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> BREWSTER HJORTH ARCHITECTS CHARLES STURT UNIVERSITY WAGGA WAGGA SCHOOL OF DENTISTRY

ARCHITECTUS AUCKLAND NEW LYNN STATION

IN PROFILE: FUMIHIKO MAKI





EDITORIAL

Welcome to Steel Profile #109.

The Australian Institute of Architects 2011 National Conference was headlined this year by Pritzker Prize Laureate, Fumihiko Maki, and *Steel Profile* was fortunate enough to meet with the 82-year-old grand master famed for works created with the delicate yet deft touch of a calligrapher.

The conference also featured prominent Australian and international architects who shared their thoughts on themes of the 'natural' and the 'artificial', sentiments fittingly echoed by Brewster Hjorth principal Ian Brewster in our coverage of the Charles Sturt University Wagga Wagga School of Dentistry. We feature this 2010 NSW COLORBOND® Award-winning project as the 2011 National Architecture Awards approach. With a record number of entries in the National Awards – which we can reveal will be held at MONA in Tasmania this year – we anticipate many reaching these pages in the future. With that in mind, the best way to submit suitable projects for consideration is via our website: www.steelprofile.com.au

Please also feel free to share your thoughts via info@steelprofile.com.au

Kristin Camery BlueScope Steel editor

EDITORIAL ADVISORY PANEL

Steel Profile has established an editorial advisory panel to ensure that only projects of the highest calibre are selected for publication. The panellists are:



ADAM HADDOW

A director of SJB Architects Sydney, Adam attempts to achieve built solutions that positively activate their urban and individual environments.

More than anything, he loves to design and construct buildings and is most interested in achieving excellent multiple housing solutions. Adam was named a 'Future Leader' by the Property Council of Australia in 2009



FRANK STANISIC

Stanisic Associates founder Frank Stanisic is a Sydney-based architect and urbanist.

His work is fuelled by an evolving interest in the diagram and frame as a basis for architectural invention, and the aesthetics of permeability.

Frank's projects have won numerous awards including Australian Institute of Architects' Special Jury, Wilkinson, Aaron Bolot and Frederick Romberg



DANIEL GRIFFIN

Joint winner of the 2008 COLORBOND® Steel Biennale Prize, Daniel's award-winning architectural thesis at RMIT examined the urbanisation of Palestinian refugee camps.

He has taught at the University of Melbourne, RMIT SEEDS and been a faculty member at the University of Sydney. Daniel recently opened his architectural practice and works for Hassell Architects, Sydney

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Brewster Hjorth Architects has endowed the technically advanced Charles Sturt University Wagga Wagga School of Dentistry with architecture that conjures rural, yet high-tech imagery



Architectus Auckland's design for a bold new railway station aims to reconnect and rejuvenate the once-divided town of New Lynn

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COVER PROJECT Charles Sturt University Wagga Wagga School of Dentistry and Health Science PHOTOGRAPHER Paul Bradshaw

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Aged 82, Fumihiko Maki could be excused for stepping back as head of one of the world's leading design practices. Yet, as Peter Hyatt discovered first-hand, this master of modern architecture still abounds with intellectual and creative energy



Architect Ian Moore has imaginatively applied thick steel plate as a structural and sculptural element in this remarkable conversion of a former Sydney grocery warehouse



New Zealand practice Architectural Ecology links people and project to landscape with a building that demonstrates conservation and sustainability in action



Richard Kirk Architect creates a social and ceremonial heart for an all-indigenous Queensland school in the form of a rolled steel-roofed hall



With a daring facade inspired by metal window sunshade screens, this contemporary building manages to maintain a strong connection with its historical neighbours



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ARCHITECT Brewster Hjorth Architects PROJECT Charles Sturt University Wagga Wagga School of Dentistry and Health Science LOCATION Wagga Wagga, New South Wales

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AND A DRIVE OF A DRIVE

GROWNING Brewster Hjorth Architects' of

Brewster Hjorth Architects' design for Charles Sturt University's School of Dentistry at Wagga Wagga admirably embodies the building's purpose and location.

Words Rob Gillam Photography Ian Brewster; Paul Bradshaw; Christian Mushenko

hile some people approach a trip to the dentist with trepidation, a visit to this school and clinic makes a welcome exception for those who appreciate incisive architecture. Comprising training facilities that include high-tech simulation laboratories for students plus public and private clinics, the school in the regional New South Wales town of Wagga Wagga is widely acknowledged as world-class.

The school's specialised facilities are typified by its simulation clinics which, in an Australian-first, replicate that of a practising professional clinic – albeit with prosthetic patients. These 'heads on sticks', as they're known, feature plastic teeth. If anything, these are more difficult to work on than the real version. Students use highly magnifying intra-oral cameras to display their work on large monitors which professors can remotely monitor via an audiovisual network. Students can observe dentists in the working clinic in the same manner.

Principal architect Ian Brewster explains that his vision for the building's design was shaped by two central ideas. "Firstly, it had to identify with dentistry, which has a very controlled, mechanistic approach to performing work – as can be seen in the school's student labs," he says. "We aimed to capture some of that inculcated precision of high technology and infuse it in the building.

"We were also mindful that it was going on a largely untouched bushland site in a semi-rural area, so we wanted it to hark to the rural and draw on the Australian bush aesthetic."

The building successfully reconciles these themes, simultaneously revealing simple rustic structure and more intricate, plant-like qualities.

Brewster says the commission to design the school came with an extremely short timeframe. "It was a Federal Government-funded project that had a requirement to be substantially completed within an election year, so we had to start very quickly."

Brewster Hjorth had some advantage in that it had previous experience with CSU in master planning and specialised design work. It also selected materials that allowed for rapid construction. "An ability to quickly design and build was a big part of the prerequisites. Timeframe was a massive challenge and dictated our material selection considerably. **7**



ABOVE: Several layers present as permeable veils that visually dissolve the building's mass BELOW: An outer structural frame and roof protects separately roofed interior buildings







"We aimed to capture some of that inculcated precision of high technology and infuse it in the building. We also wanted it to hark to the rural and draw on the Australian bush aesthetic"

AN



WEST ELEVATION

The dark colour and slenderness of the steel structure, and complexity of overlapping layers, is reminiscent of the stand of gum trees which surrounds it

PANEL SAYS

At first glance, this university dentistry school at Wagga Wagga might appear to be a typical rural shed. However, closer examination reveals highly resolved internal spaces – many of them naturally lit and with views to the landscape that are protected from the elements by a series of carefully layered facade treatments. The exoskeleton of steel columns and trusses gives way to lightweight metal screens, steel cladding and finally glazing, creating a permeable 'edge' that dissolves the 'mass' of the learning spaces within, and helps to reduce energy consumption. Just like the high-tech dentistry that takes place at the clinical facilities inside, this updated version of the rural shed is a fitting reminder that state-of-the-art design

"We needed something that could be controlled off-site and would be very quick and easy to erect," Brewster adds. "We knew a number of expert steel fabricators in the area, and of course it could be simply shipped in, so we chose steel to construct much of the building and I think the results demonstrate we made the right choice.

"The project was incredibly fast to document," he continues. "From briefing to tender it was five months, including development approval. And once the steel was brought to site, the structure and then the rest of the building clipped together very quickly."

Steel was also the perfect material to help express the project's key visions. "The building's steel structure and cladding was envisaged from the beginning as an essential component of its rural, yet hi-tech imagery," Brewster says. "Dentistry evokes metallic and mechanical imagery – such as stainless steel implements and properties such as hardness, cleanliness and precision. We thought that steel was appropriate for representing these things in the building, especially being a very exacting material with fine tolerances.

"It is also evocative of rural sheds and the shelter they give from the harsh landscape. Steel sheds are such an established part of the Australian bush that they are somehow native to it. There's an emotional history there that we also tried to draw on. So it was fortunate that steel was a great way to express the nature of dentistry as well as form a relationship to the rural environment."

