96 Architectural steel innovation with BlueScope Steel
september 2006

steelprofile

steel profile
published by BlueScope Steel

96 *Architectural steel innovation with BlueScope Steel*
september 2006

NUMBER 96, SEPTEMBER,2006. EDITOR: Pete Heininger
CONTRIBUTORS: Peter Hyatt, Stephen Crafti & Sonia West
PHOTOGRAPHY: Bob Seary & Peter Hyatt
ART DIRECTOR: Natasha Krncevic
CORRESPONDENCE: Steel Profile, PO Box 961 Crows Nest NSW 1585 AUSTRALIA.
EMAIL: pete.heininger@theprojectgroup.com.au

ABN 16 000 011 058.

(cover photography) Once the concept of a tall, thin building was rejected for the Altona Meadows Library and Community Centre, the design sketches started to embrace the entire site. Steel was the only option; it was the only material that could support so much glass.

(opposite) Tough assignments are often the province of architecture. The Brisbane practice of Codd Stenders demonstrates this most eloquently with its wafer-thin Villa Gotha, in Brisbane's Fortitude Valley.

To help celebrate COLORBOND® steel's 40th anniversary, this edition of *Steel Profile* is dedicated to this seemingly timeless, infinitely flexible and quintessentially Australian building material.

Portraits by Bob Seary
& other photography
by Peter Hyatt

002

think tank

What are some of the major changes and challenges confronting Australian architecture on COLORBOND® steel's 40th anniversary? How has the industry evolved and what are the imperatives? Steel Profile assembled a group of Australia's leading professionals to examine the rear-vision mirror as well as gaze into the crystal ball for a look at the not-too-distant future.

Award winning architects James Grose, Kerry Clare and Eddie Codd, along with Executive Director, Cities and Centre Division for the NSW Department of Planning and former NSW Government architect, Chris Johnson, consider issues as diverse as an Australian design narrative to sustainable design and appropriate material usage as part of the COLORBOND® steel story. Regular contributor Peter Hyatt moderates the meeting.


Chris Johnson


Kerry Clare


James Grose


Eddie Codd

LANGUAGE

Peter Hyatt: What are your impressions of Australian architecture from the 1960s to the 1980s? Was national identity an interest or concern for architects?

Kerry Clare: Australia was looking at its direction. Gabriel's (Poole) work had a lot of modernist examples, but he was also investigating and reinterpreting the vernacular Queenslander in a very modern way.

Eddie Codd: I liken it to what was happening with landscape gardening. There was the realisation that native plants could be drawn in from the bush and become a part of the built environment instead of always rearranging English and European plantings. In Queensland we produced houses that were all about the transition from indoors to out.

James Grose: My take on it is that the Sydney School in the 1970s was a defining time in Australian architecture. It was about finding a language that was authentic to place. A lot of it was derived from Alvar Aalto because Ken Woolley, Richard Johnson and others saw the work first-hand and understood how you needed to experience certain architecture before it could be fully appreciated.

Peter Hyatt: What about modernism as a fairly universal influence?

James Grose: Eddie Codd and his generation were the first to embrace the principles of modernism. They introduced this idea of lightweight construction.

Kerry Clare: This type of investigation was happening elsewhere because at the same time we were working with Gabriel Poole who was doing very similar things to Murcutt, so there was this awakening to the new possibilities of materials and landscape.

James Grose: It was about this time that modernism found regionalism. I remember attending a conference at which New York academic Kenneth Frampton called this convergence "an architecture of resistance". What it means now is that we need to resist globalisation, resist blob-ism, resist technology and go back and just make things meaningful.

Eddie Codd: When you start looking at the climate and the relationship of the building fabric, it opens up new directions. If you derive inspiration from an understanding of climate and what it feels like to sit on a veranda, suddenly there are opportunities to create the building fabric that results in exciting and different expressions that you will never find in a typical spec. display house.

James Grose: Interestingly, though, American architecture at its best in the 1940s and '50s was like Australian architecture at its best in the '80s. The group that included the likes of the Eames and Neutra responded completely to the environment of places such as California and Arizona.

Eddie Codd: The whole idea of the transitional space that extended the indoors outdoors, and vice-versa, means you don't feel the need to retreat into the cave like you do in a cold climate. That is largely what the veranda contributed.

James Grose: It's easy to make shapes. Architecture is not shapes. We've just won a Sulman Award for a building that we just thought would struggle to win much at all because it isn't sexy, it isn't blobbish and it isn't groovy. It's a serious piece of architecture. I know Chris (Johnson) has talked at length about 'fast architecture' that engages and then goes away.

Chris Johnson: I'm interested more in the total built environment and the impact architects have. Architects are concerned with specific aspects of shape, form and environmental aspects among others. In my line, this is really compartmentalising a smallish part within the broader built environment. But in some way, architects like that because they can identify their core position.

TECHNOLOGY

Peter Hyatt: Is technology aiding and abetting architects to rise and meet the challenges?

Kerry Clare: In future, there will be an army of architects totally attuned to doing every aspect of design on the computer. I have no problem with the computer as a pencil, and in the hands of a very talented designer the results can be stunning. But it's a matter of working through the technology to make a connection with place that has an authenticity.

James Grose: Architects can think strategically about their work so that it's more than simply thinking about worm farms or facing north. Eddie (Codd) got it in 1972 when he started talking about assembling houses and buildings through bolted connections. One of the jobs that Chris (Johnson) does so well at the government level is that strategic thinking, but it's hard to draw together all the various strands.

Chris Johnson: Incremental change across the big picture is really the only way that real change is going to occur.

Eddie Codd: What really bothers me is that we have moved away from the ultimate responsibility of dealing with technologies to produce building fabric. Your basic house frame design, especially in Queensland, has degenerated progressively, with the result being frames with many planes of horizontal failure – bearer to joist, joist to bottom plate, bottom plate to stud, stud to top plate and so on through to the roof cladding. It was then necessary to apply tiny metal bandaids nailed to every joint to maintain structural integrity. We're losing our willingness to address technical issues, understand materials and, in the process, we're missing out on the joy of producing building fabric that is meaningful and functions appropriately. We really are dead-scared of technology.

My view at the moment is that we're fiddling with the architectural vocabularies;

"I'm interested more in the total built environment and the impact architects have. Architects are concerned with specific aspects of shape, form and environmental aspects among others. In my line, this is really compartmentalising a smallish part within the broader built environment. But in some way, architects like that because they can identify their core position."

CHRIS JOHNSON

we're not getting at the guts of building technologies.

James Grose: In our office we talk about 'tectonics', and we use that word specifically because it's about understanding technology and what it means to screw and bolt things together and find the result connected to its environment. There are points in time that are important to current matters. One of them was the '80s in relation to thinking about architecture. It produced a common idea about place, regionalism and tectonics – architecture that is true to society, and that's what the '80s drew together. That's an incredibly important and generational thing.

