ISSUE 30

SCOPE

NZ METAL ROOFING MANUFACTURERS INC.

Below is a brief introduction to the 2012 executive of The Metal Roofing Manufacturers Inc.
It is intended that Scope be representative of the industry and therefore material of interest is welcomed from all sectors of the building industry be it design, research, manufacture or construction.

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NZ Metal Roofing Manufacturers Inc.
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If you would like to submit material please contact any member of the executive or the publisher.
Visit our website at:
www.metalroofing.org.nz

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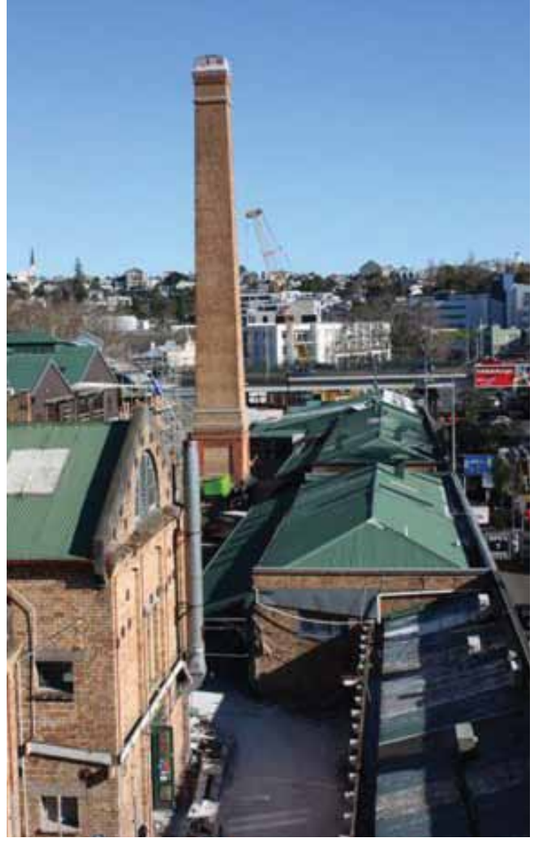
THE ICONIC VICTORIA STREET MARKET REDEVELOPMENT.

A WORK IN PROGRESS

By Graham Hepburn



Above: Photo on the left shows the progress of restoration of roofs and facades and the new development. Above right is the original complex. Right: The Oak room. One of several bar/restaurants bringing back some of the atmosphere of days gone by. Below is the Oak room garden bar.

Back in the 1980s Victoria Park Market was a popular destination for tourists and locals alike with its landmark chimney, colourful shops, stalls and restaurants.
It was a vibrant part of the city, particularly as weekend shopping was quite limited back in those days.
Over the years though, the crowds subsided as the precinct became increasingly rundown and tenants departed for greener pastures.
However, a $20 million redevelopment by consortium Victoria Quarter Trust that is halfway complete is bringing the buzz back to the markets. Already, new shops, restaurants and bars have opened in the market, while work continues elsewhere.

CMP Construction is the main contractor on the redevelopment which will see 80 new shops, restaurants and bars as well as office space at Victoria Park Market, housed in either restored heritage buildings or the two new two-storey concrete pre-cast buildings that are situated between the Depot Buildings that front Victoria St and the Generator Room, Boiler Room and Battery Building on Drake St. There is also an extension to the battery building and a new building in the western courtyard. The new-look markets will also have a stage for live performances and a giant TV screen.

The overall redevelopment has been designed by Clark Brown Architects with the restoration of the original buildings overseen by Dave Pearson Architects, specialists in heritage conservation.

Tony Howard, of CMP, says being able to create more retail space and attract more tenants offsets the costs involved with restoration.

"What we've done is a compromise with the council where we've kept and restored the old buildings but to make that feasible we've built some big new ones inside the precinct," says Tony.

Restoring the landmark 38m-tall chimney cost $600,000 alone, he says, and involved workers abseiling down inside the chimney to remove tonnes of bricks because the inside layer of the chimney had collapsed. Once that dirty, laborious job had been completed, the chimney was reinforced by spraying the inside with a layer of Flexus Shotbond, which helps make the structure stronger while still being flexible. The chimney is not only the symbol of Victoria Park Markets but also a reminder of its past. It and the adjacent Destructor were built in 1905 to deal with Auckland's growing rubbish problem when city officials became worried about the disease risk posed by rubbish being left on the streets. Rubbish was collected by horse and cart and delivered to the facility to be burnt. A few years later the Generator Room, Boiler Room and Battery Building went up as part of a short-lived scheme to make power from the burning rubbish via a steam-powered generator.

The generator couldn't keep up with the city's electricity demands and was shut down after about five years.
Further brickwork structures were added with two double-storey stables being built for the many horses needed for rubbish collection. The Depot Buildings, also brick, went up about the same time.

Slowly the facility went out of date, with the horses retired in the 1950s and the Destructor shut down in the 1970s. Rubbish was collected at the site until the early 1980s, at which time the Auckland City Council proposed levelling the facility but backed down in the face of public opposition.

Entrepreneur Alister Johnston bought the site and developed the markets, which are now being transformed into a more upmarket, boutique style of development that will act as a catchment for the increasing number of people who live and work nearby.

Tony Howard says a lot of work has gone into restoring and re-roofing the heritage buildings. Walls have been re-bricked and re-pointed, while wooden joinery has been made to replace timber that has failed or the aluminium items that went in during the 80s.
Tony says, "Everything can be made the same as it was - it just costs more money and takes longer."

Meetings with the Auckland Council, Historic Places Trust and heritage architects are held fortnightly to ensure the restoration is as faithful as can be and that modern necessities are kept as unobtrusive as possible.
Tony says a case in point is the low-level skylights and extractors on the roofs of the stables buildings – something the council would prefer were not there but from the developer's point of view were a commercial necessity.

restoring the buildings.
"Wherever we could we worked from photos of the buildings, and the buildings themselves provide evidence as to how they were set out; you can see the old openings and such like," Dave says of the project he has worked on for years with Matt Davy.

"The depot buildings in particular had all sorts of stuff put into them, a lot of unsympathetic work where a shop owner would just bang a hole in a wall and put a door in," Dave says. "There were things like aluminium windows stuck in there in the 1980s so we've taken them out and put wooden joinery back in there."