Perched comfortably on a gentle slope above the main campus entrance, the school serves as an iconic symbol of the university.

Amongst eucalypts and native fauna, it links strongly to the place through form, materials and colour. The dark colour and slenderness of the steel structure, and complexity of overlapping layers, is reminiscent of the stand of gum trees which surrounds it, creating an impression that the building is a natural part of the site. Inspiration for its bold pastel internal colour scheme was taken from the Superb Parrot, which makes its home in the surrounding bush. "The parrot isn't an endangered species but we were applying to build in a threatened habitat," says Brewster. "We had to really convince council to build here, but if anything the parrots are thriving."

The building has two main pavilions which are laid out along the site's natural contours. The southern pavilion has two levels and houses the school's clinics, while the predominantly single-storey northern wing is dedicated to student learning and contains lecture theatres and learning pods.

The pavilions are linked in a roughly 'H'-shaped layout which provides internal communication paths and visual connections between the areas while maintaining separate operational zoning.

Each pavilion possesses several layers that present as a series of permeable veils. A fine structural frame made from BlueScope Steel hollow section columns and trusses provides a frame for the roof and also for fixing perforated metal sunshading panels. These fins are offset vertically to the east and west, and horizontally to the north. The foremost roof overhangs provide additional sun-shade for the freestanding building components below.

The pavilion walls are protected by LYSAGHT SPANDEK[®] profile cladding made from COLORBOND[®] Metallic steel in the colour Cortex[®]. These panels are fixed with the profile running at opposing 45 degree angles, creating an alternating pattern. Brewster concedes that such a deeply ribbed profile is rarely selected for walls. "It is an unusual profile for cladding, but we thought it would be appropriate to use it here because it has a very definite line that is quite stimulating and we wanted something that provided a really pronounced shadow in Wagga's typically strong light. Its colour and shadowing is profoundly different between panel angles and it's quite amazing to watch its metallic colours shift with the changing sunlight throughout the day."

Some clever touches channel and harness rainfall for greywater recycling, one of which involved firstly flashing the walls with flat sheet made from COLORBOND® steel to create a gutter system behind the SPANDEK® profile cladding.





TOP: LYSAGHT SPANDEK® profile wall cladding panels are fixed at opposing 45 degree angles to create an alternating colour pattern. The COLORBOND® Metallic steel's colour (Cortex®) shifts with changing daylight

ABOVE: The deeply ribbed profile of LYSAGHT SPANDEK[®] provides pronounced shadowing in the site's typically strong light

RIGHT: Perforated metal panels are oriented to maximise sunshading efficiency







TOP: Naturally lit external courts help link and resolve internal spaces

ABOVE: Bold pastel interior colour schemes were inspired by the Superb Parrot native to the surrounding bush

ABOVE RIGHT: World-class simulation clinics feature 'heads on sticks' with plastic teeth for student practice

RIGHT: Internal paths and visual connections link areas while maintaining separate operational zones





A similarly inconspicuous treatment is provided for the main roof gutters and downpipes. "The things I really dislike seeing on modern industrial sheds are the ugly eave gutters with nasty brackets and downpipes," he says. "We turned the whole roof edge into a gutter and hid the downpipes behind steel covers welded onto the front of the main beam.

"While we wanted to evoke the feeling of a shed, we wanted to avoid some of the unconsidered detailing that can sometimes be excused for an industrial building."

As well as the many horizontal layers, there are vertical layers of differing materials – including glass, steel and stone – that serve dual purposes.

The upper portions of the building 'float' in places on an earthy base of gabions, painstakingly hand-built with local stone. "This represents the ground and ties the building back to the immediate environment, which is basically semi-cleared bushland," Brewster says.

Sitting on the gabion base is a finer "articulated machine", made of steel and glass, which encloses the interior. Above these buildings soars the primary roof. "The idea of the steel-framed box and roof is to protect the interior buildings, which are separated from the box," Brewster explains. "The box is a

container for the more precious machine that resides under it. There's a rougher, more rural feeling to materials and finishes used for the protecting parts and a more refined elegance to the inner protected areas, but we think they work well together."

The same material chosen to build the primary roof also tops the underlying pavilions: PERMALITE ALSPAN® made from marine-grade aluminium alloy, for which the architect was able to obtain an enduring warranty. "We were able to achieve a clear span with the roof trusses and we also really liked the material's aesthetic," he says of the PERMALITE ALSPAN®.

Steel mesh wraps around the vertical spaces between the roofs, keeping out animals and flora, yet allowing air to breathe between the levels. Even in the absence of wind, airflow is induced by heat.

Brewster drew inspiration for the design from time spent in the Kimberley in Western Australia, where multiple roofs are sometimes used to combat the scorching, dry climate. "Wagga, with its bakinghot summers, actually faces similar heat issues as that region," he says. "So we picked up on that technology and applied it by simply using one steel roof above and another below its roof truss."

"I'm a fan of improved materials that display their truth, including metals. I don't like being an apologist for the beautiful things that we can create"



This double-skin ventilated roof – which is complemented by the extensive sun shading, enhanced insulation, fan-induced thermal chimneys and controlled purging – is the main device for achieving the building's environmental success.

While not officially certified, there's no secondguessing the building's credentials when walking into its wonderfully fresh and shaded northern pavilion. It's so incredibly cool that the reality of its entirely passive air-conditioning defies belief.

The School of Dentistry is one of the latest in a procession of steel-centric buildings for the practice in New South Wales, including the award-winning Ingleburn Library and the recently completed Australian Institute of Police Management College at Manly's North Head.

In 2010, the school won the Australian Institute of Architects' NSW COLORBOND® Award for Steel Architecture, and Brewster is justifiably pleased.

"Well, yes, I'm proud of receiving the award but a large team of people contributed to the realisation of the building, so mostly I'm proud of our team," he says. "We were pleased about the award but we were always confident it would be a project worthy of recognition. We've used steel prominently in a lot of projects and have become quite adept at steel construction techniques. Occasionally, a building just 'comes together'. Everything gels. That was the case here and it has proved one of our more successful projects."

Would it be fair to say, then, that as an architect specialising in steel buildings, he's a fan of steel? "I'm a fan of improved materials that display their truth, including metals," he replies. "I'm a big believer that humans can improve their environment and I don't like being an apologist for the beautiful things that we can create.

"I think that change in our society is so fast-paced that people are often attracted to taking refuge in symbols of the past. That seems to be a direction that architects are forced into quite often. And while I can understand that, it's not what I want to do. I want to prove in my own small way that modern architects can make a positive contribution through design while being absolutely modern, rather than pretending we're building something that's old, even though it's not."

Proving that leading architecture is as relevant in country areas as cities, Brewster Hjorth has achieved a design for the school to match the technology and precision of its world-class educational program.

The remarkable building serves as iconic symbol for the university and is widely revered by staff, students, local and regional communities – all of whom are set to reap the benefits of such comprehensive dental health infrastructure long into the future. **SP**

PROJECT Charles Sturt University Wagga Wagga School of Dentistry and Health Science CLIENT Charles Sturt University, Wagga Wagga ARCHITECT Brewster Hjorth Architects PROJECT TEAM Design Director: Ian Brewster, Project Architect: Vicki Rushton STRUCTURAL & CIVIL ENGINEER Taylor Thompson Whitting BUILDER Joss Constructions STEEL FABRICATOR AND SHOP DRAWING CONTRACTOR Rambler Welding CLADDING CONTRACTOR Hadfield Industries LANDSCAPE ARCHITECTS Place Design PRINCIPAL STEEL COMPONENTS Wall cladding: LYSAGHT SPANDEK® made from COLORBOND® Metallic steel in the colour Cortex®; Roofing: PERMALITE ALSPAN® madefrom aluminium; Structural: purlins and girts made from GALVASPAN® steel PROJECT TIMEFRAME early 2008 - mid 2009 AWARDS 2010 Australian Institute of Architects NSW COLORBOND® Award for Steel Architecture BUILDING SIZE 3,300m² TOTAL PROJECT COST \$15.6 million

FUNIHIKO MAKI

After a long and distinguished career that has earned world architecture's major plaudits, Fumihiko Maki could easily retreat from the hurly-burly and bask in glory. Yet, as Peter Hyatt discovered, his drive seems irrepressible. Words Peter Hyatt Photography Peter Hyatt (portrait) and courtesy of Maki and Associates

t the grand age of 82, Pritzker Prize-winning architect Fumihiko Maki could be excused for stepping back as head of one of the world's leading design practices. With many of his contemporaries on the golf course, fishing or with their feet up, the wiry Maki is a contrast of quiet force.