Chris Johnson: It's a good point. I have a sense, though, that we are on the cusp of change, which is a positive.

Kerry Clare: But are we really on the cusp of change? Isn't that really happening all of the time?

Chris Johnson: I think things build up for a while and then release. It seems to me that at architecture schools there is a certain vacuum at the moment. Almost a calm before the storm.

James Grose: We're dealing with young practitioners and students at the moment, and they're very clever and have incredible computer skills, but when you talk about architecture! I've just finished reading *The Weather Makers* (by Tim Flannery) and it left me feeling incredibly depressed. The whole thing about technology is that we are at this point in time when technology can be used to change and improve the built environment. I do think we're on the cusp of something that's going to be more than a bunch of architects making shapes.

Chris Johnson: It's understandable that as technology comes in it will be used for the wrong reasons in many instances. It also has to relate to major building suppliers, materials suppliers, fabricators and the construction industry. But it requires CAD connections – for example where there is a more direct link that could be very interesting so that production companies provide house components and produce parts more quickly, efficiently and to order. Look at the car and furniture industries. Ikea is a great example of testing products, minimising costs but maximising value.

Kerry Clare: I was very impressed with Renzo Piano's Aurora Tower where they trucked in a facade system to see how it would work and to better see what modifications may have been required.

James Grose: The decision makers in this society are often not concerned with how people mostly live. So you get to my stage… when I was at QUT and I was reading books on social housing and arguing about it and it was beaten out of me in

NAB headquarters, Docklands, Melbourne.

a nanosecond. All I can really do is do the best I can within my very limited focus in my profession, because there's a constant process at work to create everything to its easiest possible path.

James Grose: Sydney towers could come from any city in the world. Most of those towers don't acknowledge Sydney's climate in any way, let alone culturally. You have to go beyond discussing the 'cost' of a building. What we're really talking about is survival of the species. Chris makes a lot of sense about this very interesting intersection where design and production can be used to make a tremendous difference.

Eddie Codd: It's a question of the scale at which we operate, and whether industry can come on board and use its influence to provide solutions that make a much more direct connection.

Chris Johnson: I think there's an interesting parallel for industry here with Japan, which re-engineered its whole production process after World War II. You can get these brochures from giant building companies that provide information about air movement, VOC's (volatile organic compounds), every possible health issue, earthquake resistance – and so they really do engineer their buildings right from the beginning and take into account recycling issues. But that only happens because governments invest millions to educate the whole construction industry.

Eddie Codd: Well, therein lies the problem we face. If you think about it, research & development (R&D) rarely happens in the building industry. R&D often takes place when companies are developing products, but there is very little R&D on building fabric. Unless we do it on a large scale, like Ikea do with furniture, we will not produce a suitable outcome.

Kerry Clare: It's particular to climate. You can't necessarily take, say, a German-designed facade system and apply it to a sub-tropical situation.

Eddie Codd: The exciting thing about this era though is the unbelievable complexity of the electronics. If we combine high-tech electronics with simple, readily available mechanical devices, building envelopes can be manipulated and changed to accommodate climate.

Chris Johnson: It seems to me that this development of skins is what a lot of the future holds. In fact, the whole of architecture might become a nano-technology skin. So all of our feelings as to where structure is, where the front door and openings are, will be much less defined. Some of the glass developments are already here – like opaque glass that achieves privacy at the touch of a button.

Kerry Clare: It's the architect's role – to make sure that the social and human scale, memory and belonging are retained.

Eddie Codd: I agree and I think the profession isn't making a bad attempt at that, but it does appear to me to be dead-scared of technology.

"The whole thing about technology is that we are at this point in time when technology can be used to change and improve the built environment. I do think we're on the cusp of something that's going to be more than a bunch of architects making shapes." JAMES GROSE

Ski'n'Skurf Ski Kiosk, Bli Bli, Queensland.

James Grose: I reckon architects are vitally interested in technology. The problem is that you and I are industrial designers and we can see the possibilities.

Eddie Codd: Buckminster-Fuller addressed this issue a long time ago. He said in the electronics industry, a good idea trying to find its way into the market might take a few months. In the aircraft industry, it could take a few years. In the automobile industry, it could take up to 30 years. But in the building industry, it could take a couple of lifetimes.

Eddie Codd: The Ikea phenomenon is a solution of scale. What is possible for Ikea is possible because of scale. We need to look at scale and expect more from companies like BlueScope Steel, such as how we can use the magic of their materials.

Kerry Clare: How often do you come across a site where you can use exactly the same plans for a multi-residential modular solution? It just doesn't happen.

Chris Johnson: What worries me about the production system at the moment is that while I've said there are big companies involved, you wonder whether part of the production system shouldn't be more proactive in putting things together.

There's a very interesting parallel in Japan with Toyota's website (www.toyota.co.jp – click on non-automotive) with their other-than-car section. Toyota produces housing, and they've decided that what they're doing with cars is not that different, and so they produce houses with a chassis, framework and cladding.

James Grose: The issue is not the idea. It's the transformation of the idea into a viable commodity. Architects aren't easily able to do that unless they are very entrepreneurial. But I do think that's the key. The argument we have heard over the years is that the most important thing on the house is the size of the front door and the material it's made out of so that it can be easily seen from the street – because home owners like to display how wealthy they are. Now most architects find that an anathema, so there's a big gap between 'the market' solution and the architectural ideal. But that's the failure of the pattern book for 'architectural' housing because it produces designs that you could argue are almost too good for the market.

Chris Johnson: I don't think that's right. Part of our discussion here is how you bring about good change. We agree that it's unlikely you will get radical change, but I think the way change occurs is through incremental build-up and trail-blazing new ideas that are ahead of their time. I reckon the biggest potential at that front end is the whole environmental agenda. People can freak out at taste or aesthetics and say they know better, but they can understand the environmental imperatives of global warming, energy costs and water shortages.

James Grose: I go back to this issue that touches on pattern book design because technology is easy really. For example, one of the great things about apartment design is the breakthrough of cross-ventilation. Now that's almost a prescribed design outcome, but to get a developer to allow for cross-ventilation was almost impossible until it became mandatory. Technology is easy. It's the process that works against the adoption of technology.

Kerry Clare: With new building systems the builder needs an instruction manual, whereas bricks, steel blocks, timber, etc, are what they are accustomed to using and adapting to make solutions. Quite often the thinking is that it is cheaper to do it the old way because everyone knows it and understands it.

Eddie Codd: Because scale is so important, it takes major companies to have an impact. Individual architects doing 'fun' houses and having a ball is interesting but it's all too isolated. I was on a site visit to Canberra a week or so ago to oversee a project we're doing. On a site several kilometres long the grader operators were being guided by satellites. Now what's extraordinary is that the computer screen in the cabin was indicating the blade height at the lower and upper end so that the operator could cut a precise swayle. There were no surveyors anywhere on site; the whole process was being guided by global positioning devices that were communicating with eight satellites at any one time. The operators can achieve a tolerance of 20mm on height and position. It's extraordinary!