"We spent a lot of time making sure they were as low and slim as possible," says Tony.
He says during the first incarnation of the markets, shop owners had knocked holes in walls for doors and windows that suited their businesses but these were all being repaired.

There are now strict protocols about what tenants can do in the heritage buildings – including signage - and fit-outs are monitored.
Dave Pearson, of heritage architects Dave Pearson Architects, says having original plans and old photos has helped hugely when it comes to

At the same time, the idea was to discreetly introduce modern infrastructure and balance restoration with the needs of tenants. "There's a lot of time involved trying to retrofit a building with new services because you are trying to locate services out of sight as much as possible."

However, any modern structural additions were clearly signposted, such as the rooftop deck between the stables and the glass canopies along the southern side of the depot buildings.

"The lightweight glass canopies are done in such a way that the new interventions are obviously new interventions but they don't detract from the old buildings," says Dave. Sourcing appropriate materials – particularly bricks - has been an ongoing process.

"One of the hardest things has been getting the right bricks," says Dave. "Because the buildings were built at different times they all have slightly different bricks."

The demolition in 2010 of the Palace Hotel, which had started collapsing, was sad for the heritage of central Auckland but yielded a rich source of bricks for the work on the markets.

Dave says re-bricking buildings also involved an education process with contractors, who had to be taught to use lime-based (rather than cement-based) mortar, which suits the softer nature of old bricks.

He says the stables and depot buildings originally had diagonal slate roofs but it was more practical to re-roof with a slate grey corrugated iron.

Modern materials such as aluminium were used to recreate the look of the original cast iron rainwater heads and square downpipes that had been in place on some buildings.
"We had rainwater heads made up on the Destructor building so the downpipes could drop straight down the building without any kinks because we had photos that showed the original rainwater heads and downpipes on the building."

The Battery Building has been clad and roofed in Scoria-coloured corrugate for a traditional look, while the Destructor has curved Scoria-coloured corrugate that mimics its original curved roof.

Colin Wilding, general manager of roofing installers Eziform, says having the rainwater heads and square downpipes made up was straightforward as was the re-roofing job, apart from the curved roof of the Destructor on which the flashings into the wall on the curved roof had to be cut individually.
Colin says it's good to see an iconic part of Auckland coming back to life, something with which Dave Pearson agrees

"After 12 years of working on it, it's great to see it finally coming to fruition," says Dave. "It's the sort of job you get once in your career."

Dave Pearson Architects

Founded 15 years ago by Dave Pearson, this practice specialises in the conservation of New Zealand's built heritage. In the years since it was established, the practice has received heritage and architecture awards for its work on buildings such as the old Auckland Supreme Court, Rotorua's Bath House Museum and Motat's Pumphouse. Dave Pearson has a Bachelor of Architecture from the University of Auckland, and for the past 25 years has specialised in heritage architecture and has completed a series of conservation courses at the Centre for Conservation Studies at the University of York in Britain.

Architects:
(overall design)
Clark Brown Architects,
Telephone: 09 373 5115.
(Heritage restoration)
Dave Pearson Architects,
Telephone: 09 445 8544.

Main contractor: CMP Construction,
Telephone: 09 442 0937.

Roofing supplier: (for stables, destructor and generator buildings):
Roofing Industries Ltd,
Telephone: 09 414 4585.

Roofing installer :(on stables, destructor and generator buildings):
Eziform,
Telephone: 09 414 7581.

Roofing:
ColorCote® Corrugate 762 0.40 ZM8
Colour: Slate (for stables).
ColorCote® Corrugate 762 0.55 ZMX
Colour: Scoria (for generator buildings).
ColorCote® Pre-Curved Corrugate 762 0.55 ZMX
Colour: Scoria (for destructor building).

BUILDING HISTORY

When Davor Mikulcic and Michael Maddern, from Studio MWA, first sighted the brief from clients, Cherry and Brian Weatherstone they immediately saw an opportunity to create something very special. It was a huge responsibility and challenge to fulfil the clients criteria and do justice to the location and history.

What was to become known as the Rotopai Residence was to be situated on an historic site established 180 years ago by the Weatherstone family on their dairy farm in South Wairarapa. The existing home was to be relocated on a new site a few kilometres away.

"The site was fantastic," says architect Davor Mikulcic as there were many mature trees, some over 100 years old, and well established gardens. The proposed new home could be well orientated to take full

advantage of the sun, views of the farm and hills beyond.

Cherry and Brian where embarking on a journey to design and create their dream home that would become an enduring reflection of their farming history and lifestyle. It was to be contemporary but had to project the charm and spirit of "home". This included numerous features and offices for the family business. From a functional perspective the offices were to be visually connected to the living areas of the home and able to provide storage, two work stations and a meeting room.

An important part of the farming lifestyle revolves around both friends and family and the ability to accommodate and entertain both. On occasion there is a requirement to do this on a very large scale with up to 100 guests. Accommodation for guests with privacy from the family home was essential.

The formal lounge and dinning area showcases some of the family treasures and historic furniture from the original homestead. The lounge and dinning areas are well located close to the kitchen.

to a deck and provides a walk in wardrobe and ensuite.

From a practical perspective utilities are well considered with a laundry close to the 3 car garaging. Access can be made through the garage to the laundry or to the toilet facilities.

The roof is designed to collect rain water which is stored for domestic use. The overall house is orientated towards collecting the maximum

The lounge is glazed on two sides allowing views of both the atrium and the wider farmland. The generous double glazed sliders give access to the adjoining, covered deck increasing the entertainment capacity and flow. The kitchen is centred around an island bench with a breakfast bar and lounge space to relax or discuss the events of the day. Both the lounge and family breakfast area feature open fireplaces to enhance the ambience and spirit of the farming lifestyle.

The master bedroom is located towards the morning sun, opens

sunshine to control passive solar energy with extended eaves to prevent over heating during summer months. The concrete floors are tiled in the majority of the home to enhance the available heat sink storage.

To meet the overall requirements of the brief, and to add flair, the home has been designed around an atrium. This not only provides a unique and exciting visual effect but provides additional opportunities to collect passive solar energy.