Seated with this master of modern architecture, the enduring intellectual and creative energy of a most formidable designer is revealed. He has never tired of creation. His design for Tower Four at New York's World Trade Centre (WTC) site will be realised in 2013 and places him squarely alongside the other tower creators, Sir Richard Rogers and Sir Norman Foster.

Maki epitomises the Japanese desire for service and humility. He recalls the client interview with WTC developer Larry Silverstein: "Each architect was asked how they wanted to proceed, and when it was my turn I said, 'Well, I do not know too much yet but I will examine and study, and then I hope I can do what I believe is needed without scaring you.' Everyone laughed at that, but I wanted to emphasise that I didn't immediately have all of the answers.

"I'm not sure that I get better with age," he adds, "but my experience helps the next design". Maki relates a conversation with Australian Pritzker winner Glenn Murcutt, with which he concurred. "Glenn told me that clients often say the moment of greatest disappointment is at the project's end.

"Clients have told me how much they have enjoyed the journey of designing a building with me. I have been lucky enough to share that enjoyment throughout my life, but some people only ever get to do that once.

"As an architect you are generally optimistic because being in this profession you can't be pessimistic and hope to attract clients," he adds. "You need a good spirit to share. And you're looking for a similar spirit in your clients because it is just as important that they bring the right attitude as the funds needed to develop a project.

"I've rejected clients before I've even started for that very reason, but generally I have been very fortunate. Some people make me suspicious and I will say that I am not sure that I want to spend the next five years with them, so I will politely excuse myself. In a way it's a kind of marriage where it is better to say 'no' before, rather than break-up later. "The complexity and lead-time of architecture demands patience," he says about retaining the thrill of seeing his designs come to life. "It takes time and the coordination of many people. Progress can be slow.

"Many projects take such a long time to realise. Some take 10 years or more. In the meantime you have to do other projects just to keep going. So I have to hold on to see those projects."

Maki's dedication defines the greatness of those so committed to their craft. Besides, he finds it exhilarating. "My first building in Tokyo was tremendously exciting," he says. "Even now, the practise of architecture is a privilege. "You can't become an architect to become rich. This is a good thing. In the rich world, for architects to be playing games of design is really irrelevant.

"We're in a crisis in energy and materials. There's a crisis in housing the vast majority of people on the planet and feeding people. Where you have poverty and people crying out to be lifted up to a slightly better standard of living: that's more important to me than designing another pretty building for wealthy people. I think the world is really hungry for ideas."

Maki's designs exhibit those classic elements of Japanese calligraphy, where letters and words are formed with a butterfly-like lightness of brush or pen-stroke to create delicate structure that in turn conveys precise meaning.

Maki says steel is one of the materials in his palette critical to achieving uninterrupted volumes that permit a good flow of daylight and relationship to site.

"We use steel quite extensively for our work – especially on a number of gymnasiums and convention centres, for instance," he says. "It assists where we need long spans and its aesthetic quality when properly used excites us very much. If you think in steel, glass or timber you think in a certain way. You know what is possible.

"I'm a little bit like [Finnish architect Alvar] Aalto in that I take a holistic approach to architectural design, focusing on creating spaces which can be appreciated and shared by all people."

LEFT: The modernist steel and glass form of MIT Media Lab, Massachusetts USA



"Clients have told me how much they have enjoyed the journey of designing a building with me. I have been lucky enough to share that enjoyment throughout my life" Maki's designs exhibit classic elements of Japanese calligraphy, where letters and words are formed with a butterfly-like lightness to create delicate structure that conveys precise meaning











 Ottawa's Delegation of Ismaili Imamat building is Maki's first Canadian commission;
 The steel-clad 10,000 seat Tokyo Metropolitan Gymnasium designed by Maki in 1991 embodies a futuristic vision;
 The 1994 Keio University Graduate School Research Centre forms a distinct development zone that includes university, library, gymnasium, hall and accommodation – all connected to a large ornamental lake;
 Maki's 1984 steel-framed and stainless steel-roofed Fujisawa Municipal Gymnasium linked dramatic curved forms;
 The Makhuari Convention Centre incorporates contemporary technology and a human scale in pursuit of a 'festive urbanism'



In Melbourne earlier this year as keynote speaker at the Australian Institute of Architect's Natural Artifice conference, Maki wowed the audience with his quiet reflection as much as his vast oeuvre. If it wasn't images of an irresistible architecture, it was his humility that shone.

A Maki-designed performing arts centre just one kilometre from the inland reach of Japan's tsunami became a refuge for 1300 homeless residents. "Nature can be very unforgiving," says Maki, who comprehends how much rebuilding of lives and communities is required.

Maki's raw emotions after Japan's devastating earthquake and tsunami surfaced during question time. "It was an extremely moving presentation," observed Steve Guthrie from Queensland's Bark Design. "Here is this iconic figure reduced to tears. He received a standing ovation. You could sense his humanity and I think in the end we all understood how human he was and that we were also connected, not just as human beings but by vocation."

Lindsay Clare, 2010 Australian Institute of Architects gold medalist with Kerry Clare of Clare Design, described Maki as quietly profound. "He reminded us how 'time is the true judge of architecture'. He was also wonderfully eloquent in his explanation of how a building forms a relationship with its site. He described the role of space around a building as critical to the building's performance and relationship with nature."

Maki asserts that humility is a very important part of architecture. "After all, we are not God, so it is important to reflect upon how a project could have been done better," he explains. "When I have a problem I always think, Well, something could be worse.' You often have difficult moments but I think this is a very human business and often the people in my office will take away the problem and help me solve it.

"My wife doesn't complain about my time in the office," Maki says as he gives a hearty laugh at the idea his wife misses him. "She doesn't want to see me all the time. Being an architect I leave the house at 9am and don't return until 8 o'clock at night. If I return home earlier I bring the materials with me and I might sit in front of the television and work late into the night."

This ethic reflects the Japanese proverb *teishu-genkide-rusuga-ii*, meaning 'A good husband is healthy, working hard and making money for the family.' Maki concedes "this can be good for a Japanese wife, but maybe not an Australian one," and further elaborates. "It's not that I am ignoring her, but being an architect's wife for so many years she is used to my long hours.

"Architecture has always been my career choice. Eighty years ago everyone lived in an independent house; today my grandchildren live in apartments. I want to see them live in the quality of place that I had."

Reflecting on his distinguished family tree of architecture, Maki also speaks of his buildings "... as my children. They are always exciting and give me pause for reflection.

"In a way, your clients are like family and your family can also become your clients," he concludes. It's an irresistible philosophy based on mutual respect from an irresistible architect. SP

BLACK & WHITE

Converting an old grocery warehouse in Sydney's Surry Hills challenged architect Ian Moore to reconcile his renowned minimalist sensibility with a gritty, industrial structure. The key to his success proved to be the imaginative use of <u>10mm-thick steel plate</u>. Words **Paul McGillick** Photography **Iain D. MacKenzie**

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ARCHITECT Ian Moore Architects PROJECT Strelein Warehouse LOCATION Sydney, New South Wales



his remarkable conversion of a former warehouse in the heart of Sydney's innersuburban Surry Hills can only be fully understood by knowing the background of its architect, Ian Moore.