Chris Johnson: We just need to replicate that change in the other disciplines.

Eddie Codd: Absolutely. We're back in the Dark Ages compared with the Canberra earthmover. I came away excited but depressed at the same time. Nano-technology and high-technology can produce solid shapes and architects need to investigate those technologies.

Kerry Clare: The reality is that the modular solution may sound appealing but it doesn't happen like that. There are too many variables. The details and elements of building introduce complexities to that process of assembly. Componentry can be incorporated but there's still the need to fill in the gaps.

STEEL

Peter Hyatt: We understand steel has tremendous flexibility and cultural fit, but can it reclaim that iconic status beyond the obvious rainwater tanks and roofing?

James Grose: All of us have done buildings that are about a holistic, cultural fit. My point is that steel has already gone beyond that point, and in a way that's the problem with thinking about materials stylistically.

"If you're talking about spreading your resources a long way, a very thin product – like steel – that's best folded, or as a composite product, is incredibly sustainable." KERRY CLARE

Chris Johnson: I think there's a popular perception about steel being a product that isn't related to comfortable domestic stuff. It's widely seen a bit more on a bigger scale that relates to large structure and steel beams that come from an industrial landscape. We may need to find a way to alleviate that perception. We in the industry see it positively.

Peter Hyatt: But it has to be understood and associated with being more than utilitarian and sustainable. It must be seen as desirable, even beautiful.

Chris Johnson: That's right. But it has to come from the ESD (ecologically sustainable development) issue. From that, we'll be shown a way forward.

“Years ago somebody said to me the revolution in architecture is going to come from coatings. I look at a piece of COLORBOND® steel and I can’t even see the thickness of the coating. So you say I have this very thin, lightweight material with high durability, but how do I use that material in the face of the ESD challenge? What an opportunity to design new facades!” EDDIE CODD

Villa Gotha, Fortitude Valley, Brisbane.

The water tank has had a revival because people like to feel they’re making a contribution to conservation.

Peter Hyatt: The Toyota analogy is really useful because the market is calling for product development. They have to build lighter, smarter, more fuel-efficient vehicles. And this is the point at which we started – how far have we come over the past 30 to 40 years. The housing and city building stock is not really reflecting any tremendous evolutionary progress. Environmentally they aren’t any better. Apart from a few isolated stars, there’s no real progress and so the alarm bells should be ringing. Ultimately, the government and/or industry needs to take up this issue. Not with a one-off house, but by sponsoring a group of architects and planners to take this in the right direction.

Eddie Codd: There’s an enormous amount of work BlueScope Steel can do to move the game forward. It’s a very exciting challenge.

Chris Johnson: It really comes down to BlueScope Steel’s core business. For example, will there be a BlueScope Steel house in the future?

Eddie Codd: If I were in BlueScope Steel’s shoes I would be aiming my products at demonstrating how to produce environmentally responsible solutions. I’d do some comparison between materials in certain applications and provide various combinations and options to reveal the energy outcomes so people can make the best choices.

(Also) if someone asked me: ‘Can you roll-form a house?’ I would say ‘yes’.

James Grose: Absolutely.

Eddie Codd: But could you actually produce roll-formed parts with holes punched and detailed so you could assemble a house in that way? The answer is again ‘yes’. But nobody’s doing it.

Years ago somebody said to me the revolution in architecture is going to come from coatings. I look at a piece of COLORBOND® steel and I can’t even see the thickness of the coating. So you say I have this very thin, lightweight material with high durability, but how do I use that material in the face of the ESD challenge? What an opportunity to design new facades!

Kerry Clare: You’re right that, as a skin, steel has so much to offer.

Chris Johnson: Just look at the NAB building at Docklands in Melbourne with all of its fabulous elements. In the world of the workplace that’s an amazing building that addresses all of the issues of space, materials and systems.

COLORBOND® STEEL

Peter Hyatt: If you were to take two typical high-rise towers – one is a conventional tower and the other is a really sustainable tower – how do the upfront costs compare?

James Grose: Well obviously the sustainable tower is the dearer one to start with because the cost of sustainability is higher than a concrete frame clad in the cheapest glass. But you have to consider these things over the life of a building, taking into account running costs and occupant comfort and efficiency. The NAB project has mixed-mode ventilation that is incredibly complex. Somewhere around level 40 in a high-rise tower you find the wind wants to blow away your sun screening. It has all sorts of issues and it’s bloody hard. From a cost viewpoint it’s at least 20 per cent dearer. You have to remember that’s the launch cost. How long is the life of the building? What about running costs and amenity?

Kerry Clare: If you’re talking about spreading your resources a long way, a very thin product – like steel – that’s best folded, or as a composite product, is incredibly sustainable. But the architect is up against the detailing of that when that material meets another material. How is the flashing resolved over corrugations for example?

Eddie Codd: COLORBOND® steel is a remarkable material. It isn’t possible to site-paint zinc-coated steel and obtain the life achievable from COLORBOND® steel. COLORBOND® product, or sheet steel with COLORBOND® coating, opens up opportunities to address ESD issues. For example, if I were marketing it I’d be extolling its virtues in relation to other materials to improve the environmental performance of a building.

Imagine, for example, a facade that opens up to reveal a black concrete wall during winter, and then closes down during the evening so the heat can be used internally.

James Grose: It starts as this flat sheet and by pressing a very poetic shape in it, you also magnify its spanning qualities, and that in itself is a fantastic innovation. Think panels and stuff; get your head around that, because that’s where steel has to go in the future.

Eddie Codd: The question of whether something fits culturally is valid. The profiled veranda roof made entirely of corrugated steel sheet was a cultural icon. There was no need for structure. There was a wall plate against the inner wall and head spanning the veranda posts, and a curved roof spanned between the two. Culturally, steel hasn’t come up with a replacement for that element.

Peter Hyatt: And that (corrugated steel veranda roof) was the iconic form; the great Australian vernacular. Until the Opera House came along, and putting aside the Harbour Bridge, that was really an Australian symbol of survival and utility.

Eddie Codd: Culturally, you don’t need to be scared about the potential for COLORBOND® steel as a product to achieve that foothold, but that foothold is already there. But we do need the next bull-nosed veranda. There are so many opportunities, but they’re different now.

James Grose: And it’s probably not in residential construction. More likely it will be developed in commercial buildings before finding its way down. But I come back to my point that all building types can use panel systems – hospitals, houses, factories etc. Industry needs to recognise that it should make them intelligently, and they will be on a winner.

COLORBOND® steel celebrates 40 years

No other native Australian building product of the past 100 years has come to speak more of local conditions and seeming timelessness than corrugated steel.