The distinctive shapes around the atrium core effectively create zones that determine the function. The use of interior and exterior ponds provides interest and unexpected effects with the office spaces appearing to be on a "bridge". Galleries, interior and exterior spaces all interacting to provide interest.

The construction of the home is based on an insulated concrete pad using a combination of steel, concrete block and timber as framing and structural support. In areas throughout the home the stacked insulated block walls have been exposed as a feature and positive solar collectors.
The exterior cladding is a combination of Dimondek 400 steel, Shadowclad and plaster. The choice of Dimondek 400 roofing is both aesthetic and practical as the home relies on collecting potable water for all domestic needs.

The interior is a combination of plastered walls and exposed polished block to provide contrast. A considerable number of walls within the home are doubled glazed glass which adds to the interest, light, solar collection and views.

The flooring is primarily tile with featured wooden floor inserts and carpeted areas confined to the bedrooms.

This project first began in the design stage in 2006, plans were completed in 2007 and the final home completed in 2009.
The home covers 340m2 with over 200m2 of additional decking.

Studio MWA

Environmentally Sustainable Design is one of our main goals and focuses upon thinking towards a better future. We strongly believe that a sustainable approach and environmentally sensible designs are important ingredients in quality architecture and we are proud to incorporate it in every project.

To Studio MWA the principles such as the orientation of building, use of natural light, natural ventilation, use of passive solar energy, use of natural, recyclable and environmentally friendly materials and finishes, effective sun protection, reduction of energy consumption, providing living and working comfort without sacrificing the environment of spaces, use of energy and water efficient systems, recycling and waste management are all an integral part of our design discipline.

We believe this sustainable approach to design should not cost more. Through our work we are seeking alternative solutions to balance the energy resources we use in our everyday lives and we bring this innovative spirit to all of our projects.

"We do not inherit the earth from our ancestors; we borrow it from our children." Native American Proverb.

Client: Cherry and Brian Weatherstone

Architect: Davor Mikulcic
Practice Manager: Michael Maddern
Studio MWA. Wellington/ Brisbane
Telephone: 04 471 1331
Email: info@ studiomwa.co.nz
www.studiomwa.co.nz

Roofing Manufacturer: Dimond
Roofing profile and wall cladding: Dimondek 400
Colour: Ironsand

Roofing Installer:
Water-Mart Wairarapa Ltd.
Masterton,
Telephone: 06 370-0006,
www.watermart.co.nz

Builder: Bashford Construction Ltd.
Mobile: 027 270 5664
E -mail: bashfords@xtra.co.nz

BUILDINGS FOR THE 21ST CENTURY

In February 2011 Ormiston Senior College welcomed its first Year 11 students to a new year in a stunning new facility designed to meet the needs of teaching and learning in the 21st century. The building surrounds a courtyard and provides a variety of spatial options, from large open plan flexible areas, to more conventional class sized rooms and then to smaller meeting or study areas. The courtyard design provides shelter, security and a 'heart' to the school. All spaces enjoy close proximity and views to the exterior.

The design-build contract by Fletcher Construction, working with Jasmax Architects and WSP New Zealand Ltd, has delivered the first NZ Green Building Council 5 Star school in New Zealand, making this building an impressive benchmark for the future. The Ormiston Senior College has been awarded the IPENZ Arthur Mead Award, presented annually to a project that best addresses sustainability and potential adverse environmental effects.

While the green field site had advantages to optimise the space, it came with the problem of airborne noise from aircraft on the Auckland International Airport flight path and a busy roadway. To deliver a well ventilated, quiet learning environment with natural light and reduced energy use to achieve the 5 star rating, attention was focussed on minimising the glazing, screening mid-day sun and using passive ventilation in a way that enabled noise attenuation with no openings.

The design solution used Monodraught Ventilators which work on an air pressure differential principle to generate airflow both into and out of the building space and provide noise attenuation within the shaft. The height and number of the ventilators meant that they became a design feature of the building, and were positioned to align aesthetically. Each vent has a photovoltaic cell to run a small fan to boost airflow when required. The ventilation design qualified for an innovation credit point in the 5 Star rating, and the use of 87 of these ventilators made this project the third largest in the world using this type of ventilation.

Olsen Gascoigne, Site Manager for Paton Roofing, was able to offer a new design to flash penetrations of this size, including a concealed system to deal with any condensation issues.

The ventilators were best accommodated within the Dimond BB900 roof profile and a flashing system, developed jointly with the roofing contractor Paton Roofing, has enabled a pleasing and weather secure roof solution. Olsen Gascoigne, Site Manager for Paton Roofing, included a concealed system in the wide flashing assembly to deal with any condensation issues. The roof material is ColorCote®ZRX™ in a mixture of Titania and Ironsand colours to give a stunning appearance against the blue and green colours of the landscape.

The resulting building, and the attention to detail, is a credit to the design and construction and stands as a state-of-the-art school building to be enjoyed by teachers, their students and the local community. It also serves the wider building industry as a benchmark for sustainability in the New Zealand built environment.

Jasmax

Jasmax is a major New Zealand architectural, interiors and landscape design practice, with nearly 200 staff based in Auckland, Wellington and Christchurch and with representation in Tauranga.

The Jasmax philosophy is that architecture and design can inspire the spirit, turning the everyday and ordinary into truly memorable experiences. They have been doing this for over 40 years - designing and creating exceptional spatial experiences that benefits end users.

Over this period the company has gained an impressive reputation, both here and overseas, for inspirational, award winning architecture by listening to clients and their particular needs and offering solutions based on a wealth of experience.

Jasmax has worked on a variety of outstanding architectural projects throughout this country and overseas. These include the acclaimed Britomart Transport Centre in Auckland, as well as the internationally awarded and renowned Te Papa Museum of New Zealand, which is one of this country's premier tourist attractions.

Client: Ormiston Senior College

Architects: Jasmax
Auckland
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E-mail: studio@jasmax.com
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Main Contractor:
Fletcher Construction

Roofing Manufacturers:
Dimond
Telephone: 0800 346 663.
Technical helpline: 0800 766 377.
Email: dimond@dimond.co.nz
Website: www.dimond.co.nz
Profile: Dimond BB900
Roofing: ColorCote® ZRX™
Colour: Titania and Ironsand

Roofing Installer:
Paton Roofing
Telephone: 09 838 7905
Email: sales@patonroofing.co.nz
www.patonroofing.co.nz

SCOPE NEWS AND VIEWS

Carl Mossman

When Carl Mossman started with A. Balfour Ltd in Cambridge in January 1972 he probably never envisaged he would work for the same company for the next 40 years.

