigers form no part of cirque nouveau, which instead focuses on extending the limits of human skill and endurance. It includes a variety of activities such as gymnastics, acrobatics, aerial acts and dance-like adagio performances.

The choice of steel for structure and cladding was a considered one; its tent-like thinness and ‘escapist interior’ is a contemporary take on a ‘Big Top Arena’.

The NICA building’s blue-glazed ribbon motif dances through the cladding, which consists of LYGAHT SPANDEX® H-TEN® made from COLORBOND® Metallic steel in the colour Facade®
Cirque nouveau required a large shed that could accommodate various kinds of trapeze and circus apparatus in a number of configurations. NICA’s creative director also recognised that the resulting flexible space could be hired out for external functions to generate additional funding that would sustain the facility over the course of its lifetime. Cox’s response to the brief was a playful interpretation of circus themes, combined with a thoughtful response to the site and cultural context.

The choice of steel for structure and cladding was a considered one; its tent-like thinness and ‘escapist interior’ is a contemporary take on a ‘Big Top Arena’. The design also draws on local street art culture, providing a tag of its own with its blue-glazed ribbon that sweeps across the facade.

Replacing a redundant ground-level car park, the new facilities occupy two connecting buildings. The larger 30m x 20m structure occupies the corner block and is a portal-framed building clad with LYSAGHT SPANDEK HI-TEN® made from COLORBOND® Metallic steel in the colour Facade®, which juxtaposes against the existing white-clad facility and emphasises the building’s industrial aesthetic.

It houses the main 16m performance space with seating for 600, which can be adapted for different seating and stage configurations, and doubles as rehearsal space. The building also incorporates back-of-house facilities and a loading bay. The entry foyer is located within a tower glazed ‘candla’ structure, which connects the existing Sidney Myer Circus Stables to the new facilities. Its brightly coloured blue glazing reads like a gymnast’s ribbon, connecting the two new buildings and announcing the entry point. It also encourages passersby to stop and peer in through the facade to catch glimpses of NICA students in rehearsal.

The connecting pavilion is both utilitarian and theatrical. As well as the foyer, it houses a drama room and has capacity for two or three stages. Inside, an over-scaled door connects the old facilities to the new, with a box office and bar to either side. The incandescent-globed ‘box office’ and ‘bar’ signs are reminiscent of backstage dressing-room mirror lights. During warmer months, the large glazed doors open up to create a generous indoor/outdoor space.

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The design caters for potential future expansion in the form of a steel roof structure that is designed to withstand upward development. An obvious marriage exists between the scale and architectonics of the new Cox-designed performance building and the original studio. The new facilities neatly complete the block to create a handsome wall comprised of Stramit Longspan made from ZINCALUME® steel along the streetscape.

Like the existing building, the new facility adopts a three-tiered facade – a concrete base punctured...
by an array of glass brick ‘peephole’ windows and a strip of louvered windows allowing cross-ventilation, topped by the roof and wall cladding made from COLORBOND® Metallic steel. Both buildings are of similar proportion and height, and perfectly anchor the corners of the block. Both also unabashedly embrace an industrial steel aesthetic and celebrate steel construction in every way.

Design architect for the project John Hayball explains why the choice of steel for both the cladding and structure was so fitting for the project. “Steel is the only material you can use for an instant like this,” he says. “It gives you the required strength and loading requirements and the ability to precisely design the steel sections because of the nature of the material. It is also very flexible and cost-effective.”

Structurally, the new facilities are a clever advancement from the Sidney Myer Performance building. Where the Bates Smart-designed facilities proudly expressed the vertical structure externally, Cox strategically contained the framing within. To some extent, it sits in counterpoint to many other Cox projects that heroically express the structure externally, but there were good functional reasons for not doing that here. The beams and columns are also used to support added trusses and stage apparatus for performance and rehearsal configurations. Importantly, the space can be partitioned into quarters to enable four simultaneous acts to take place in consonance with aerial acts.