Born in New Zealand, Moore is the son of a builder. Every six months his father would build a new house and the family would move; he says that by the time he was 17 he had lived in 34 houses. Moore helped his mother fit out the interiors and later worked on planning houses with his father. At 17, he had designed his first building – a converted woolshed.

Moore found himself studying civil and structural engineering, only later qualifying as an architect in Sydney. But this grounding in engineering gave him an invaluable understanding of buildings from the inside out. "I can see things spatially and I'm always thinking about heights, lengths and the best use of materials."

Moore is known for his spatially intelligent houses and apartments which, with their clarity and immaculate detailing and finishes, possess a luminous and timeless simplicity. With the Strelein Warehouse he has enjoyed the challenge of applying this same sensibility not to a new-build, but to a relatively small existing building with a number of heritage and approval constraints. As he explains, the building was essentially "two relatively open spaces only closed in slightly in the 1970s when it became an artist's studio". He adds that one of the difficulties of working with a warehouse or loft space is determining how to "create separation of spaces without destroying that sense of it being one large, open volume".

Moore's client had previously lived in a warehouse in nearby Paddington and now wanted to live in Surry Hills in a similar kind of building which offered the flexibility that terrace houses typically don't. "She loved many of my other houses, but basically gave me a brief to come up with a totally unique house to suit her requirements," says Moore. "She had a collection of black and white photographs and she was very particular about having a bathroom that was well-lit both in daylight and artificial light and in having a very big bath. And that was effectively it."

Moore's client found the warehouse up for auction and asked him to come and check it out. "As soon as I saw it," he says, "I knew it was the right property because it had the basic requirements, but also an unusual presence and the ability to create something quite unique within it." The black steel plate becomes a sculptural element simultaneously unifying and animating the spaces The building is double-fronted and previously had loading docks on both sides, one a half-level lower, opening on the southern side to a cul-de-sac of charmingly restored terrace houses and a splendid sandstone retaining wall flush with what is now the entry to the Strelein Warehouse.

Conceptually, the project was driven by two ideas ultimately reconciled by Moore's bold and imaginative use of steel plate.

The first idea was for a palette of black and white, taking its cue from the client's collection of black and white photographs. Everything that was existing is white – "even though it may have been lined, or it may have been painted" – and everything black is a new insertion. This applied even to the main stair. This was removed and re-positioned and is now effectively a continuation of a stair (also re-positioned) up from the entry and main living area. Here, it meets the kitchen mezzanine (and beyond that, the garage) which had previously been the loading dock. A condition of approval was that entry be directly off the footpath, rather than by an external stair. These stairs, then, are black because they are new.

The second idea was essentially a structural one. The internal width of the property is 4.65 metres, which led to a problem described by Moore. "Once we had deducted the minimum 700mm for the guest bathroom, laundry and storage on the eastern side, the minimum three metre internal width for a garage and then 850mm – which, minus the handrail, gets you down to around 750mm – that pretty much leaves the minimum space for a stair. When you take all those dimensions away from the 4.65 metres we were left with 10mm, and that was what we had available to build the wall between the garage and the stair, as well as a structural wall which had to support the new stair opening and a wall all the way through that space."

Clearly, a standard, framed wall would not do the job. So, Moore came up with the idea of using 10mm steel plate. Suddenly, not only was he able to optimise the available space and achieve structural strength, but he was also able to perfectly reconcile form and function by fully realising the aesthetic idea of a dialogue between black and white. The 10mm-thick steel plate was used not just for the wall, but as a structural element throughout the house. Hence, the entry portals on both street frontages, the stairs, the wall which runs from **a**









ABOVE LEFT: Upstairs sitting room where the steel-framed windows evoke the building's industrial past

LEFT: The bedroom is screened off from the sitting room by the black box bathroom

BELOW LEFT: Inside the black box, the bathroom is all-white and illuminated by the highlight window

BELOW: The stairs from the kitchen to the upper floor take on a sheen from the upstairs windows



the kitchen through to the storage area in the garage, the beams, the floor-to-ceiling bookcase in the living room and the frame for the banquette in the living room which extends up to form the kitchen surround – are all 10mm fabricated steel plate.

Steel was also put to good effect as roofing and vertical cladding, both in the form of LYSAGHT CUSTOM ORB® profile made from COLORBOND® steel in the colour Surfmist®.

The living room, kitchen, garage, laundry and guest bathroom are all on the lower levels. On the top level is a sitting area on the northern side, with the bathroom in the middle and the bedroom on the south side. As a new inserted element, the bathroom exterior is black. The challenge here was to avoid compromising the feel of the upper level as one continuous space, so Moore didn't want the bathroom to go floor to ceiling but, for acoustic and privacy reasons, it had to. His solution was to adopt the datum height of the existing windows in the sitting area as the height of the bathroom black box. Then he used clear glass to fill the gap between the top of the box and the ceiling, including a skylight which draws natural light into the whole of the upper level. "What was formerly a very dark space in the centre of a deep plan became a very luminous space," he says.

With no doors or walls upstairs, the black box of the bathroom effectively screens the bedroom from the main street and the sitting area, giving it intimacy and privacy, but also allowing it to remain part of the overall space. Once again, conceptual, structural and aesthetic coherence is achieved at the same time as spatial optimisation by integrating one wardrobe into the side of the portal which comes up from the front door on the southern elevation, and the other wardrobe into the black box of the bathroom.

Ian Moore's achievement with this house is a magical, indeed poetic, fusion of all the things which go together to make a dwelling. Rather than hide the structure, Moore celebrates it. The black steel plate becomes a sculptural element simultaneously unifying and animating the spaces. Key to this animation is the continuous conversation between the black insertions and the existing white elements, mediated with exquisite subtlety by the off-white Dalsouple rubber flooring. In short, the perfect marriage of function and aesthetics. SP



ABOVE: The use of 10mm-thick steel plate for new dividing walls enabled Moore to reposition the stairs without sacrificing width in the terrace-like space

BELOW LEFT: From the main entry, the building steps up to the kitchen and garage at the rear BELOW RIGHT: The main entry is off a charming cul-de-sac











PROJECT Strelein Warehouse ARCHITECT Ian Moore Architects PROJECT TEAM Ian Moore, Ian Gorton, Danny Mathis INTERIOR DESIGN Ian Moore STRUCTURAL ENGINEER Benvenuti SC (Ruggero Benvenuti) HERITAGE CONSULTANT Urbis (Stephen Davies, Fiona Binns) BUILDING CERTIFIER Paul Rolfe Consulting BUILDER Seager Constructions STEEL FABRICATOR Salken Engineering LANDSCAPING Fast Feet Garden Design PRINCIPAL STEEL COMPONENTS Roofing and roof cladding: LYSAGHT CUSTOM ORB® profile made from COLORBOND® steel in the colour Surfmist®. Entry portals, bookshelf, banquette, kitchen surround, stairs, wall from kitchen through to garage, storage area framing: 10mm-thick mild steel plate. Circular downpipe and gutter: fabricated painted stainless steel. All windows steel-framed. Universal beam supports: 75 x 75mm square hollow section columns AWARDS Winner 2011 Australian Interior Design Awards, Best in State (NSW), Residential Design; Australian Institute of Architects 2011 NSW Interior Architecture Award TOTAL FLOOR AREA 150m²

- LEGEND
- 1. Living/dining
- 2. Kitchen
- 3. Laundry
- 4. Powder room
- 5. Garage
- 6. Storage
- 7. Bedroom
- 8. Bathroom
- 9. Sitting room

PANEL SAYS

Ian Moore's innovative application of mild steel plate as structural walls – specified for its ability to squeeze maximum width out of this terrace-style house without sacrificing its warehouse-like interior - is a terrific example of how useful steel can be when used in urban settings. We particularly like the sophisticated north-south upstairs section, which illustrates how the new skylit bathroom insertion brings natural light into the centre of the terrace and divides living space from bedroom without the need for doors. Initially chosen as the structure for the new stair, Moore also used mild steel plate to create external door and window openings, the mezzanine kitchen and the floor-to-ceiling bookcase in the downstairs living area, providing a sense of cohesion and legibility to the entire project.