Balfours Cambridge was the roofing and plumbing outlet for the Tauranga based manufacturing operation of A Balfour Ltd, foundered by Sandy Balfour in 1946. Sandy had aspiration's to expand into the fast growing rural sector of the Waikato and when Carl joined Tom Roper as a 2 man team he was responsible for delivering galvanized roofing, spouting, downpipe, flat iron and associated roofing products throughout the Waikato, King Country rural towns and farming areas.

Carl recalls some interesting and now historic events of days gone by;

"Balfours had a rima spouting machine and were one of the largest manufactures in the region producing 1000s of feet annually.

Galvanized water tanks were a big seller in those days and we had a trailer that was towed by an articulated truck with up to 6 tanks a load. We had a dedicated tank maker in the factory at Tauranga rolling tank iron and fabricating tanks.

Delivering them wasn't without it's challenges and a number never made their destination in one piece. Plumbers and merchants made up the bulk of our customer base. Dalgety, J. Jones, Newton King, Ellis and Burnand, TTT and Andrew M Patterson are some of the merchants that come to mind. Most Plumbers had an 8ft folder and guillotine and purchased flat iron in either 8x3 or 8x4 sheets in 26g and 24g for manufacturing flashings.

Unloading 1 ton packs of flat sheet was a time consuming process so we hooked a chain and pully system to the rafters of garage in Cambridge. We soon found the weight was more than the structure could handle and after breaking a couple of trusses had to revert to manual handling.

The landscape was very different from today. We had no fax machines, computers, calculators, forklifts, hiab trucks or mobile phones. Prices were set by the Auckland Spouting and Downpipe Manufactures Association and price books comprised of rates for Merchants, Resellers, Trade and Retail. A reseller was any plumbers outlet that displayed a toilet pan in the window of their workshop.

Corrugated galvanized iron was the staple product and every day we hand loaded and unloaded tonnes of iron for delivery around the Waikato . Most of our corrugated iron was imported in standard lengths of 6ft, 8ft, 10ft, and 12ft and our longrun requirements came from Reese Run Roofing in Hamilton.

My role was diverse and apart from deliveries included taking phone orders, handling customer enquiries, quoting and pricing. All our invoices were hand written and had to be priced using a ready reckoner. (try invoicing 45 sheets 11 foot 4 inches at 31.5 cent per foot with a ready reckoner that didn't have half cents). When I ran out of something to do I made barge roll to fill in the day. Most of our accessory items like lead head nails, building paper, unifoil, netting, solder, lead sheet and copper tube came into Cambridge by rail and had to be cleared daily.

Later that year we took on an agency for Paneldek 8 inch tray section and 5 and 7 inch paneldek slotted gutter which was manufactured in Wellington at the time and was railed to Cambridge with orders taking on average 2 weeks to arrive. Run to length was gaining in popularity and sheet lengths were restricted to wagon size and delivering long loads was another challenge. Sheets had to be draped over the cab of the truck with the balance of the load cantilevered over the back of the trailer.

My first visit to NZ Steel came in July 1973 when we were invited to view the galvanizing line at Glenbrook.

Our first painted product came from Hunter Douglas with a selection of 3 colours; nut brown, torres blue and gold. Our first order went on to two spec. homes in Tokoroa.

My most interesting experience came when we took an agency for Dilwyn tiles. Unfortunately our first project was a disaster as I supplied steel clouts only to find rust marks on the tiles 3 days later and so I spent the next 2 days, in searing heat, pulling the clouts with a pair of side cutters on a 30 degree pitch. It didn't finish there! I damaged a number of tiles and had to the replace about 50 but unfortunately the colour didn't match so I had to have the roof spray painted."

Carl has been an active member of various associations in the industry over the years, He has seen this as vital for staying in touch with developments within the industry. He represented the company at the Waikato Branch of the Auckland Spouting and Downpipe Manufacturers Association through the 70's, and the Auckland branch of the Plumbers Merchant Guild. He was an Executive Member of the NZ Metal Rollformers Association from 1992 to 1999,

Balfour's was sold to McConnell Dowell, later to BHP Building Products and finally to Steel and Tube. Today Carl is Auckland Sales Manager at Steel and Tube.

Winner of the 2012 Roofing Association Professionalism in Metal Tile Roof Installation Award

Metrotile is proud to announce that the winner of the 2012 Roofing Association of New Zealand Professionalism in Metal Tile Roof Installation Award was Shaun Cooke from Cooke Roofing in Hamilton.

From Left: Des Cowperthwaite, Shaun Cooke, Gary McNamara, Stuart Thomson

The annual award, which recognises and celebrates craftsmanship in the installation of Metal Tiles, is open to all RANZ members and recognises and rewards both the Roofing Company and the Installer.

The Award was presented at the recent RANZ Conference in Wellington and Shaun has won a $1,500 trip to the Gold Coast.

The Award judges were Stuart Thomson and Des Cowperthwaite.

Stuart and Des were both heartened by the quality of all the Award Entrants and noted that the standard across the three finalists was very high. They also noted that all the owners were totally satisfied with their roofs and that the only points of difference were small details of fixing and flashing, which could only be noticed by a roofing professional "looking for faults".

Congratulations to all of the Award Entrants.

If you have any queries in regards to entering the 2013 RANZ Professionalism in Metal Tile Roof Installation Award please do not hesitate to e-mail RANZ at ceo@roofingassn.org.nz or Metrotile at info@metrotile.com

Steel & Tube Launch Their New Profile – ST963

Steel & Tube's ST963 profile has been specifically developed with unique design elements for superior performance over traditional high rib profiles.

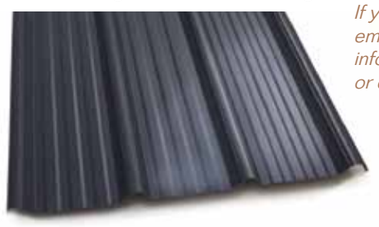
Responding to industry feedback for a profile with more efficient cover than traditional high rib trapezoidal profiles, with stronger ribs and easy to walk on pans, Steel & Tube engaged in two years of rigorous R & D resulting in the development of ST 963.