While it has been used as a building material in many countries, its elevation beyond simple sheds and out-buildings has been left largely to Australians – with some of our leading architects more recently embracing corrugated steel and its progeny for a range of important projects.

One of these progeny is COLORBOND® steel – most notably in its traditional corrugated profile. And this material's rising popularity and refinement as both a design and building element has corresponded with the evolution of *Steel Profile* magazine.

Initially, we considered looking at the development and refinement of COLORBOND® steel since its launch 40 years ago. However, the more we looked at the product, the more we realised it could be timelined through a series of *Steel Profile* projects over the years.

Mounting any meaningful retrospective is fraught with danger as it's such a subjective quest. There's every chance we'd overlook landmark projects in an attempt to narrow the field to a handful of buildings. Yet COLORBOND® steel's very nature – its ability to be pared back to structural abstractions – lends it to the vernacular.

It has encouraged increasingly exuberant and creative use – particularly when combining roofing and wall areas – while reinforcing a comfortable Antipodean tradition.

Many of the following projects – stretching over the past 24 years – could be considered seminal. They amply demonstrate versatility.

Sonia West and Pete Heininger
Images by Peter Hyatt

FILTERING LIGHT –

Chris Clarke's Ascot House, Brisbane. Issue No 18, 1986

After spending 15 years working in the UK, Clarke's design for his house in Ascot oozed confident timelessness, underpinning Queensland requirements to filter harsh light and modulate airflow.

He understood – and worked with – the local climate and conditions.

Reminiscent of Father Emmanuel Green's Woodend House (*Steel Profile* No. 95), initially designed and built in the early 1970s as a school, Clarke's work has also stood the test of time..

It's understated, designed for an "impossible" site, and bears no hallmarks of an organic legacy. This is pure, confident, angular, timeless steel.

ARCHITECTURAL SCULPTURE –

Morrice Shaw's Wave House, Sydney. Issue No 6, 1982

COLORBOND® steel was already 13 years old when Morrice Shaw's organic, ground-breaking Wave House was completed on Scotland Island, north of Sydney.

Designed to harmonise with its environment, the house was conceived as a floating, flowing form of steel and glass – a metaphor of surrounding waves and clear blue skies above Pittwater.

Shaw captured a sense of perpetual, surging motion through a series of well-defined corrugated roof 'waves', reinforced through the rendition of staggered, independent pavilions.

While the Wave House was designed from the outset to be sculptural, Shaw maintained it was a poetic and practical resolution of his client's needs.

ENVIRONMENTALLY RESPONSIVE –

Gabriel Poole's Noble House, Noosa. Issue No 22, 1987

It's clear that Poole was an architect on a mission, determined to stem the tide of sub-par development flooding his beloved Noosa, courtesy of an ever-increasing demand for real estate.

His Noble House was designed to float in its environment rather than hug the earth. As a result, it displays a breathtakingly modern image compared with other the other houses around it.

There's no doubt that Poole, leading the charge for superior Noosa architecture, understood early on the benefits of delivering environmentally responsive work in steel. The use of his patented Quadropod system of interlocking braces and trusses aided in speedy design and erection, which significantly cut costs.

SOFT STEEL –

Michael Rigg, Urban Spaces' Skye House, Castlemaine. Issue No 15, 1982

Rigg's house, built in Castlemaine, Victoria, paid little homage to traditional Australian rural homesteads – while underscoring our almost universal delight in corrugated steel.

While traditionally fastened vertically to external walls, Rigg chose to secure this small home's cladding made from COLORBOND® steel horizontally, underpinning another Australian tradition in the making.

Rigg was also paying a large debt to Italian architect Palladio, reinforcing what he referred to as "enveloping domes" (with just a hint of the quick-built Nissen Huts of World War II). But that's where external influence ended. The tiny (five-and-a-half squares) Skye House was Australian to its bootstraps, designed to be fire resistant in a potentially harsh environment.

It was also designed to be fabricated in Melbourne and assembled quickly on site. And like Shaw's work, Rigg worked to avoid hard-edged design.

IN TRAIN –

Jandaloop Rail Link, Perth. Issue No. 43, 1993

Suburban railway stations are normally stolid piles of brick punctuated by cheap aluminium windows. Their role – while possibly sheltering passengers from the elements – underpins the impression that successive State Governments would rather spend money on anything other than public infrastructure.

However, the seven new stations formed along the Jandaloop rail link into Perth's northern hinterland flew in the face of this perceived 'logic'.

While all stations along the line speak eloquently of steel – and the relationship between humanity and steel wheels on steel rails – it could be argued that Forbes Fitzharding's station, awarded the Sir Zelman Cowan award for public buildings in 1993, is the project's masterpiece.

It rises in quality and performance in direct response to its physical challenges and celebrates, rather than detracts from, the romance of train travel – even if it's only commuting to and from work.

SPINNING WHEELS –

Adelaide Superdrome, Adelaide. Issue No 44, 1993

Adelaide's Superdrome, designed by Carlo Gnezda and opened in March 1993, was a dramatic resolution of the age-old form-versus-function challenge.

Gnezda's toroid form was as sleek as it was expressive, and within short order was being dubbed as the offspring of Utzon's Sydney Opera House mated with an armadillo. The structure, akin to a flattened racing helmet, shares a similarity with like forms – essentially because it needed to house its cargo as economically as possible.

While producing an aesthetic stimulus underpinned by confident engineering, the Superdrome kept a firm lid on State building budgets. The more one studies Gnezda's velodrome, the more it equates to maximum cover at minimum cost, underscoring a timeless aesthetic that begs speed.

BLACK BEAUTY –

David Luck's The Lookout House, Red Hill. Issue No 80, 2002

Black. The colour of sophistication – more at home in a New York bachelor pad than an isolated Australian bush setting. Yet strangely, owner/architect David Luck managed to successfully combine dense colour and COLORBOND® steel to give birth to a prototype weekender, appropriately called The Lookout House.

More alien than familiar, the home is a futuristic vision of a retreat reflecting the shadows of its forest surrounds. Flat sheets of COLORBOND® steel in the colour Night Sky® clad the exterior, with pod-like rooms lighting the interior spaces.

For such a hard-angled home, the Lookout House has a surprisingly soft touch. Embracing Glen Murcutt's 'touch the earth lightly' theme, Luck removed not a single tree during the construction process. And as if to prove a point, the house stands defiant on steel legs with the four floor levels appearing to hover just above the ground.

For David and his partner Robynne, the home borrows from the iconography of Ned Kell's helmet, and provides a view of the bush through Kelly's eyes.

ACTIVE MINDS –

Sunshine Coast University Recreation Building, Maroochydore. Issue No 64, 1998

For centuries, educational buildings have reflected the institutions within. Conservative bricks and mortar have shrouded inquisitive student minds, and long, dark corridors have severed all connection with the outside world.