The portal frame spans a seven metre grid to allow maximum space for performers to move without crossover. It also incorporates a double truss system to allow access to all aspects of the roof. Steel catwalks span beneath the five trusses, with one across the centre and one at the south-west corner. These incorporate structural steel mesh traversable floors that withstand loads of attached apparatus. Arup, the project’s structural and civil engineers, devised an inverted box section for the truss system. According to John Hayball, this enables rigging off the top chord of the truss, with free clearance so that both top and bottom members can be loaded.

The new space also provides optimum conditions for performers and performances. Its concrete floor is hydronically heated to maintain a moderate temperature for the performers, who need to keep their muscles warm. It’s a marked improvement from the timber floors of the original studio, which was continually carved up for performance requirements, making maintenance difficult. Another advance is the incorporation of a solid louvered blade in the hopper windows, rather than the glazed ones used at the original facilities. These allow 80 per cent blackout for visual projections during performances.

Walking through the new buildings with NICA production operations manager Nick Barclay and architect John Hayball, it was clear that the facilities were not only functioning well, but also much loved. School children were training as part of a holiday program and were clearly excited by their activities. “Most people are quite impressed and surprised about how big and modern a facility it is,” Barclay says.

Hayball believes the briefing process greatly boosted the building’s ultimate success. “When we won the commission, we had the opportunity not just to meet with the project control group, but with staff and riggers,” he explains, “so it was a real hands-on briefing, enabling us to fine-tune the facilities for all aspects of circus performance and training.”

This building is undoubtedly a fine addition to Swinburne Prahran’s steel architecture. Its celebration of steel offers a modern interpretation of the circus tent, while giving NICA a new-found public presence and identity.
A new government office building has injected a sense of vitality into Penrith in Sydney’s west. The prominent building, with its weathered steel and louvred facade, sits proudly alongside its neighbours in the city’s commercial heart, and offers a new vision of sustainable design for the region.

Words: Alex Taylor  Photography: Paul Bradshaw

The weathered steel’s oxidised layer is a protective patina that will last the building’s lifetime and is effectively maintenance-free.
The striking new building at the corner of Balmoral and Station Streets in Penrith, opposite the railway station and next door to the Australian Tax Office, is the city’s tallest structure and instils a new mood of confidence in the outer-west hub.

The Penrith Government Office Building (PGOB) provides locals with a one-stop-shop to access government services, including the Office of Fair Trading, the Department of Community Services and the Sydney Catchment Authority.

From an aesthetic point of view, the building appears impressive thanks to the integration of a new BlueScope Buildings Facades product, one of the first projects in Sydney to use the innovative technology. The panels are BlueScope Buildings Facades Azure™, which are made from WR350 XLERPLATE® technology. The panels are BlueScope Buildings new BlueScope Buildings Facades product, one appears impressive thanks to the integration of a structure and it instils a new mood of confidence over that time.

The BlueScope Buildings Facades’ system’s absence of sealant-filled joints and articulate detailing

The building’s Ecologically Sustainable Development (ESD) features include operable louvres to the eastern and western facades; extended floor plates that shade the level below; and proprietary-technology operable aluminium screens blazed on the northern facade to provide sunshine.

All of the materials, and particularly the weathered steel, were chosen for their longevity, to meet the client’s demands for a building that would last a minimum of 15 years and require little maintenance over that time.

Bob Nation had used weathered steel in previous projects such as the Sidney Myer Asia Centre at The University of Melbourne. “We did a lot of research and through that process we contacted BlueScope Buildings Facades,” De Waal explains. “Although there were some concerns about using weathered steel in the facade, we came to the same conclusion through a number of routes that provided the same results. We pre-weathered and treated properly in its detailing, the product would be fit for purpose.”

To that end, Nation proposed a ‘rain screen’ facade system which, according to De Waal, is not common in Australia but has been widely adopted throughout Europe and the United States over many years.

“The ‘rain screen’ facade is not a water-tight skin,” he explains. “The first layer is a backup wall made of concrete block within a concrete frame, which is waterproof, then the panelised system sits like a screen in front of it. The assembly enables the wall to ‘breathe’ behind the panels, which are open at the top and bottom.”