Numerous concepts were evaluated and reduced to seven different profile designs. These were subjected to computer modelling to provide theoretical indications of strength which reduced the number to four profiles. The four were all prototyped by hand-folding then tested on the MRM test rig. As a result two designs proceeded to the final stage. Two single-rib roll formers were built to provide accurate prototypes for the final decisive point load and wind uplift tests.

The results exceeded expectations and identified a clear winner.

Dave Stampa, National Manager for Steel & Tube Roofing, says ST 963 has a radically different design which provides enhanced strength at the top of the rib to resist stresses in this region of the profile, while the concave web increases buckling resistance and contributes to increased bending stiffness.

ST963 has now been successfully installed on a number of projects receiving excellent feedback from installers and architects alike. While originally intended as a strong roof profile for the commercial and industrial market sectors, several architects have expressed interest in the product's aesthetic values and have accordingly specified it for both wall cladding and residential roofing.



Metalcraft: Putting safety first.

Metalcraft Roofing, East Tamaki organised with the Department of labour a training session on Preventing Falls from Height at the Celcius Bar and Grill, Botany on the 2nd August. The presentation by Marcus Nalter, the Department of Labour preventing falls from height project team manager, was attended by more than sixty roof installers and builders, from the Auckland region.

Metalcraft Roofing are proud to be putting safety of their installers and customers first! Every project Metalcraft Roofing price includes an allowance for the appropriate edge protection which includes one or more of the following; edge protection systems, barriers, scaffolding, guard rails, multi user MEWP, safety mesh.

Preventing falls from height is a priority for the Department of Labour and it expects employers and self-employed contractors working at height to actively manage this significant hazard.

The Department's Preventing Falls from Height campaign will target enforcement in the construction sector, particularly focusing on residential building sites. It aims to reduce harm by raising awareness about the safe use of ladders and safe working on roofs. Downloads are available from: www.dol.govt.nz

If you have any questions please email the Department of Labour info@dol.govt.nz or call 0800 20 90 20

INSULATION.

by Stuart Thomson

In this third article of the series Stuart Thomson looks at the effects that modern ideas about insulation are having on what we see as a serious problem in complaints of "leaking" and "condensation". Since the last article we have had a couple of meetings with interested parties and an investigation by BRANZ is starting off. After the last article on ventilation, we had quite a large number of emails supporting the fact that there is a problem. I would ask any reader with a case of "leaking/ condensation" which can be looked at by the BRANZ team to send details in via Scope. As usual I have to add that while the main drift of this article is in line with our current investigation, some of the comments are Stuart Thomson's and not official policy. Stuart Hayman MRM Technical committee.

The last two articles on underlay/ condensation/ ventilation have drawn much positive feedback in spite of swimming upstream against the official flow. Roof cladding is no longer just a product- it is a roof system.

Insulation is not new. The Egyptians knew about it and they built with thermal mass to even out the high and low temperatures of the day and night. Many countries build to keep the heat out rather than to keep the heat in but in New Zealand we usually insulate to keep the heat in and have generally opted for thin wall construction and cold roofs. (A warm roof is where the insulation is adhered to or formed onto the metal roof cladding)

The Vikings and other Europeans learned that by insulating their homes with mud reinforced with dung and straw and plastering in between the cracks of the logs they gained a measure of airtightness and comfort. They also knew that fur was good for clothing to insulate their bodies. We now use synthetics like polyester and natural insulators like down.
Many years ago when working on some old houses in the Chinese district of Tory Street, Wellington, the writer was surprised to find all the outside walls stuffed with crumpled newspapers and old pakapoo tickets. (An old Chinese gambling game) As insulation it was cheap and efficient and available.

While insulation is not new, the standard of comfort now demanded appears to follow that set by the World Health Organisation (WHO) at 65° F -18° C and all recent reports seemed to be based on this premise although UK has gone with 15.5° C.- 60° F.

While it is easy to find that the majority of New Zealand homes generally do not live up to this expectation there is little proof to link health with temperature alone. Comfort has been confused with health and, what appears to be lost sight of is, that it is mostly the moisture content that determines people's health. (Except perhaps in the very young and very old.) The higher the air temperature the more water vapour it can hold.

The drive for insulation and the recent government support by way of subsidy has seen the retrofitting of many New Zealand homes with ceiling insulation rather than wall insulation, which is in the too hard basket. To trace the history of insulation in New Zealand may give some insight into the reasoning (or otherwise) of the move to subsidise heat pumps and ceiling insulation. The first published data on a measure of insulation for New Zealand homes came from Dr Lyndon Hastings when he wrote 'Handbook on the insulation and heating of buildings' in 1958. This led to his recommendation in 1964 as shown in the table. The local manufacture of fibreglass began in Auckland in 1961 and Winstone Ltd. were one of the first to offer a home insulation service.

'By courtesy of The Fletcher Trust Archive' Ref 6144P/76

Then in 1972 the Christchurch City Council introduced an insulation by-law for new home insulation but this was more about the polluting chimneys and alternative heating than insulation. Since that time we have upped the anti, as shown in the table, but we are still a long way off other countries recommendations.

Insulation is traditionally measured as an R-value; the thermal resistance to the passage of heat measured in m2·°C/W; the higher the value the higher the resistance. In the United States R-values are approximately six times SI R-values A U value is a measure of conductance which is the inverse of an R-value.

The following Table (page 16) uses N.Z.R Values based on Zone 2 Australian R-values based on Zone 6 (Coastal Victoria) * Dark roof (darker than Desert Sand. Lighter than Bone white = R 4.1.)
U.S Equivalent R values (US values in brackets) based on Zones 4 & 5 (mid – US)

In 1975 the government introduced interest-free loans for insulation and

Date	Source	Roof	Walls	Floor
1964	Dr Bastings	0.6	0.7	0.7
1972	C.C.C.	1.0	1.1.	1.1.
1978	NZS 4218	1.9	1.5	0.9
1992	NZBC HI/AS1	1.9	1.5	0.9
2000	NZBC HI/AS1	1.9	1.5	1.3
2007	NZBC HI/AS1	2.9.	1.9	1.3
2009	BCA (Aus)	5.1.*	2.8	2.25
2008	US Dept Energy	5.0 (R 30)	2.5 (R15)	4.0 (R25)

the Housing Corporation followed shortly after, using macerated paper as a ceiling insulating material.
The world energy crisis encouraged the quest for insulation. Our low hydro lake storage made it evident that hydropower was not so free and or available as previously thought and it was logical that energy savings would have to follow. But it was the escalating cost of oil and New Zealand's dependence on imports that finally drove the government to legislate for compulsory new home insulation in 1978.