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CLOUD FOREST CANOPY

Nestled in a cloud forest, with a vista that takes in volcanic peaks and a pristine estuary, the Orokonui Ecosanctuary Visitor Centre aims to blend into its verdant surroundings.

Words Rachael Bernstone
Photography Paul Bradshaw; Patrick Reynolds

ARCHITECT Architectural Ecology PROJECT Orokonui Ecosanctuary Visitor Centre LOCATION Dunedin, New Zealand





Architect Tim Heath used shipping containers linked by infill walls and a soaring canopy roof to create an "endemic" structure

"We also chose steel for its ability to provide visual depth in the form of light and shadow, which creates a texture on the building like the bush around it, and allows it to sink into the background"





Shipping containers are splayed out to create a classroom, reception/retail store and back-of-house facilities



Unedin-based architect Tim Heath has specialised in sustainable design and green building for more than three decades. The aim of his practice is to link people, buildings and landscapes, which he has certainly done in the award-winning Orokonui Ecosanctuary Visitor Centre near Dunedin – a modestly priced building that aims to promote and demonstrate conservation and sustainability in action.

In the 1980s Heath and his wife joined with other Otago locals who wanted to establish an aviary to protect rare and threatened species in an old Dunedin cement works. While that project didn't get off the ground, members of the group – led by Dr Ralph Allen – founded the Otago Natural History Trust in 2000.

After leasing a 307-hectare parcel of former farmland and pine plantation from the Department of Conservation, the Trust encircled the land with a \$2.2 million, 1.9-metre high, 8.7km-long pest-proof fence. More than 3000 Pinus radiata trees were felled so that a similar number of native trees could replace them. Non-native mammals were removed, and South Island Kaka parrot, Otago's jewelled gecko, and the only mainland population of the once endangered South Island Saddleback bird were reintroduced. Now, the Orokonui Ecosanctuary is the only place on the South Island mainland where native birds, animals and insects can live as they would in the wild, safe from predators.

As a keen supporter, Heath lent his services to the Trust to design the Ecosanctuary's Visitor Centre. The building won a public architecture award at the NZIA's Southern Region Awards and a New Zealand Award for Sustainable Architecture.

Responding to the Trust's brief for "a truly New Zealand building" – which would be funded by a modest budget raised entirely by public subscription – Heath opted to use shipping containers linked by infill walls and a soaring canopy roof to create what he calls an "endemic" structure.

"We tried to design a building that would represent the biophysical and cultural landscape of the 18th century, using layered information like contextual glue," Heath says. "We wanted to make it part of its context."

To that end, the building is orientated towards the nearby volcanic peak of Mopanui and the atrium's expansive, curved window takes in panoramic views of Blueskin Bay to the north and the volcanic peak of Mihiwaka to the south.

The Ecosanctuary boasts tracts of Otago's signature "cloud forest" where centuries-old rimu, miro and pahautea trees form a dense overhead canopy. Heath aimed to replicate the experience of walking through the bush in the building's atrium, where the steel portal frames are slanted like tree trunks beneath the barrel-vaulted roof.

The forest is typically misty and its close coastal proximity means the salty air is corrosive. Winter brings snow and ice while summer can inflict drought conditions. Because the Trust wanted a low maintenance building that would endure for many years, the visitor centre had to be constructed using steel that had been properly treated to withstand those conditions, Heath says.

OPPOSITE TOP: The atrium – with its steel portal frames slanted like tree trunks beneath the barrel-vaulted roof – references the experience of walking through the bush

OPPOSITE BELOW: In line with its ecosanctuary ideals, the building is mostly naturally lit and ventilated; it collects rainwater and treats greywater; and waste is reduced, re-used or recycled

PANEL SAYS

The architect's decision to use shipping containers for the classrooms and back-of-house facilities at this visitors centre – primarily as a cost-saving measure – might have produced a clumsy or unresolved building, but the opposite is true in this case.

Overlooking the Orokonui Ecosanctuary which it serves, this exultant building features soaring ceilings, sweeping glazed walls and expansive decks from which to admire and enjoy the landscape. The shipping containers and their steel canopy roofs form the backbone and limbs of the main atrium, and the effect is a harmonious building that doesn't seek to impose on its unspoilt environment. "The wind loads are sufficient to make the use of structural steel mandatory," he explains. "Also roofing made from COLORSTEEL[®] Maxx[™] offered a warranty that met the needs of the Trust.

"We also chose steel for its ability to provide visual depth in the form of light and shadow, which creates a texture on the building like the bush around it, and allows it to sink into the background," Heath says.

The Visitor Centre is located just outside the Ecosanctuary's protective fence, on a sloping, partially cleared site. Heath modestly describes the building as a "bunch of sheds around a barn roof".

The "sheds" are recycled shipping containers: three are splayed out to create a classroom with "pockets" for breakout groups within the larger space, while another four house the reception and retail store, the catering kitchen and storeroom, an office and staff room, and toilets.

The containers were sourced from Dunedin's Port Chalmers and were chosen for their durability, low cost, and ease of transportation. However, building with recycled containers wasn't all smooth sailing, Heath says.

"They were hard to work with, especially as the construction team faced the worst possible conditions to build in, including snow, ice and gale-force winds.

"We had to pull out all the stops to make the detailing and the connections between the containers and the steel frame intelligent," Heath explains. "But we had a fantastic contractor and one of the best construction foremen I've ever worked with. We also had a top structural engineer who is a genuine designer and could pare down the steel and make the structure efficient and elegant." The containers are linked by a suspended concrete slab which provides thermal mass, and are topped by individual raked roofs made from the same material used for the main canopy: corrugated COLORSTEEL[®] Maxx[™] in the colour Spring Green.

"I learned a trick some years ago about creating a simple barrel-rolled roof with one edge cut to shape: you need a gutter you can bend," Heath laughs. "So we took a pipe, bent it and cut it in half, so that it would follow the curve up to the ridge. It's a lovely piece of engineering by the guys who did it.

"Despite that detailing, the roof is a relatively inexpensive product that sits on top of an inexpensive steel frame, and its primary purpose is to gather water – both condensation from the cloud forest and rain – for reuse," Heath says. "Also, the roof sections over the shipping containers create air pockets that provide additional insulation."

In keeping with its ecosanctuary ideals and to promote the benefits of sustainable design more broadly, the building is mostly naturally lit and ventilated (heat pumps are employed in winter to overcome extremely cold outdoor temperatures). It harvests environmental water and treats greywater onsite, bicycle racks are provided for staff and visitors to reduce vehicle use, and waste is reduced, re-used or recycled.

Other construction materials were chosen for their low environmental impact, including sustainably grown western red cedar ply cladding, joinery made from macrocarpa that was milled from trees found onsite, and rimu floorboards recycled from a town hall in a neighbouring settlement.