“This rain screen’ facade system offered the best outcome in relation to our desire to use weathered steel as a featured material, and the need to generate a facade that was well detailed and easy to install,” De Waal says. “The BlueScope Buildings Facade system provided the best fit for the facade performance criteria, which included longevity, crisp detailing, a professed surface and value for money.

“It also allowed for a crisp expression of the panels which was possible because of the absence of sealant-filled joints.”

“The idea that you can be supported by good facade engineers who effectively operate as a one-stop-shop, and achieve that level of crispness in detailing, makes the BlueScope Buildings Facades product an attractive proposition,” he adds. SJP

This is one of the first applications of the new BlueScope Buildings Facade system that we have seen. The BlueScope Buildings Azure™ panels provide strong colouration and a graphic quality to the facade. The WR350 XLERPLATE® weathered steel panels in particular give the building a presence that would be hard to accomplish with other cladding products, and the panelised system is beautifully integrated with the overall design.

The BlueScope Buildings Azure™ facade system made with AS/NZS 3678 – WR350 XLERPLATE® weathered steel; BlueScope Buildings Azure™ facade system using pre-painted panels

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Guided by a simple philosophy about the role of, and respect for, water, Cox Architects and Planners has revived Victoria’s Hepburn Springs Bathhouse.

Words: Peter Hyatt  Photography: Derek Swalwell; Peter Hyatt
That hotbed of hydrotherapy, Hepburn Springs, has undergone a renaissance in recent times. Tourism has acted as a stimulus to oxygenate and revive the tired spa and bathhouses that, until recently, occupied pride of place.

Just 110 kilometres north-west of Melbourne, near Daylesford in Victoria’s historic mineral springs district, the springs have been born again with some fine design by Cox Architects and Planners. Recognising the need for frisson, rather than fusion, the practice has created a facility grounded in practicality and lofted with environmental aspiration.

Guided by a simple philosophy about the role of and respect for water, the practice evolved a distinctly pared result that strips away all artifice. Its high performance materials provide a highly legible elegance, while steel and glass wrap the package in a way that is sustainably sharp rather than hair-shirt woolly.

Inclined glazing and an inclined roof made from COLORBOND® Metallic steel are key components in subtly realising Hepburn Spa’s sublime environmental circumstances. Peter Hyatt spoke with project architect Marc Raszewski of Cox Architects and Planners in Melbourne about the role of design in better realising the region’s failed therapeutic waters:

How long did it take to arrive at such a distilled result?

It took around five to six attempts to reach this final iteration. The project had a long gestation of almost six years from commission to opening.

Was it difficult to let go of the design at each point, when you felt as if you had already arrived at the answer?

In many ways the design continued to be refined and resulted in a more appropriate solution. We felt gutted quite a few times. We were sure we had it, but on each occasion we realised some part could be improved.

How mindful were you of the opportunity to deliver a truly ‘green’ building?

The entire basis of the project is about sustainability. We began with the idea of remaking a direct connection between the water, the land and those that inhabit it. Thus the building had to be part of that system. By definition, spas require high-energy input; it’s a building type that inherently uses a lot of resources and energy to heat the water, and it uses the water itself.

The big issue for the local community, which has been on water restriction due to the drought, was to ensure that it wasn’t just a case of visitors coming up from Melbourne and using all of their water. The whole premise for the development was no increase in water usage.

What was the brief for the new building?

The brief looked simply at the number of pools and therapy rooms. We came up with the idea of a landform building in which the pools were ‘cut’ from the site itself, and the notion of the bathing pavilion. We managed to maintain the strong community aspect to the bath-house. It’s not designed as a private club or hotel-style spa resort. What’s here is a natural resource that only occurs in this location and that everyone has access to.

What were the major design constraints?

The whole of Daylesford’s plumbing runs down the side of our site. The creek on the other side has a boundary we could work to, and we sought advice...
from the Department of Sustainability. There were fixed levels so we had to pay regard to and we had to watch that we didn’t upset any springs while we were setting the foundations. The design was really about lifting the plane rather than excavating and possibly damaging the aquifers.