Enter the Sunshine Coast University's Sports and Recreational Building. Half glider, half jump-jet, the Lindsay and Kerry Clare design infuses the inner halls with light from glazed external walls and a top-lit collonade – inspiring the active minds and bodies within.

The COLORBOND® steel roof reflects the sub-tropical heat and glare as it steps gradually from the large northeast veranda that skilfully enhances cross ventilation.

This project also made a concession to cost-effective campus architecture of the past by following a fast-track construction plan: six weeks to design, document and tender, and 12 weeks to construct and fit out.

COASTAL CUBE –

Daniel Holan's Coastal House, Waratah Bay. Issue No 81, 2002

Great Australian landscape painters have romanticised corrugated iron, fascinated by its refusal to buckle to its harsh environment. Architect Daniel Holan had a similar fascination that he employed with his Coastal House.

The ability to withstand wild weather was the greatest challenge Holan faced in designing his residential cube perched on a coastal headland on Victoria's southeast coast. So he turned to steel.

Muscular steel columns jut from the landscape giving the coastal retreat a sense of permanence, supporting three levels of living above and opening the home to 360 degree views of Bass Strait and surrounding hinterland.

A tough, textured steel skin deflects the worst the weather has to offer through Holan's use of COLORBOND® steel in CUSTOM ORB® profile for wall cladding and COLORBOND® steel for the double skillion roofs.

With its mid-level, first-floor glazing protected by innovative steel shades, the floating structure has drawn much of its influence from more tropical climates.

ROYAL AMBITIONS –

King George V Recreation Centre, Sydney. Issue No 65, 1998

Nestled beside one of Sydney's busiest expressways, Ed Lippmann's $4 million King George V Recreation Centre (KGV) has shimmied its way into our history books.

Virtually everything from the ground up is steel, yet the project managed to find middle ground between contemporary design and the history that surrounds it at the Rocks.

The striking silver steel skin curves into, rather than cuts, the streetscape, rebuffing the noise of traffic crossing the nearby Sydney Harbour Bridge and providing Lippman with a steel cladding recipe for future successes. Specially fabricated panels of flat COLORBOND® steel coil were wrapped over a plywood carcass and attached below the curving roof.

The internal space, home to a basketball stadium, is supported by a 30m clear span, steel truss and portal frame. The walls are lined with COLORBOND® steel in perforated MINI ORB® profile to control acoustics.

FULL CIRCLE –

Jesse Judd's Wheatsheaf Residence, near Kyneton. Issue No 89, 2004

To outward appearances, this lightweight demountable could simply be a corrugated lean-to with a veranda, but expression extends far beyond the fabric of the Wheatsheaf Residence, an understated palette of plywood and steel set on five hectares of old State logging forest.

An extrovert by shape and colour, this bush property has defined the elegance of steel with its razor-thin, wave-like profile and rib-like frame.

Wheatsheaf Residence reflected a new trend to minimal that wasn't white. Where Luck's Lookout House (Issue 80) anchored its angular presence to bush shadows with its dark colours, architect Jesse Judd designed this house to stand out like a fiery sunset by staining the ply interior red. As a statement in steel, it comes full circle.

Built in two parts with two folded planes, lean use of materials, products and trades is evidenced throughout. This is Judd's demonstration of how to strip back and simplify life. It's a true getaway.

016

Project Villa Gotha, Fortitude Valley, Brisbane
Architects Codd Stenders Pty Ltd
Builder Melbourne Lynagh

GOTHIC DIMENSION

On an inner-city site just 3.2m wide and 31m long, Villa Gotha combines astonishing compression with spatial invention. Streamlined and utterly deceptive without any suggestion of facade-'ism', the house has a bird's-wing, fly-away fineness. Home and contemporary art gallery in one, it provides a remarkable series of floating platforms behind a taut, silky, steel skin. While architecture is about delivering 'bang for the buck', it can also offer magic. This inner-city Brisbane house by Andris Stenders and Eddie Codd sees the intersection of opportunity and circumstance. The result is super-charged form and space.

Tough assignments are so often the province of architecture. Who else would accept the high-risk challenge to redevelop such a narrow site? Most architects hanker for the luminous setting to display their work in all its glamour. But architecture can be cruel and difficult, constantly imposing constraint. This is when some architects – teased to produce a more ingenious response – rise to the occasion.

The Brisbane practice of Codd Stenders demonstrates this most eloquently with its mighty Villa Gotha on a 91-square-metre parcel of land – barely bigger than a couple of cricket pitches. Named after its location at the corner of Gotha and Agnes Streets in Fortitude Valley, the house is one of those unplanned small 'L' landmarks that so easily slip between the cracks amid the flurry of civic constructions.

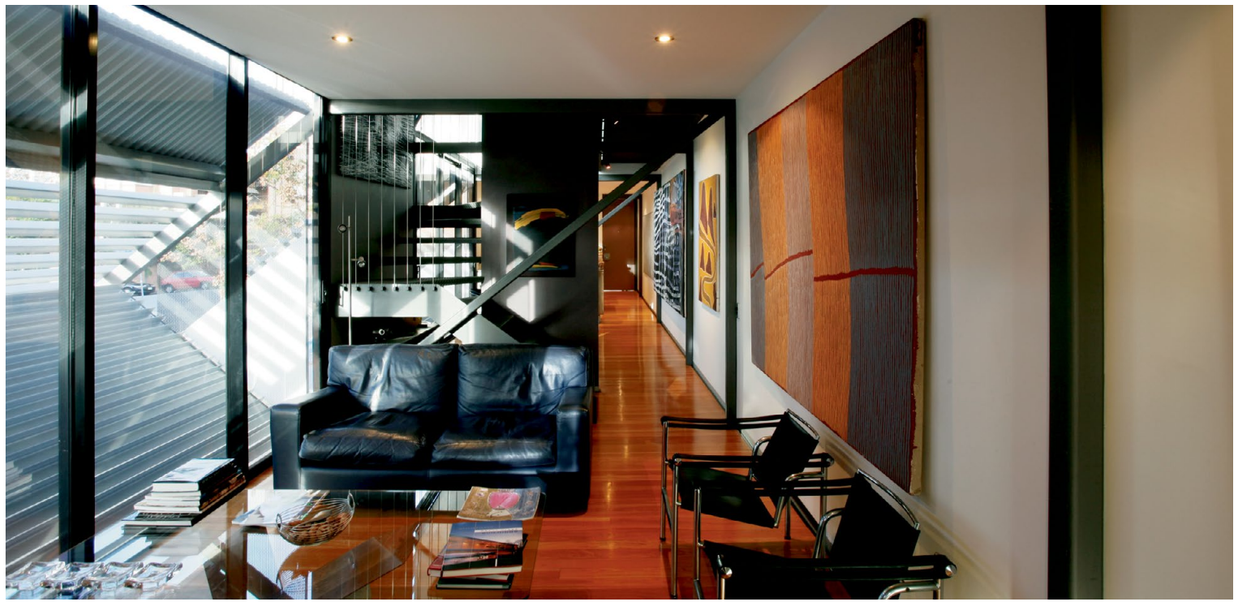
And this made it all the more of a pleasant surprise when Brisbane Deputy Lord Mayor David Hinchliffe, among a group of eminent style-meisters, selected the house as his favourite among the city's 'iconic' buildings. Not bad for a project he has only ever seen in passing and has never actually entered.