All of these factors add up to a building that both complements and is subservient to its surroundings, while still making an impressive architectural statement. Over time, the Visitor Centre will blend into the background as newly planted vegetation grows up around it. This won't dilute the conservation message though. In helping to create a place where locals and tourists can experience and enjoy Otago's bountiful bushland first-hand, and learn how to preserve it, Heath has produced a piece of architecture that is a working tribute to the principles of sustainability. SP

LEGEND 1. Entry 2. Wind-stop lobby 3. Classroom 4. Atrium 5. Reception 6. Shop 7. Toilets 8. Store 9. Kitchen 10. Staff 11. Office 12. Retention ponds

SITE PLAN

PROJECT Orokonui Ecosanctuary Visitor Centre CLIENT Otago Natural History Trust ARCHITECT Architectural Ecology PROJECT TEAM Tim Heath, John Baker, Hannah Sharp STRUCTURAL & FIRE ENGINEER Hadley & Robinson MECHANICAL ENGINEER Mechanical Services Solutions BUILDER Naylor Love STEEL FABRICATOR C J Saunders CLADDING CONTRACTOR Calder Stewart LANDSCAPE ARCHITECTS Mike Moore Landscape Architect PRINCIPAL STEEL COMPONENTS Roofing: COLORSTEEL® Maxx™ in the colour Spring Green; NZ steel structure to atrium and canopies to shipping containers, curved gutter PROJECT TIMEFRAME 2008-2010 AWARDS NZIA Southern Award 2010 – public architecture; New Zealand award 2011 – sustainable architecture BUILDING SIZE 500m² TOTAL PROJECT COST Approx NZ\$2 million





ARCHITECT Architectus Auckland in Association with Architecture Brewer Davidson PROJECT New Lynn Station LOCATION New Lynn, Auckland, New Zealand Previously bisected by its railway line, the once-stagnating town of New Lynn in Auckland's western suburbs has been reunited and rejuvenated by a bold new station. Words **Rachael Bernstone** Photography **Simon Devitt**

New Lynn Station

1 NUN

n 1880 when Auckland's western rail line was extended through New Lynn, 12 kilometres south-west of the city centre, it effectively cut the town in half. On the northern side of the tracks the retail and civic centre prospered, especially with the opening of Auckland's first American-style shopping centre – LynnMall – in 1963. The southern side grew up around New Lynn's brick and ceramic factories and other manufacturing industries. As these declined and businesses closed in the latter part of the 20th century, some buildings on the southern side of the line fell into disrepair.

Instead of fostering human connections and business activity, the railway line caused major bottlenecks as trains passed through the town's three level crossings every five minutes. The town was stagnating according to Bob Harvey, Mayor of Waitakere City Council, which brokered a solution with the Auckland Regional Transport Authority (ARTA), ONTRACK (the New Zealand Railways Corporation) and Auckland Regional Council (ARC).

A new railway trench with double tracks to replace the single line – one kilometre long, 20 metres wide and eight metres deep in parts – was cut through the town, with new bridges to re-connect north and south. Speaking at the time of the project's announcement, Mayor Harvey said the town had been saved from destruction. "New Lynn had no future. It would have had traffic banked up five kilometres each way. It would have been the centre of frustration. Now it's going to be the centre of celebration," he said.

In 2007, with negotiations on the trench works progressing, Waitakere City Council engaged Architectus Auckland in association with Architecture Brewer Davidson to design New Lynn's new transport interchange. The hub's arresting appearance – four inverted pyramids are mounted on slender columns strung along the platform length to form a broad canopy – creates a new focal point for the town and aims to physically reconnect the northern and southern sides of the tracks.

Architectus associate director James Mooney says the canopy's unusual form was largely dictated by the need to ventilate the trench where the belowgrade level platform would be located. "That simple requirement threw up interesting opportunities in terms of what form the canopy might take," he explains. "We were looking for a single gesture that might fulfil the key objectives: giving the station the desired level of visibility, providing an element that would give some order and rhythm to the overall project and resolving the ventilation issue."



Following extensive modelling, the upturned pyramid was confirmed as the most suitable form to disperse diesel fumes from below. In the meantime, research into similar projects overseas – such as Raphael Moneo's Atocha Train Station Extension in Madrid, which boasts a large roof area over spatially constrained platforms below – confirmed the viability of the proposed solution.

At New Lynn the canopy and its supporting structure had to be built using steel, Mooney says, because of physical constraints at trench level and issues associated with construction within an active rail corridor. "Each inverted pyramid is formed by four cantilevered trusses that splay out towards the four corners. These support a steel grillage which in turn supports the roof above," Mooney says. "Each canopy is approximately 16 by 21 metres separated by a three-metre skylight and rests on a single 50-centimetre diameter concrete-filled steel column which carries the gravity load, together with a brace on the leading northern edge of each canopy. We couldn't brace the southern side because the curb sweeps in underneath the canopy for the bus bays." **A**

The canopy and its supporting structure had to be built using steel because of physical constraints at trench level and issues associated with construction within an active rail corridor

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The concourse is naturally lit, and the public areas are naturally ventilated, thanks to skylights and upper level louvers (above), so despite their below-grade location, the station platforms are pleasant spaces to wait for a train (right).



The structural steel solution was both lightweight and easy to prefabricate offsite for erection around the rail corridor, Mooney says. "The degree of difficulty associated with building in the trench was exacerbated because the canopy structure had to be erected while freight and passenger trains continued to use the tracks below on a 24-hour basis."

Using steel also produced the delicate appearance that Mooney sought. "In order to produce a slender structure and resolve some of the limitations around load paths, the canopy is designed to allow more movement than you might usually expect in a structure of that scale," he explains. "The result is that the roof appears to 'float' above the concourse with minimal support."

Conversely, a rigid connection was required between the abutting low-level glazed structural elements – including the extensive bus shelters – and the ground plane. This meant the low-level structural elements had to be physically separated from the canopies above in order to permit the differential movement between the two structures.

The structural steel was painted in two shades to express the tectonics of the building. The steel at the lower level – where the bus station canopy connects with the pavement – was painted Resene Blast Grey, while the sections supporting the upper canopies were painted with Resene New Lynn Rail Yellow, which references, among other things, the surrounding built environment and the locomotives themselves, which are a similar shade.

Steel also offered a long lifespan; an important factor given the difficulties imposed by the station's awkward location. "The client was looking for a low-maintenance and durable product solution to overcome access issues within the rail trench."

"The roof appears to 'float' above the concourse with minimal support"



Dimond Brownbuilt 900 made from COLORSTEEL[®] Endura[™] was specified in the colour Sandstone Grey for the canopy roof for both functional and aesthetic reasons, Mooney says. "At the moment there are only a few buildings that overlook the roof – although that is likely to change over time – but we wanted a colour that tied in with the canopy soffit so that it didn't break up the form of the pyramid. We wanted it to read as one element," he explains.

"From a functional point of view," Mooney adds, "we didn't want the roof colour to be too dark in order to minimise heat gain. This is especially important as all the public spaces below are passively ventilated."

The extensive glazing gives the station a sense of openness and permeability that contributes towards a safe, high-visibility environment. The skylights set between the pyramids convey daylight to the concourse and the platform below. That sense of transparency is enhanced by the fact that there are no ticket turnstiles – passengers purchase their tickets from conductors on the trains – thereby eliminating any physical or visual barriers between the station and the town.

The architects worked hard to knit the station into its context and were involved in the consultative process that determined its best position within the trench. "Perhaps ironically, the biggest constraint regarding the location of the station was imposed by the trains themselves," Mooney says. "The trains needed sufficient distance to gather pace to ascend the incline at the western end of the trench, so that dictated where the station could be positioned."

The station's new location between two of the new trench crossings allows for access points at both ends of the platform. "We looked at current and potential future pedestrian links in the broader context, and at how you might enhance and develop these," Mooney says. "The primary access to the concourse building forms the first stage of a proposed axial connection, via the redevelopment of the adjacent former bus terminal site, to the public library with its adjoining public space. These two projects form part of the proposed 'Merchants Quarter' to the north of the station, which is marked for high-density, mixed-use development.

"On the southern side, you can access the station from Clarke Street, which connects to existing residential areas, and the anticipated new highdensity residential development proposed for the former clay pit site," Mooney adds.





CROSS SECTION

Looking south, it's still possible to see the negative effects of the former railway line that divided New Lynn, in the form of rundown buildings, surface carparks and vacant sites. However, all that is set to change under Waitakere City Council's new planning regulations, which aim to transform the whole town centre into a vibrant and safe pedestrian-focused city.

As part of that push, Council has rezoned former industrial sites for intensive apartment and mixeduse development and, despite the recession currently affecting New Zealand, that rejuvenation has begun. A new supermarket opened 'on the wrong side of the tracks' in early 2010 and Mooney says that landowners are consolidating their holdings to maximise redevelopment opportunities. Architectus Auckland is currently involved in a number of these projects, including the clay pits development and Merchant's Quarter.