There are some convincing applications of steel that go a long way towards ‘shrouding’ the package and avoiding the ponderous. As the design focused on the water, it was important to minimise and refine the structure, to lighten it as far as possible. There’s a lot of steel used in the lightest way possible. It has the lightest of roofs that works with the very fine roof beams, and those in turn attach to the recycled ironbark columns.

The roof penumbras with a ‘cocked hat’, friendly disposition that presents such a sunny face on the east elevation.

The roof pitch follows the topography. We wanted to minimise the impact of a new object on such a beautiful site. We’ve done a lot of steel buildings and so we are pretty experienced at getting those sorts of buildings right. The structure behind the thermal break is all steel so that you get that tremendous lightness. We placed 150mm x 10mm steel fins along the glazed facades to provide strength. They’re sandwiched between relatively fine ironbark glazing frames, so the steel never actually makes contact with the outside. A stable 28-degree internal temperature saves the steel protected from the corrosive effects of condensation. The steel is protected with an A10 finish, similar to that used on bridges and the Melbourne Cricket Ground North Stand.

How was steel able to contribute to the result?

Steel was really instrumental in creating the appropriate lightness in the roof and this allowed it to ‘float’ and fit in with the spirit of the design. Could the building have been realised using materials other than steel?

Steel was vital in achieving the structural lightness and lightness. Condensation and energy efficiency concerns necessitated a built-up roof with high thermal values. An alternative timber solution for this primary span could not have been achieved in a single solid section and would have required a composite product – with the associated risks of de-lamination and instability in the aggressive chlorine and mineral water environment. In this design the use of timber, as either a truss or laminated member, would have required a greater beam depth, undermining the design concept of the light floating canopy. The slenderness of the structure aids to the legibility of the building as a modern addition to the bathhouse complex.

What is the project’s best attribute?

The variety of the crafted spaces and the intimate levels of engagement with the mineral water, the landscape setting and the site’s continuation of historic traditions.

Why did you specify COLORBOND® Metallic steel for the roof?

The roof wasn’t a case of using the cheapest available material. We specified LYSAHT SPANDEK® made from COLORBOND® Metallic steel because it was quite cost-effective. When you see it from above, you recognise the number of different colours used – Facade®, Axis® and Conservatory®. We wanted to minimise and refine the structure, to lighten it as far as possible. There’s a lot of steel used in the lightest way possible. It has the lightest of roofs that works with the very fine roof beams, and those in turn attach to the recycled ironbark columns.

The Bathhouse’s roof pitch follows the topography to harmonise with the site, its shelter and light LYSAHT SPANDEK® made from COLORBOND® Metallic steel achieving a sharp perimeter edge

The result has to embody tranquility and calm. Is that how the design process unfolded? Was it about lifting the plane rather than excavating and possibly damaging the aquifers?

The pure and direct connection that can be made between the person, the water and the environment. To have embroidered would have been to disrupt this simplicity. Hedonism and the architecture that supports it can prevent us from achieving this simplicity. In a world full of clutter, luxury can also be about sparseness. We didn’t have a huge budget and so it was never going to be a case of marred columns and gold-plated tags.

The client, the operator and our own people really did insist on a project that was unique and special. We began with a strong philosophy about the water, the site and its history. We had a clear idea and a set of principles involved with our client and were maintained throughout.

To what extent were you informed by the need to satisfy the desire for concrete, concrete structures in the particular landscape setting and the site’s continuation of historic traditions.

Your use of grain and careful details is really integral to the result. You are in contact with the detail here and have the time to experience the grain as part of the relaxation process. What looks minimal at first glance slowly reveals depth of detail. There are many of those details. The eaves, for instance, are all in steel to achieve that sharp edge along the perimeter. There’s just one demarcation that’s structural and it runs directly from one corner. Here, steel is working both in uplift and compression. We also used steel for the sun-shades on the link between the old and new. The idea was to make it a fine, delicate connection and to see it almost dissolves. It’s a very fine structure that references Edwardian-era eaves, but done here in steel. A similar approach was taken with the access bridges that uses unfinished 3mm folded AEROLATE® and stainless steel/mahogany. There is no attempt at desire to cover up or use applied finishes, so the component parts that provide the formal expression are celebrated.