This is impossible architecture in many ways, but Codd and Stenders manage to achieve what many considered unlikely, if not foolish. The rambling design on the sprawling, dramatic site is easy. Not much different to simply releasing the belt a few notches and tucking in for a second helping. Villa Gotha seemingly had nowhere to turn, yet it achieves its effect with intrigue and imagination rather than mere subtraction and loss of amenity.

And it qualifies as one of the narrowest, if not the narrowest, houses built in Australia since Colonial times. It is as if the architects have – in one excruciating tug – managed to squeeze corset spilling, buxom flesh into an hour-glass of highly desirable invention.

Nothing if not brave, it is an example of poetic technology that had to defy prescriptive council planning codes. The architects' work has the hallmark of a great tag team. Stenders was the visionary who saw the opportunity (where

The art of the slender envelope is exemplified by the rippled skin and wafered steel construction to extract maximum space from minimal site.



others could only see off-street parking). Codd was the maestro who could articulate a structure that would breathe life, instead of mere existence.

Most of all, the addition of an external 'enclosure' amplifies the sense of space to a degree that appears twice as wide as the actual. What comes across most emphatically about the house is the absolute absence of claustrophobia. Success is what a building feels like 'in the flesh', observes Codd, and he is absolutely correct.

The architects have taken inspiration for the house from Gothic architecture. While it seems a stretch to see the great cathedrals of Europe surfacing in this house, there is an unambiguous vision that makes the lineage entirely credible. "Our architecture is guided by the vocabulary that emerges from the great stone cathedrals – which is really just raw structure with in-fills."

Given the site's narrowness, the architects used the thinnest possible structural and coated steel elements to provide the maximum possible spatial opportunity.

Built across four levels of open planning, the house is also home to clients Ian and Marie Lynagh's contemporary art collection. The Lynaghs say the design provides a brilliant series of gallery spaces. Screened from direct sunlight, the house is nevertheless animated by zebra bands of daylight invited to slice into living areas of a morning. External steel sunshades and internal blinds provide a

Interiors are hallmarked by a deceptive sense of space despite being tied by a block hardly better than 3m. wide. Four levels, mezzanine, and an ingenious triangulated louver system provide an expanded sense of crafted light and space.

seemingly infinite level of daylight adjustment.

The stripped composition is open to, yet protected from, the elements. A simple diagram and plan is reinforced by a vernacular language notable for its spidery steel frame and softly burnished steel cladding. The veranda-like slenderness provides a model of economic and egalitarian design. Its extruded form and simple, repeated, elements allow construction economies, thermal efficiencies and shared prospect. In this respect the house is far removed from being a contemporary Victorian villa. There is no obvious hierarchy of master and minor rooms of privileged/disadvantaged spaces, and the wall of light along the entire eastern elevation produces an entirely different solution.

Sliding walls/windows further blur the inside/outside experience where views are glimpsed and fragmented rather than highly ordered. Triangular windows on the narrow north and south elevations provide additional daylight and vista options. A pitched roof made from COLORBOND® steel provides a light, thermally efficient, unobtrusive cap to the envelope.

Operable louvres provide sunlight and breeze control. "Its vocabulary," Codd says, "flows from the structure and the detailing." In this respect the patterns of the coated steel skin provide tectonic quality of graded detail that echo the fine grain of the Aboriginal art that features in the Lynagh's collection.

Steel is pervasive in its vigorous diagrammatic form. Diagonal steel bracing even intersects living areas. In its exuberance a potential flaw exists for the unwary basketball-tall types unaccustomed to the internal 'flying buttress'. Presumably repeat bumps and scrapes are avoided in the event of chance encounters.

Externally the house lets its dynamic geometry carve some fine space. BlueScope's COLORBOND® steel in CUSTOM ORB® and MINI ORB® profiles provides a satisfying legibility. The pattern of its rippled surface has highly organic associations such as water's-edge sand pattern, cirrus cloud and feather – all complementary to the house as container for art and living.

The cladding's colour program is appreciably understated. It reinforces the elegance of assembly. External colours are restrained and shy away from the dead masonry wall.

What could have been a highly exposed interior with a more traditional modernist glass box or enclosed masonry job uses some audacious and ultimately effective sleight of hand. The result is an environment very protected in terms of heat load. The fully insulated steel skin and projecting baffles remove most of the heat load from the long face of the building supported by sliding glass and louvres on upper levels. "It ventilates beautifully," Ian Lynagh says. "Without its protective projection it would have just been a box, and fairly uninhabitable at that. But the light penetration is fantastic. It just dances and overcomes that issue of space in the single dimension."

Despite its apparent limitations, this is a house of remarkable scope. Entry reveals a great depth of floor plan interrupted only faintly by a slender steel central staircase. Art on one side, glass on the other, provides lustre and dimension. The ground floor has provision for two cars – parked end-to-end unsurprisingly – as well as storage space. The first floor provides a generously proportioned and equipped kitchen, dining and lounge/living areas. The second floor has two bedrooms and ensuites, while the top floor offers a loft as additional gallery space and an office/study. A small private terrace on the second level to the north is a bonus.

Despite its rational and highly disciplined form, the architecture achieves a high level of amenity where the vocabulary of structural materials, louvres, lightweight cladding, polished timber floor and art imply an authentic, fully made linkage between structure and client use.

Andris Stenders (left) and Eddie Codd with their design considered by Brisbane Deputy Lord Mayor David Hinchliffe as one of Brisbane's most iconic buildings.

During a visit by one 'glossy' magazine, the style editor appeared with a bag full of cushions to 'customise' the house. Not surprisingly, the Lynaghs saw red. Their house was to be portrayed as something other than what it truly was. That was the end of it. "She was shown the door."

The pair was far more impressed, however, with the recent visit by a Year 8 group of students who travelled from the Gold Coast by train to follow a 'culture trail' of architecture and galleries.

"They just suddenly turned up and were gazing at the house. We had no idea why they were wandering around," Marie says.

"Ian went outside to see what the interest was and without hesitating we invited them in. That was one of the most gratifying moments. Those kids thought it was amazing. Most had never experienced such a house and they hadn't expected to do an inside 'tour'. It was an extraordinary pleasure to be able to share the surprises of this place in that way."