"The transport interchange is expected to play a central role in those broader aspirations," Mooney says. "It is envisaged as the first stage of New Lynn's Transit Oriented Development and should become the hub of a walkable city. We tried to make it as open, transparent and inclusive as we could. The building is intended to act as a catalyst for quality high-density developments as envisaged by the new Council planning regulations.

"I'm thrilled that we managed to construct our initial idea, with the backing of the client groups including Waitakere City Council and ARTA," Mooney adds. "We've had a lot of positive feedback from them about the quality of the building and the amenity it provides. It's good to see people using the concourse facilities simply to meet friends and catch up."

Waitakere Mayor Bob Harvey – one of the key drivers of the project from the outset – couldn't be happier with the station, describing it as the key to New Lynn's multi-million dollar regeneration. "This stunning new transport centre is the first step in New Lynn's longawaited transformation and is part of our vision to create a unique, sustainable and exciting town centre geared to the needs of a projected 20,000 residents and 14,000 workers by 2030," Mayor Harvey says. "The Council's investment is now starting to yield considerable returns. Property values are rising, new businesses are moving in and investors are showing significant interest, attracted by New Lynn's recently unlocked potential." SP

LEGEND

- 1. Roof canopy
- 2. Station concourse
- 3. Glass screen wall
- 4. Metal fins
- 5. Fixed glass louvres
- 6. Escalator enclosure
- 7. Platform
- 8. Train tracks

PANEL SAYS

This transport hub in suburban Auckland boasts a very confident and skilled use of steel in the inverted pyramid canopy roof forms, which simultaneously provide shelter to the concourse and lower platforms, and give the building its strong identity. It is apparent that the architects have worked hard to integrate this new facility into the existing urban landscape. The small footprint of the four internal steel columns enhances the connection between inside and outside, by creating a sense of permeability and transparency. The ability to look through the station to "the other side of the tracks" is a visual reminder that New Lynn's northern and southern halves have been reunited by this landmark project. We also like the delicate use of steel in the facade – both structural and the vertical fins - which is in keeping with the high level of sophistication that is evident throughout this project.



PROJECT New Lynn Station CLIENT Auckland Regional Transport Authority, Waitakere City Council, ONTRACK ARCHITECT Architectus Auckland in Association with Architecture Brewer Davidson PROJECT TEAM Architectus: Carsten Auer, Malcolm Bowes, Patrick Clifford, Michael Thomson, James Mooney, Henry Crothers, Marc Lithgow, Manuel Morel, Nidhi Nautiyal, Minkyu Lim, Christian Kim, Mark Yong, Sang Park, Angela Wall, Chang Liu, Hilary Kitt, Eddy Lau Brewer Davidson: Peter Davidson, Kevin Brewer, Andrew Buchanan STRUCTURAL & CIVIL ENGINEER Beca BUILDER Fletcher Construction / NZ Strong STEEL FABRICATOR Grayson Engineering SHOP DRAWING CONTRACTOR W.N.Z. Draughting Services CLADDING CONTRACTOR Symonite NZ LANDSCAPE ARCHITECTS Architectus Auckland PRINCIPAL STEEL COMPONENTS Canopy roofing: Dimond Brownbuilt 900 made from COLORSTEEL[®] Endura™ in the colour Sandstone Grey; COLORSTEEL[®] flashings to match. Structure: NZ Steel products including structural UB and UC sections, CHS sections and a number of specially welded sections and rolled sections PROJECT TIMEFRAME 2007–2010 TOTAL PROJECT COST Approx NZ\$300 million including trench works (concourse building approx \$20 million)

The four slender steel columns that support the inverted pyramid roof forms are painted in Resene's New Lynn Rail Yellow, to match the colour of the trains themselves and traffic poles outside

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ROLL CALL

Rolled steel roofing helps create a social and ceremonial heart for a Queensland community in the form of a new hall for an indigenous school.

Words Margie Fraser Photography Scott Burrows

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ARCHITECT Richard Kirk Architect PROJECT AIICS Multi Purpose Hall LOCATION Acacia Ridge, Queensland







NORTH ELEVATION



ABOVE: Further gathering spaces that relate to the landscape, an avenue of Tuckeroo trees are created under the eaves

RIGHT: A generous skillion overhang protects the compressed entry foyer boxes on the western side

EAST ELEVATION

he Aboriginal and Islander Independent Community School (AIICS), aka the Murri School, is Queensland's only school owned and run by indigenous people, for indigenous students. It was established 25 years ago by visionary members of Brisbane's indigenous community who were concerned that standard education systems disadvantaged their children. Programs to improve literacy and numeracy, selfesteem and nutrition, and to counter the stumbling blocks of education costs and impairments to attendance were put in place for children from preschool through to primary ages. During the last 10 years the net has widened to include secondary school students through to Year 12.

In 1998 the Murri School moved from leased premises to its current location at Acacia Ridge, in Brisbane's outer west. The ready-made site was previously a state government primary school, with a cluster of utilitarian buildings situated near a busy arterial road. Under Richard Kirk Architects' (RKA's) masterplan, the old buildings have gradually been demolished and replaced by new, purpose-built spaces that relate to one another and to the landscape.

RKA was commissioned to design a new multipurpose hall on campus that could serve both the 240-strong school population and the broader community. The range of activities and functions it accommodates underscores the educational philosophy of embracing culture. Performances, meetings, sporting events, speech nights and wet weather classes are all on the agenda. At 900 square metres, the hall caters for an Olympic-sized basketball court and indoor netball games. A large commercial kitchen in the annex services the canteen. Toilet facilities and change and storage rooms are also included. Taking into account undercover spaces, the useable area stretches to 1280 square metres.

A gently sloping tract of cleared grassland slopes away from the original building cluster in the south-east corner to the quieter, residential back streets on the northern and western edges. The main entry to the campus is through an unassuming garden gate on the north-western corner, via bus stops and a small drop-off zone.

The new multi-purpose hall assumes a commanding presence in the arrival sequence. On approach, visitors first encounter the generous undercroft of its western elevation. The impressively scaled skillion roof tilts northwards, and is anchored at the corner by a single steel pillar. A pivotal view of the building and its location on the site is gained from the corner position near the pillar. Looking south, along a pleasant avenue of tuckeroo trees, there's a view into the campus that provides

"The Aramax roof sheeting allows for huge roof spans with no purlins. It was the only product that could give us these important structural qualities at the same time as fitting into a tight budget" a snapshot of the whole scheme. The elegant striations of a steel and timber colonnade that links the hall to its neighbours guides the eye into the heart of the campus. Looking eastward, along the hall's grand northern elevation, the impressive cantilever continues. The expressive sailing roof form and the openable northern wall allow the hall to operate as outdoor-like space.

RKA director Richard Kirk wished to completely avoid a "cold internal hall", as the school generally aims to de-institutionalise its built forms. Opening onto a natural amphitheatre in the landscape extends the sense of space even further.

For Kirk, the decision to specify Aramax made from ZINCALUME® steel for the new building's roof was an easy one. "The Aramax roof sheeting allows for huge roof spans with no purlins," he says. "We found it was the only product that could give us these important structural qualities at the same time as fitting into a tight budget."

The fact that ZINCALUME[®] steel is easily transported and can be roll-formed on site is another advantage for projects involving short construction timeframes and tight budgets.

"The structural strength of Aramax with its eight- or nine-metre spans is so important here," says Kirk, "but the grain of the folds also suited this building. It gives the interiors a wonderful textural quality."

Another advantage of the product is its capacity for ventilation and insulation in both the ceiling and the wall linings. Applied to the ceiling underside, a second layer gives added heat and sound insulation. Also, Kirk notes, with the deep 700mm ceiling profile, waterproofing is highly effective.

Rainwater is captured off the roof, stored in large underground tanks and used to irrigate the school grounds. The gutters suspended from the four-metre northern overhang are self-supporting.