So what was the motivation? Was it energy saving, less air pollution, creature comfort, health or just great advertising? If you guessed a bit of each you probably would be about right. Don't get us wrong. Insulation is a good thing but there is a balance of airtightness, ventilation, solar design, cost and user savvy that is equally important for our countries economy and the health of our homes and their occupants.

While we live in a global village and nothing we say, do or act upon is done in isolation, we must look at New Zealand as a special case. We are a unique island with a unique climate and we think we are a unique people. Actually the latter is not entirely true as we are pretty gullible lot and believe what the advertisement says and particularly if an official report has EECA's or BRANZ's name on it.

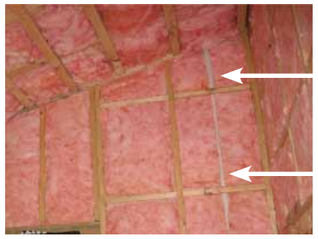
The carrot of a free thousand dollars or so was too much for most New Zealanders to miss and so many of us paid out a lot more to insulate our ceilings for a feel-good factor of saving energy. But did we ever do the true cost/ benefit analysis?

Do you remember that ad when the attractive young lady came home from work and took off most of her clothes because the ceiling has just been stuffed full of the pink stuff?

The problem was a psychological one, "now we are insulated we can crank up the new heat pump 3°or 4°." The problem was that although the ceiling was insulated, the walls and windows were not. We upped the air temperature and its capacity to hold more moisture but we dare not open the windows because we would let all that "new" heat out! Even the best aluminium double glazing E-glass, argon, the lot, has only 1/6 of the R value required for the walls!

But insulation is not just about houses it's about people too. Skinny people feel the cold but the overweight don't seem to notice it. Normal people react to what they have become used to, those raised in a cold climate know their seasons and dress for them. New Zealanders are not good at 'dressing up' for their climate. The Americans are worse so while we tend to wear short-sleeved shirts in the summer and wear a jersey in the winter they do the opposite, because everything is so coldly air-conditioned in the summer. More energy is used in the US for cooling than for heating!

Humidity is a major factor for thermal comfort which is very much dependent on whether the skin is wet or not. Over the years as technology has provided us with solutions, the current demand for a more comfortable environment is now narrowed down to a very small band of temperature. Our extremities are very sensitive to cold environments and we insulate our fingers with gloves and our toes with thermal socks and protect our nose and ears.



Installing insulation is easy – anyone can do it – yeah right! Both are bad installation.

While there are different forms of heat insulation such as loose fill, rigid board, blown and spray foam, the most used NZ insulation is fibre, either rock, polyester, wool or glass fibre segments or blanket - which this article assumes. N.B. The term 'Batts®', although commonly used, is a registered trade mark of TINZ Tasman Insulation and the term "segment" is the alternative word. Sound insulation is also obtained by using some of these materials in a denser form. Foil is often referred to as an insulation material which it is not, because although it can reflect heat it relies on a still air space to provide any insulation benefit.

Insulation is the stuff that keeps hot stuff hot and cold stuff cold. It is easy to forget that the prime purpose of any insulation is to provide still, trapped air which is a very good insulator. A Thermos is an even better insulator but it has no air - just a vacuum.

While retrofitting an attic ceiling insulation is relatively straight forward, it is inevitable that some areas around pipes, electrical fittings and especially at the wall/ roof intersection the fitting will be less efficient than in a new dwelling. Retrofitting skillion ceiling insulation can only be economically installed when reroofing with the task of designing and fitting insulation usually falling to the roofer.

Most heat loss across an uninsulated air space is by convection caused by differences in temperature and the purpose of the insulation of the cavity is to slow it down. However there are still losses due to conduction and heat transfer through the framing. The natural law of equalisation is a hard one to beat.

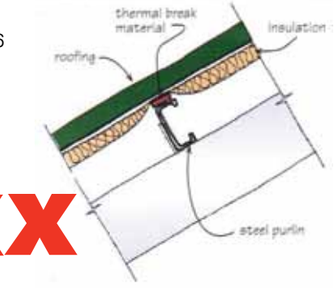
So just how good is this insulation? It is not often recognised to the extent that the R-value applied to a product has to be depreciated by other factors to obtain the actual R-value of the wall or ceiling with the insulation in place. There are heat losses due to the framing and by compressing fibreglass as the 'nip and tuck' methods of some installers save money by using up small pieces or jamming the insulation to avoid cutting. More particularly though losses are due to the gaps left by the installer. A gap of 6% of the cavity = 20% efficiency loss (NRCC.)

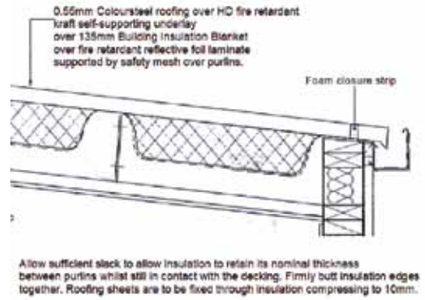
Another major loss factor not often considered are downlights which not only downgrade the R-value but allow moisture laden air into the attic space. If you have one downlight for every 2m2 of ceiling then your R2.9 theoretical ceiling value drops to R2.1!
Because the R value of single glazed windows is only R0.15 they let out 10 times more heat than the wall. If the total glazing area of your East, South and West walls is > 30% of the total wall area then you will have to compensate your design. New buildings require R0.26 for glazing in all areas however it is still possible to design using single glazing in some areas by compensating. Solar gain and free passive heating comes from the North but so many of our New Zealand homes are oriented to the road and not the sun. Developers take note. And don't carpet those North rooms that have full length glazing- remember thermal mass. While lined curtains are insulators and a good investment they are only as good as the gap between the two pieces of material. That's why pelmets are a good idea to stop the convection currents. But don't forget to pull the curtains early in the evening in the wintertime.
Where you live in New Zealand will determine what minimum insulation values are required by the NZBC H1/AS1 and how much you have to pay for heating. Of course the house orientation, design and occupants will have a major bearing on these dollars to. Also more heat is needed to heat moisture laden air. A look at New Zealand's large cities in the NZBC three insulation zones gives some idea of those differences.