Sustainable design is achieved via a kind of material subtraction that converts to addition. Vigorous editing produces the distilled, responsive object. As a house, it asks something more of its occupants than flicking a switch to control heating or cooling. It implies there's nothing wrong or onerous, for instance, when occupants need to manually open or close louvres or adjust blinds. As a society we still haven't understood that running refrigerated air-conditioning is as environmentally daft as running household taps, unattended all day, for their cooling sounds.

Villa Gotha by contrast requires little in the way of external power to supplement a comfortable lifestyle. Daylight flows in with minimal heat load and does this so successfully that one can only ask why such principles of passive cooling have been so conveniently overlooked in the form of unprotected glass curtain, wall and concrete towers and faceless tract housing.

Needless to say, Codd and Stenders are suitably unimpressed with the State's uncritical embrace of climatically unsuitable building stock. "The government says it wants to preserve the old Queenslander house and the character of Brisbane," Codd says. But what does it do? It arranges dual occupancy permits, shifts the houses over to one side and builds a load-bearing block-work job that is totally unfit for climate. It's awful stuff.

"This house is a novel solution that demonstrates the need to overcome difficulty and adversity. That's what almost works against you here. What people like to see in terms of residential fit is the great big box down the road. They don't see the adaptive possibilities of thinking laterally and imagining a suitable version of this house on a typical suburban block. It's possible.

"We couldn't have big structural members because it needed to be razor thin to save space. And the site was so small there was no room on-site to store any building materials. The house arrived on the back of a truck in sections at 3.30am. The frames were lifted in – and by 6am the whole fabric of the house was there," Codd recalls, enthused by the meccano-like process.

"The Lynaghs used to say to me: 'I hope it works.' The fascination for me was that it could work as well as it did. On some projects you look back and think it didn't work quite as well as it might have, but in this instance everything coalesced and clicked into place."

Ian Lynagh says he vividly remembers the day the house was completed and Codd and Stenders arrived for inspection.

"They came in, stood at the kitchen bar and looked around. Eddie said with a hint of surprise: 'You know, I think it works.'

Peter Hyatt

Project:
Villa Gotha, Fortitude Valley, Brisbane

Architects:
Codd Stenders Pty Ltd
Tel: (07) 3846 0877

Structural engineers:
Morgan Consulting Engineers

Steel fabricator:
Apex Fabrication and Construction

Builder:
Melbourne Lynagh

Principal steel components:
Rolled hollow section structure, light weight cold rolled sections for framing joists, purlins, battens. COLORBOND® steel in CUSTOM ORB® and MINI ORRB® profile for roofing and wall cladding

Cost:
$500,000

Photography:
Peter Hyatt

024

Project Altona Meadows Library and Learning Centre

Client Hobson's Bay City Council

Architect Haskell Architects

COMMUNITY FOCUS

Designed by Haskell Architects, the Altona Meadows Library and Learning Centre provides a focal point for the residents of Altona Meadows, a 30-minute drive west of Melbourne's CBD. The striking form, located at the edge of a car park, proudly announces itself upon arrival. "We wanted something that would capture the imagination of the community, a building that shared the contemporary vision of the Hobson's Bay Council," architect Daniel Haskell says.

The curvaceous building was designed as an integrated community facility, and includes a library as well as conference and meeting areas. "The original library was a shopfront in the shopping complex; it wasn't much bigger than 100 square metres," says Haskell, who also recalls the community centre, previously located at Laverton.

Haskell Architects is used to designing community buildings, having designed several schools and libraries among other commercial projects. The firm is also conscious of the process involved in delivering community buildings to a broad range of interest groups.

Haskell Architects started the project by consulting with many local groups, asking each to identify what they considered to be key design components for the building. "Each group highlighted the RAAF base at Point Cook [designed in the 1950s]," says Haskell, who was also captivated by the futuristic lines of the airport hangars at Laverton.

Another criteria specified by those groups interviewed was light-filled spaces, with a sense of transparency. "The previous library was quite gloomy. It did anything but attract people to the centre," Haskell says. While the indicators toward a vibrant new contemporary building were positive, there were also several constraints to the 1100 square metre site. "We considered designing a taller building that occupied less space, but there's a 10m height limit," Haskell says.

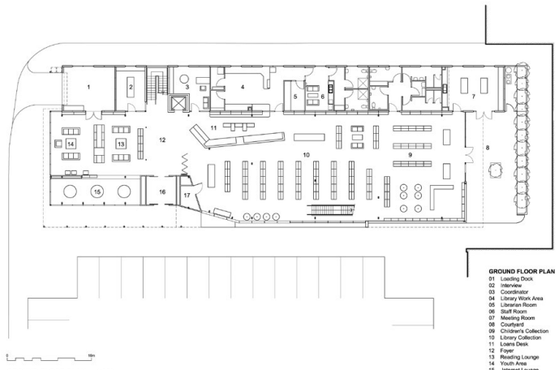
The design sketches started to embrace the entire site, with the exception of a north-facing courtyard. "We saw the design as a fish tank or even an ant farm, where you can easily look in without disturbing anything," Haskell says. And although the form for the building underwent a few changes, the materials were decided upfront. "Steel was the only option," he says. "It was the only material that could support so much glass."

While COLORBOND® steel in CUSTOM ORB® profile features prominently on the building's northern and southern elevations, it was also integral to the structure. Fine steel frames appear both vertically and horizontally on the east and west perimeter. Ten steel columns support the roof as well as the finger-like balcony on the second level.

"These steel sections are quite fine," Haskell says. "They're only 100mm by 200mm in width, yet they manage to support the entire roof." As the steel columns were 'fire engineered', the architects did not have to provide another layer around these. "We always prefer expressing a material like steel for what it is," says Haskell, who was also appreciative of the economics in reducing the number of layers. The COLORBOND® steel used externally allowed for simple and quick construction.

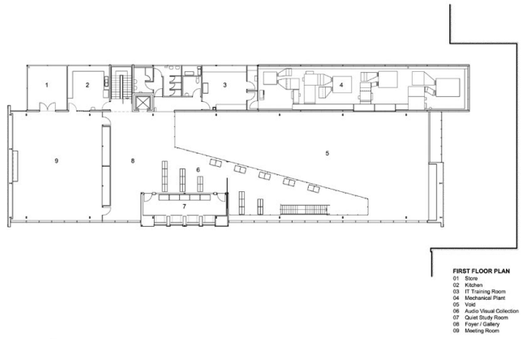
In contrast to the glazed curtain wall facing east, the building's western wall is concrete, with highlight windows reducing the harsher light. "The cladding

Featuring porthole-style windows, the main facade reflects a nautical feel. The windows reference Hobsons Bay, while the yellow represents the colour of pelicans' beaks.