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Melbourne practice Ashton Raggatt McDougall (ARM) is interested in history, culture and nuances, and other ideas that are far more abstract. ARM’s commission to design the adjacent Melbourne Theatre Company Theatre and Melbourne Recital Centre was a dream and, not surprisingly, the result is rich.

Words Anna Johnson  Photography Paul Bradshaw
The dedicated abode that ARM has designed for the long-established Melbourne Theatre Company (MTC) and the new home it has created for chamber music in the Melbourne Recital Centre (MRC) are complex and inventive, offering a vibrant street condition. The architects began with a strong desire to extend the arts precinct and expand its material themes, providing new legibility for existing materials—such as the pipework of the Melbourne Arts Centre spire and the bluestone of the National Gallery of Victoria—and sought to suggest alternative ways of understanding them.

ARM’s (modestly) stated desire was to make a “decent bit of Melbourne street with two buildings that had a strong promenade experience.” To this end, it has reimagined an entire block. The two buildings, side-by-side on Southbank Boulevard, each occupying their own corner, with the MTC flanked by Dodds Street and the MRC continuing on Sturt Street. ARM describes this realignment of the Boulevard as providing “a rich but ordinary street feel, with the two separate programs remaining identifiable as two collaborative yet distinct personalities.” In other words, a set of non-identical Siamese twins.

Although ARM’s buildings are always structurally inventive and highly precise, structure and materiality alone are not issues that interest the firm. As director Howard Raggatt says: “We have always been overtly disinterested in that tradition of structure, and whilst some of our buildings are quite complex and difficult structurally, it hasn’t been our interest to turn them into some kind of engineering object.”

Nevertheless, in the MRC and MTC we indeed find a lot of structure—in fact 1200 tonnes of steel with over 14,000 individual members. The steel elements in the MTC Theatre alone include the dominant white 219mm-diameter pipework, lightweight metal cladding supported by a steel stud and structural steel system, and the lightweight metal-clad roof.

Both buildings are roofed with LYSAGHT KLIPLOK® 700 made from COLORBOND® steel in the colour Night Sky®.

Inclined at a 14-degree angle, the MTC’s facade frame also supports the upper floor levels. The fly tower is an all-steel structure clad in concrete panels for sound-proofing. The sheer size and quantity of the MTC’s steel elements meant they needed to be manufactured in the street and erected in one piece.

And so, while the pipework is an intentional reference to Melbourne’s love affair with expressive piping—as seen most overtly in the Rod Laver Arena—the MTC’s piping doesn’t aim for a synergy of engineering and architecture. Instead, as Raggatt explains: “There is a lot more interest in the freedom of that steelwork to convey ideas, rather than always being subject to the necessities of structure. The facade system, composed of iridescent painted steel pipework that is mounted proud of black aluminium cladding, is almost entirely a visual decorative element.”

During the day, the pipework facade evokes an almost tacky, ‘lights-on-in-the-nightclub’ feel, but at night, when patrons arrive for a performance, it is transformed, taking on a flickering, joyous character. There is a lot more interest in the freedom of steelwork to convey ideas, rather than always be subject to the necessities of structure.
Raggatt says the client wanted a “pretty ratty” building that did what it had to. “Theatre buildings are notoriously lumpy – things have to go exactly where they have to go,” he says. “There’s not much room for a whole lot of architectural affectation in a modestly budgeted building.”

In ARM’s hands, even such a straightforward approach was likely to result in a complex building, one that is almost difficult to visualise, where it is difficult to determine its actual shape. The architects refer to this as “designing in the dark”, an idea to produce an architecture that is non-formal, almost non-compositional.

The Melbourne Recital Centre is a studied contrast. The clients’ conception of the space and its operation was driven by music – the very nature of sound – and its history. While the MTC Theatre was conceived as “a direct, non-glitzy, knockabout-on-the-street kind of building”, according to Raggatt, the MRC’s design strategy was driven by ideas of the precious – how music and its history could be contained and protected.

ARM’s interest in packaging – the relationship between what is contained and the container – is evident in the polystyrene aesthetic of the facade and street-level promenade.