Zone	% Houses*	City	Average Temp C0	Sunshine Kwh/ m2	RH%
1	37	Auckland	15.5	4	82
2	39	Wellington	13.0	3.9	78
3	24	Dunedin	11.0	3	81

** % Houses in each Zone (2008)*

Wet insulation is no installation; the three legged stool of underlay, ventilation and insulation means the whole roof system has to work if condensation and wet insulation are to be avoided. If there is no attic ventilation, underlay can accumulate moisture on the underside and if there is enough of it, it will drip and wet insulation.
Another detail which always causes problems is when the insulation is compressed over the top of the purlins. The NZMRM Code of Practice has never sanctioned this detail but unfortunately this is a BRANZ recommended detail.





2000 & 2007 (current) Publications

This drawing, that follows the BRANZ detail, was very recently consented by a South Island BCA, flies in the face of good trade practice, the NZMRM Code of Practice NZS 4246:2006 and even the manufacturer's recommendations. The Roofer is stuck between a rock and a hard place. He is required to sign off the Record of Work for a CCC (now a Consent Completion Certificate) knowing that there is a good chance that this detail will fail!

There is no way the fire retardant absorptive underlay can dry out and this detail not only voids any R-value but over time the roofing screws become loose and cause

Wet insulation, saturated underlay and no ventilation causes splitting.

XXX

leaks. So who carries the can? Installation works best when there is not a lot of air able to pass through it. Heat is an escape artist and like sound, if it can find a gap it will escape! While we need to build tighter to save energy costs we must be careful that we do not make homes air-tight to the extent that fresh air is excluded and moisture retained.

One problem that has occurred since the 2007 increased requirements of H1/AS1, is that in the very popular skillion roofs, there is just not enough room left to place the fibreglass insulation and still maintain a minimum 20 mm air-gap. Another problem associated with dimension is the property of fibre insulation to loft. Lofting is the term used to explain the growing in dimension of insulation once it is released from its compressed bale and the manufacturer's use- by date has some bearing on this.

The problem is compounded because different fibreglass insulation manufacturers make their segments and blankets in different densities or a different thickness for the same R value. This is a design problem. When considering design substitution It is not permissible to interpolate or extrapolate product R-values because fibreglass is manufactured in different thicknesses and densities.

What this means is that substitution must not be made without checking the design and if change is needed then an agreement between the BCA and other parties must be reached prior to any work being started.

Two manufacturers have recently recognised the skillion problem and produced denser SRB's - skillion roof batts® or blankets. However attention must still be paid to ensure that at least 20 mm of clear space is left above the insulation for separation from the roof underlay to allow it to dry by attic space ventilation. (this was described in the previous issue of Scope). Why do we not have a Standard for insulation size and density?

H1/AS1 2007

There are many forms of heat but one above all is the most comfortable. It is radiant heat. The sun is a radiant heater and doesn't heat the 93,000,000 miles of space in between us. If a wall or a floor is warmer than you are then you will feel warm, if they are colder than you are you will feel cold. To the writer, forced air convection heaters such as a heat pump, are uncomfortable and unhealthy. For one reason when air is used as the vehicle to move heated air through the house it distributes mould spores, mites and dust; the other is that one's head becomes flushed by contact with moving and dusty air directed by a noisy fan. Radiant heating from a heated floor is the reverse as your feet become warm and your head is cool. The Romans knew about radiant floor heating which is now known as hydronic heating and acknowledged (at least in Europe) as being more efficient than forced air systems.

In 1968 the writer built one of the world's first 400 solar heated houses. This had a radiant floor with solar hot water being circulated throughout the house giving the floor temperature in the low 20°C's. The house did not have fibreglass insulation but did have a ceiling reflective foil dead air space. The view was to the south with large aluminium doors and joinery so the air temperature inside certainly was not 18°C.! The house however was warm because you felt warm because the floor was radiating heat. European experiments have shown that school class rooms with lower air temperature but radiant floor heating, enabled their students to score higher than their classmates in a classroom using convection air heating.

The roofing industry has nothing against insulation per se, but it does have a gripe about what the added 50% of insulation has done to increase the condensation problem in unvented attic and skillion roof spaces in the last five years. This is not an insulation problem it is a design problem. Not only are we experiencing an increase in construction problems but in spite of increases in air indoor temperatures asthma is on the increase as well. An insulated roof system needs to be designed holistically with not only insulation but the airtightness, heating, ventilation, moisture sources, RH and air quality all considered at the design stage. The energy loss by venting above the insulation to minimise condensation has to be weighed up on a cost/ benefit basis as the most cost effective solution may simply be to offset the loss by increasing the ceiling R-value. Infiltration and ex filtration rates need to be known.

One problem job came to a deep south homeowner who recently had his hot water cylinder supply tank in the roof, suddenly found he had a leaky home — not from the roof but from his water pipes that had frozen. Why had this happened only at this time?

Like many others he had taken advantage of the government's insulation offer. The heat leakage from the roaring fire in the living room had kept the attic temperature above freezing but after the installation of insulation, the attic space and the metal roof temperature dropped below freezing long enough to burst copper pipes on thawing and give him a condensation problem he did not have before.

Another problem job involved a complaint of wet insulation in a new residence which as usual was blamed on a leaking roof. The excessive construction moisture came from the curing concrete slab and the drying out of the framing with moisture escaping into an unvented roof cavity.

Yet another problem job involved an owner who took advantage of the government's offer of insulation and heat pump subsidy... but at the same time turned his basement into a flat but without a heat pump. Not long after the renovations, mould began to grow in the south facing bedrooms of the upstairs flat. Yes, his heat pump was too small to heat the whole house and yes there was no attic space ventilation.