GROUND FLOOR PLAN
01 Loading Dock
02 Interview
03 Coordinator
04 Library Work Area
05 Librarian Room
06 Staff Room
07 Meeting Room
08 Courtyard
09 Children's Collection
10 Library Collection
11 Loans Desk
12 Foyer
13 Reading Lounge
14 Study Area
15 Internet Lounge
16 Entry
17 After Hours Returns

GROUND FLOOR PLAN 1:250
ALTONA MEADOWS LIBRARY AND COMMUNITY CENTRE



FIRST FLOOR PLAN
01 Store
02 Kitchen
03 IT Training Room
04 Mechanical Plant
05 Void
06 Audio Visual Collection
07 Quiet Study Room
08 Foyer / Gallery
09 Meeting Room

FIRST FLOOR PLAN 1:250
ALTONA MEADOWS LIBRARY AND COMMUNITY CENTRE

made from COLORBOND® steel functions as a lid, bringing these two materials together," Haskell says.

The centre's main facade is extremely eye-catching. Its elliptical form is accentuated with a rendered block work plinth, as well as a bright yellow capsule that cantilevers over the entry. Featuring porthole-style windows, the facade has a nautical feel. "These windows clearly reference Hobson's Bay," Haskell says. "And we used the same yellow as the beak of the pelican, the signature for the council."

Colour was also of importance when selecting the COLORBOND® steel for both the north and south facades. (The roof, which can't be seen from street level, is clad in LYSAGHT TRIMDEK® made from ZINCALUME® steel.) A 3m-wide band of COLORBOND® steel in the colour Deep Ocean® appears on both ends of the building. "It's like the GT stripe on a hotted-up car," Haskell says. COLORBOND® steel in CUSTOM ORB® profile was also used to clad the canopy above the library's main entrance.

Also important in the design was protection for the northern courtyard. Haskell Architects used COLORBOND® steel to create a protective canopy for adults and children venturing outdoors during warmer weather. "We wanted to allow as much northern light as possible to enter the interior spaces," says Haskell. Although the courtyard is only about 70 square metres, there's sufficient room for art easels or deck chairs to be scattered through the space. And while parents enjoy browsing through magazines, their children can busy themselves outdoors, protected by steel gates.

While the shape of the building resembles heroic post-war buildings of the 1950s and '60s, there are few if any similarities to libraries of this era. Instead of hushed voices, there's the sound of pre-school children singing. "This end of the building is for younger children," Haskell says. "They're certainly free to make as much noise as they like."

The main floor space – which is loosely defined in the centre of the building on the ground floor – constitutes the main library section of the centre. Filled with bookshelves and informal reading areas, there's a welcoming ambience.

(above) The elliptical form of the centre's main facade has been designed to be extremely eye catching, while appearing to maximise available space.

(below) A 3m-wide band of COLORBOND® steel in the colour of Deep Ocean® is 'like the GT stripe on a hotted-up car'.

A concrete feature wall (made of acid-etched precast concrete) located behind the reception counter conceals staff offices and meeting rooms, together with a kitchen and bathroom facilities. In contrast to the light-filled library, these rooms are relatively introspective. Providing a generous area for community groups to hold functions, the meeting rooms bring together people from a number of ethnic backgrounds. The kitchen is enlivened with bright red seraphic glass splashbacks.

But rather than being sombre spaces, as in the original library, the new space is uplifted with brightly banded laminate walls. "We were inspired by Marimekko fabrics of the 1960s, particularly the brightly coloured stripes," Haskell says.

One of the main design issues was deciding how to allow for independent access to the first-floor meeting rooms after the library had closed. To create this division, Haskell incorporated sliding glass walls and doors on both the ground and mezzanine levels. Disappearing into cavity walls when not in use, these doors allow for maximum functionality both day and night.

The 'youth area' and the area set aside for pre-school children are at opposite ends of the building.

Slightly older groups, meanwhile, use the computers in the IT training room. Also enclosed, but in a more funky way, is a bright yellow room made of ALUCOBOND® at the top of the staircase. Lined with built-in desks, this 'capsule' provides students with a quiet area in which to study, either before or after school.

As the building's footprint is relatively constrained, the architects created a mezzanine and second floor. Ceiling heights varying from seven to 10 metres give both levels a generous feel.

The issue of sustainability was on the architect's mind when selecting the fittings for the centre. While heating and air conditioning was included in the building (as seen by the circular vents embedded into the concrete wall in the library), great effort was taken to orientate the building to ensure maximum northern and eastern light. The lighting used in the building includes sensor lights, which are activated only when people move within a certain distance.

For Haskell Architects, the pleasure of the building comes from seeing laughing children at one end fuse with older children sitting at computers, unaffected by the sound. One of the difficulties of the project stemmed from having to satisfy some 35 different community groups. "It's about finding a middle ground where all groups agree," Haskell says.

While the Altona Meadows Library and Learning Centre provides the community with much-needed services, it also delivers an important focal point for the community.

And although Haskell could have simply delivered a transparent modernist glass box, his firm has created an inspiring new building.

Stephen Crafti

(opposite above) The concrete wall immediately behind the reception area conceals offices, meeting rooms and a community kitchen.

(opposite below) As the building's footprint is constrained, the architects have created a mezzanine and second floor.

(below) Light-filled, warm and inviting at night.

Project:
Altona Meadows Library and Learning Centre

Client:
Hobson's Bay City Council

Architect:
Haskell Architects – 03 8602 0700

Project architect:
Craig Barkla

Project team:
Katherine Belcher, Simon Dick, Nicola Dovey, Alex Hill, Carlos Hui and Ross Loh

Builder:
Kane Constructions

External wall cladding:
COLORBOND® steel in CUSTOM ORB® profile in the colours of Surfmist® and Blue Ridge®

Roof cladding:
LYSAGHT TRIMDEK® made from ZINCALUME® steel

Approximate cost of the building:
$4.3 million

Landscaping cost:
Approximately $50,000 (included in the cost of the building)

Approximate size of the building:
Gross floor area – 1500 square metres

Photography:
Bob Seary

steelprofile

The planning and design of successful buildings requires original and creative solutions to technical and practical issues.

The design process in such projects must also include extensive and real community consultation involving all stakeholders in the project.

I draw inspiration from this consultation, drawing together at times conflicting priorities and views that will ensure community ownership.

Public buildings play a vital role in our communities, and reflect our society. Facilities in the public domain such as libraries, museums, sporting facilities and civic buildings provide spaces for people to engage in specific activities; relax, learn, gather and engage with and feel a part of our diverse community.

The Altona Meadows Library and Learning Centre had to reflect this diversity. It also had to reflect the community's values and provide for the discovery, development and growth of its values and beliefs.

Daniel Haskell
Architect

BLUESCOPE STEEL

For more information on steel products appearing in Steel Profile visit our website on www.bluescopesteel.com or within Australia contact BlueScope Steel Direct on Freecall 1800 800 789.

Steel Profile Issue #96

9 320075 048631