“It’s a fairly grand scale for a piece of polystyrene!” Raggatt admits. “It’s certainly meant to transcend that humble origin, but we did explore some of the more, in style, that emerges from that kind of technology. It gives us a figuration that conveys a kind of precision. Polystyrene is very engineered and not designed for aesthetic purposes. Rather, it’s about a fit-for-purpose attitude and we quite liked that as an aesthetic approach – rather than launching into some sort of typically angular or contemporary manner.”

As is characteristic of ARM’s work, the final building – rich with other subtle and some more direct architectural references – also opens up to other readings. In the grotto-like space of the MRC’s polystyrene promenade, the famous stone passageway of Antonio Gaudi’s Parc Guell in Barcelona seems not so distant.

The steel work on the MRC’s northern facade has perhaps the most interesting application of steel. The 28-metre-high elevation features a dramatic window wall segmented into 3.5-metre panes. To be structural as well as being a glazing system.

The steel-framed structure. The two are not connected, isolated from the ground, and therefore from any structural-born noise. Surrounding this is a separate steel ladder frame system and is therefore structural as well as being a glazing system.
Because it was a one-off and required particular integration with structural engineering, the entire wall was prototyped before being constructed to ensure design integrity.

With its characteristic non-uniform hexagonal frame, the glazing becomes a kind of bubble-wrap that extends the ideas of protection and packaging.

The size and weight of these steel members – more than 50 tonnes of 40mm x 220mm structural boxed sections – required that the elevation be manufactured off-site in a number of ‘blobs’ which were brought to site and constructed piece by piece.

This wall also acts as a thermal chimney. Six operable windows at Level One and a further four windows at Level Four open automatically to equalise air when the building reaches a pre-set temperature.

The bubble window’s encasement – the polystyrene element that wraps around the glass and forms the promenade – is cast Glass-fibre Reinforced Concrete (GRC) mounted on steel panels.

The size of these panels required them to have their own steel frame bracing system. The differing steel frames that were cast into them were in turn used to connect them to the building’s structural steel sub-frame.

This precisely made and modular, relatively lightweight, precision system enabled ARM to achieve fine-grained surface patterning.

The MRC’s western façade is different again, with its bluestone treatment directly referencing Roy Grounds’ nearby big bluestone container: the National Gallery of Victoria. Marking this surface are soft folds and lines that resolve in a bronze aluminium-clad rotated expression.

Here, the architects draw on their interest in operative geometry – a reference perhaps to Minifie Nixon’s adjacent Centre for Ideas building with its shiny aluminium Voronoi-patterned surface treatment. As Raggatt states: “It’s not so much the fold, as the operation of the fold, that interested us”.

Precision was a pre-eminent issue for the clients of both the MTC and the MRC. For the MRC, the auditors’ acoustics had to be as close as possible to so-called perfect “non-adjusted natural acoustics”. The final acoustic result is so accomplished that some performers are reportedly nervous playing in the hall because it is usually so transparent and revealing.

ARM’s skill and established working knowledge of advanced digital technologies and modeling were paramount in meeting the client’s precise acoustical requirements. Programs such as Rhino and Dados were used to test volumes and the Odeon and acoustical requirements. Programs such as Rhino and Dados were used to virtually test all connections and structures through computer-generated 3D modeling and 3D shop-fitting.

"Nearly all of our consultants work in 3D,” Raggatt says. “If they don’t, we tend not to work with them because we want things modelled as we go along.”

Ironically, in view of ARM’s direct engagement with manufacturers and its hands-on production of the building, these architects, known as digital masters, are more than a little bit ‘arty-crafty.’

The resulting steelwork is precisely tailored for its buildings, ARM worked directly with engineers to virtually test all connections and structures through computer-generated 3D modeling and 3D shop-fitting.