"The grain of the folds gives the interiors a wonderful textural quality "



TOP: The light-filled interior space is devoid of pillars RIGHT: An annexe right of the main hall houses a kitchen, tuckshop, lavatories and storage spaces



PANEL SAYS

The directness of this steel shed – a multipurpose hall for an indigenous college in Queensland – appeals to us immensely. There is nothing artificial or tricked-up about the soaring, cantilevered roof and the massive box below. The use of galvanised steel for the structure and ZINCALUME® Steel for the roof and ceiling lining adds to the building's robust and knock-about aesthetic. Internally, the hall features a clear span that is very effective in its simplicity, and it has a straightforward and legible plan, making this a building that is sure to serve its users – students, staff and the wider community – well into the future. The structural elements use hot-dipped galvanised steel, which is largely expressed. Perimeter pillars are wrapped in ply on their interior faces to reduce the risk of collision injuries while also enhancing the building's sparse, streamlined qualities. Painted or applied finishes were generally avoided, and the reliability and robustness of galvanised steel was essential for such a well-used and knockabout space. In awarding a High Commendation to RKA for the Australian Steel Institute Awards in 2010, the jury panel noted:

"The materiality and structural concept of ... the primary steel structure [is] expressed to reveal its careful detailing and structural efficiency. The skillion roof is a large rainwater catchment area, which leads to tanks that irrigate the entire school landscape. To the north of the hall, paired steel downpipes align with the structural grid and splay outwardly to support the bespoke eaves."

The form of the building is not overt. Its grid-like repetition and soaring skillion make it aesthetically pleasing, but its more important qualities lie in the nuanced tempering of daylight and its vital connection to the landscape. The blade walls of the two entry foyers consist of large steel portal frames lined with blackened ply sheeting. The compressed spaces are multi-functional: acting as trophy cupboards, ticket booths or catering and service spaces as needs require. They are a nice foil to the light-filled, overscaled volume of the main hall and the shade of the overhangs.

Kirk recognises the hall is in fact the "social and ceremonial heart" of the school. His practice completed

a masterplan for the entire campus a decade earlier, and has since created a number of other buildings in two stages. The hall comprises Stage 3 of the plan, and when the Federal Government's Building the Education Revolution scheme took effect, this was one of the first buildings to be actioned.

All in all, the school is a feel-good success story. Each day, five school-owned buses collect children from across the city. Breakfast and lunch are provided, with parents and hospitality students helping in the kitchen. The independent school receives significant support from local Rotary Clubs, the indigenous radio station (FM 98.9), and a variety of businesses. Medical testing and health programs run by the Aboriginal and **Torres Strait Islander Community Health Service** assists students who might otherwise fall through the health care net. Community involvement has been integral to promoting a sense of belonging, not only from within the student body but also from the broader community. Initial resistance to the school's presence in the area has been overcome partly through the establishment of adult education classes and increased employment opportunities.

Crucially, the multi-purpose hall has helped create strong ties between the school and the community. School Principal Philomena Downey says students have benefited enormously from the interchange and activities the hall facilitates. "The hall has been absolutely terrific for us," she says. "The students have much more of a sense of belonging and of value because of it and the involvement with the community it encourages." SP

PROJECT AIICS Multi Purpose Hall CLIENT Aboriginal and Islander Independent Community School ARCHITECT Richard Kirk Architect PROJECT TEAM Richard Kirk, Yee Jien, Sam Clegg, Brendan Pointon STRUCTURAL & CIVIL ENGINEER NJA Consulting BUILDER Northbuild Construction STEEL FABRICATOR City Steel Engineering SHOP DRAWING CONTRACTOR City Steel Engineering PRINCIPAL STEEL COMPONENTS 460UB portal frame (hot-dip galvanised finish) Roofing: Aramax made from ZINCALUME® steel; Trims and flashings made from COLORBOND® steel; Structural steel: hot-dip galvanised PROJECT TIMEFRAME Design and documentation: three months; Construction: six months AWARDS Australian Steel Institute Steel Awards 2010: Steel Clad Structures Building Design Award BUILDING SIZE 900m² TOTAL PROJECT COST \$1.8 million

STEEL DETAILS

arrnambool's new South West TAFE building - designed by Lyons Architects - might be provocative, but it's also mindful of its neighbours, says director Carey Lyon.

"The brief from the TAFE client called for us to create a new 'front door' for the campus so that you could see into it from the street and get a sense of the activities taking place there," Lyon says. "Because the geometric facade system tilts forward you can see students and staff walking between the various levels inside, at all times of the day. That facade essentially pulls the public space of the footpath up into the building and through its multiple levels.

"We were also conscious of the fact that we were working in an interesting heritage town, so the three-dimensionality of our facade system worked well with the Victorian-era buildings alongside the campus," Lyon says. "Despite our building being visually striking, the fact that our design related to the building's neighbours helped us to achieve the required approval from Heritage Victoria."

The Timor Street facade was inspired by metal window sunshade screens, which were among the raft of options considered to climatically shield



the north-facing elevation. In a bold civic gesture, the architects decided instead to expand the metal screen profile to an urban scale to create the entire wall, thereby allowing winter rays to penetrate deep into the building while offering permanent protection from summer sun.

The facade, with its elongated hexagonal openings, had to be constructed using SHS steel members for ease of assembly and quality assurance reasons, Lyon says. Despite its complex appearance, the geometry was relatively straightforward to design and construct.

"This project was essentially a repetitive and clear solution that involved working through the shop drawings to get it working perfectly in the steel shop before being craned into place on site," he explains. "When building in a regional centre we try to keep the technology reasonably straightforward so, while this looks complicated, there is a relatively simple trade technology underlying it."

Once the steel frame was erected on site it was clad in zinc - which could be easily moulded around the ridge and valley forms - and then glazed. When the new building was first unveiled, the facade raised a few eyebrows and generated some positive discussion in the local media.

"As architects, our primary aim is to positively satisfy the client's brief," Lyon says. "Their initial ideas involved projecting the TAFE as being open for business and transparent in terms of its activities, and having a strong public face on the main street - and we certainly feel that the project has been a success for them in these respects.

"It's a very contemporary building that demonstrates how high-quality architecture can take its place within a heritage environment," Lyon adds. "It looks like the opposite of the building next door because it is so new, but the TAFE building has very specific connections with those Victorian constructions because they are incredibly three-dimensional in their facades. We have generated a strong connection with those heritage characters which really works." SP

"This project was essentially a repetitive and clear solution that involved working through the shop drawings to get it working perfectly in the steel shop before being craned into place on site"

PROJECT South West TAFE Warrnambool Campus CLIENT South West TAFE ARCHITECT/PROJECT TEAM Lyons Architects SERVICES ENGINEERS Umow Lai STRUCTURAL & CIVIL ENGINEER Barry Gale Engineers Projects BUILDER Hooker Cockram STEEL FABRICATOR R.A. Steel Warrnambool SHOP DRAWING CONTRACTOR Beckett Drafting CLADDING CONTRACTOR PBR Roofing LANDSCAPE ARCHITECTS Rush Wright & Associates PRINCIPAL STEEL COMPONENTS Feature Facade: SHS framing; Courtyard facade: LYSAGHT TRIMDEK® roofing made from COLORBOND® Stainless steel in the colours Surfmist®, Windspray® and Dune® PROJECT TIMEFRAME 24 months (completed early 2010) AWARDS 2010 Australian Institute of Architects Regional Prize BUILDING SIZE 2870m² TOTAL PROJECT COST \$12 million



LEGEND

- 1. Roof made from COLORBOND[®] steel
- 2. Capping made from COLORBOND[®] steel
- 3. Metal cladding
- 4. Glazin
- 5. Steel stud framing
- 6. Steel mullions
- 7. Wall vinyl on substrate

The elongated hexagonal facade openings were carefully angled to allow winter sun to enter, while blocking summer sun, and could only be constructed using SHS steel members