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The resulting steelwork is precisely tailored for its structural requirements, and the buildings assemble together tactfully well. The steel plays an integral role in realizing the architects’ vision of expanding Melbourne’s arts precinct by using known materials to convey new ideas.
The form of the Hinkler Hall of Aviation in Bundaberg unmistakeably takes its cues from aeronautical engineering, especially the bi-plane that Bert Hinkler flew from London to Darwin in 1928, while the facade treatment subtly references the local landscape of the pioneer aviator’s birthplace. Photography: Nathan Hildebrandt

Paul Sekava, associate at Fulton Trotter Architects in Brisbane, says that when you fly over Bundaberg you see the patchwork appearance of farmland. It was from this image that his firm drew its inspiration for the innovative cladding system that adorns the Hinkler Hall of Aviation.

“We used an abstracted version of the aerial perspective to sell the building’s appearance. The shape of the COLORBOND® steel sheets on the entry wall, with its diagonal edges, evokes the feeling of speed,” Sekava says.

The wall features randomly placed Stramit Corrugated panels made from COLORBOND® Metallic steel in the colours Citi®, Conservatory®, Cortex®, Facade® and Skybridge®.

“Although in the standard COLORBOND® steel range there is more variety of colour, and while some of those shades are closer to the actual landscape colours, we decided to use the COLORBOND® Metallic steel range because you get slight variations in different light and the colour change is more subtle.

“We didn’t want to end up with a checkerboard effect. If we’d used the standard range, the wall would have looked more literal, but we wanted an abstraction of the landscape idea.”

The effect of overlapping steel sheets wasn’t easy to translate from paper to built form, and involved several challenges, Sekava says.

“Fundamental issues were how to get reasonably watertight cladding, achieve variation in the colours, and not solely conform to the structural grid.

“We worked out with the builder that if we put down the first base sheet, that would provide waterproof cladding by running full-length sheets from grid to grid, varying the colour vertically, with the second colour overlaying directly onto the first sheet,” the architect explains.

“We then added a third layer – in what we called the ‘cloud’ sheets – to achieve the three-dimensional effect.

“It went together quite quickly, although we had to innovate to get very neat diagonal edges on the sheets. Also, in some cases the sheet edges don’t coincide with the stud behind, so where necessary, we riveted the second sheet against the first sheet.”

The eye-catching final result is a testament to the considerable efforts of many individuals who, like Bert Hinkler, endeavoured to pioneer new techniques and push known boundaries.

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“We worked out with the builder that if we put down the first base sheet, that would provide waterproof cladding by running full-length sheets from grid to grid, varying the colour vertically, with the second colour overlaying directly onto the first sheet,” the architect explains.

“We then added a third layer – in what we called the ‘cloud’ sheets – to achieve the three-dimensional effect.

“It went together quite quickly, although we had to innovate to get very neat diagonal edges on the sheets. Also, in some cases the sheet edges don’t coincide with the stud behind, so where necessary, we riveted the second sheet against the first sheet.”

The eye-catching final result is a testament to the considerable efforts of many individuals who, like Bert Hinkler, endeavoured to pioneer new techniques and push known boundaries.

The form of the Hinkler Hall of Aviation in Bundaberg unmistakably takes its cues from aeronautical engineering, especially the bi-plane that Bert Hinkler flew from London to Darwin in 1928, while the facade treatment subtly references the local landscape of the pioneer aviator’s birthplace. Photography: Nathan Hildebrandt

Paul Sekava, associate at Fulton Trotter Architects in Brisbane, says that when you fly over Bundaberg you see the patchwork appearance of farmland. It was from this image that his firm drew its inspiration for the innovative cladding system that adorns the Hinkler Hall of Aviation.

“We used an abstracted version of the aerial perspective to sell the building’s appearance. The shape of the COLORBOND® steel sheets on the entry wall, with its diagonal edges, evokes the feeling of speed,” Sekava says.

The wall features randomly placed Stramit Corrugated panels made from COLORBOND® Metallic steel in the colours Citi®, Conservatory®, Cortex®, Facade® and Skybridge®.

“Although in the standard COLORBOND® steel range there is more variety of colour, and while some of those shades are closer to the actual landscape colours, we decided to use the COLORBOND® Metallic steel range because you get slight variations in different light and the colour change is more subtle.

“We didn’t want to end up with a checkerboard effect. If we’d used the standard range, the wall would have looked more literal, but we wanted an abstraction of the landscape idea.”

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