This situation was resolved when the writer discovered an unflued gas heater in the bottom flat which allowed water vapour (heaps of it) to find its way upstairs. The owner was persuaded to buy his tenant a heat pump and wrote his tenancy agreement so that no gas heaters were permitted.

To help us solve our excessive moisture problems we need action.

Let us be blunt; - ban unflued gas heaters now. Besides moisture they produce carbon monoxide and nitrogen dioxide - not a good idea. Portable gas heaters may be cheap to buy but they are expensive to run. Placemakers won't sell them! They are already banned in Western Australia, Victoria and Queensland, Canada and some U.S. States. It is said the 35% of NZ homes have them – perhaps that is why we have so much asthma?

If you need a dehumidifier you have got a moisture problem.

Let us also ban those so-called heat recovery positive pressure systems that do not have a fresh air source and a heat exchanger. They circulate stale air. The recent ECCA report prepared by the University of Otago agrees (quoted in the last issue of Scope). We also need to look closely at the use of VCL's (vapour control layers) to prevent moisture migration into the roof space and revisit the problem highlighted by Harry Trethowen in 1988 on sub floor moisture migration.

Over two thirds of New Zealand houses were built before insulation was required and 80% of these were single detached dwellings which still do not have any floor or wall insulation. N.B. A building consent is required to insulate walls. Unfortunately these are the problem houses with families with health problems that we should be directing our insulating subsidies towards. A unhealthy home has unhealthy children.

You may not believe or agree with all what you have just read but do read on…..

A graduate architect returned from his OE. He married and built a modern house with carpets, aluminium windows, insulation, heat pumps - the lot and took a good job with a large architectural practice. Two boys were born but unfortunately both soon developed asthma and used puffers, had consultations with doctors and specialists but to no avail. After 10 years the architect wanted a major change of lifestyle and a decision was made to go into practice on his own account. Money was needed for an office and so the new house was traded for an old villa in Ponsonby. No carpets, two chimneys, wooden windows and no insulation. After six months the two boy's asthma had disappeared.

Surprised?
Not many dust mites?
No mould spores?
A lot more fresh air?
A lot colder temperatures-a lot less moisture?

Coincidence?

The boy's parents don't think so.

Thickness in mm of ceiling batts® or segments

	Tas	Tas BL	Tas #	Brad	Brad #	Premier	Polygold	Ecofleece	Insulpro #~
R 1.2		50							
R 1.8	95	75		95	80				115
R 2.2	115			115	90	90	90 100#	133	140
R 2.4.		100							150
R2.6*	140	110		145	120	90	120 110#	180	175
R2.9					115				185
R3.2*	170	135	115	165	145	145	120	185	200
R3.6*	180		165	185	165	155	150	190	225
R 4.0	195			215		175	190	266 (R4.2)	
R 4.6	205						190		
R 5.0	210			210					

*Tas = Tasman, Brad = Bradford, BL = Blanket, # = SRB (Skillion Roof blanket or batt® or segment) *Different densities available. (R2.6 wall = 90mm. R3.6 wall = 140mm)~polyester and recycled fibre made from recycled plastic bottles.*

Replacement Table 1: Non-solid construction – minimum R-values for schedule method (only where area of glazing is 30% or less of total wall area)

Building thermal envelope component	Minimum R-values (m² °C/W)		
	Climate zone 1	Climate zone 2	Climate zone 3
Roof	R 2.9	R 2.9	R 3.3
Wall	R 1.9	R 1.9	R 2.0
Floor	R 1.3	R 1.3	R 1.3
Glazing (vertical)	R 0.26	R 0.26	R 0.26
Glazing (skylights)	R 0.26	R 0.26	R 0.31

MAKING THE RIGHT CHOICE

Where do you go for a high end roof with a Pacific flavour when you are a privately owned New Zealand company specializing in the design, manufacture and export of customized and prefabricated houses and resort developments throughout the South Pacific, Asia and the world?

The Ross family is proud to say that Greg Charteris chose Metrotile Roofing Systems and its Shingle Textured Charcoal product.

The Charteris home is luxurious by any standard in its size, quality and presentation. The brief to Architectural Designer Martin Heere, from Timber Construction Solutions, was based upon a floor plan provided by Greg and Toni Charteris and involved a high degree of collaboration to produce a unique design, with the look and feel of the Pacific, that could comfortably accommodate guests and family and which took full advantage of its rural setting and the surrounding countryside. Martin noted that it wasn't just the size of the house that made the design challenging and enjoyable, but some of its features, including floor to ceiling doors and 15 metre long truss spans, all of which required a high degree of on going communication with Greg and Toni, the Builder and the Engineer to complete in a seamless manner.

The 730 square metre family home is located near to an existing cottage on the site. The new home sits above a lush and expansive sub-tropical garden which wraps around a small pond that sits below an outdoor gazebo and dining area. Greg installed the roof on the gazebo himself, but wisely chose to have SH Roofing install the Metroitle Shingle tile on the

roof of the main house. The roof, which is some five times the area of a standard house, is a highly visible and defining feature that emphasises the Tropical design of the house. It has a 30 degree skirting roof, which required custom flashings where it merges into the main body of the roof, which is set at a 45 degree pitch. The roof also incorporates a number of long valley lengths and ridge lines that are visible from multiple angles. Greg and Toni recently opened up their house to support the Christmas in Karaka fund raising drive for the local Tehihi Primary School, which is attended by their grandchildren. Over 1,000 people visited their home and a number of other properties in the area, during the fund raising drive, which raised some $60,000 for the school. Greg

noted that many of the visitors referred to both the house and roof as stunning.

The house itself is divided into two parts by its central Atrium, which runs directly through the middle of the home, from its Southern front entrance to its long indoor / outdoor dining area and 40 metre long North facing decks. The deck is beautifully finished and it took the best part of a month to install the 1.5km's of decking, which was secured with over 7,000 screws. On the East side of the Atrium is the Master Bedroom and living area and the Lounge and Guest rooms sit on the West side of the North facing home.

Hayden, from Roose Butcher Builders Ltd. who was contracted by Greg and Toni to build their family home, found it a challenging and enjoyable project with a number of "out of the ordinary" and one off features including the first ''floating" fire place in New Zealand. This is located in the lounge / dining room area, opposite the kitchen which in turn opens on to a Scullery or commercial kitchen. Greg is particularly fond of the Scullery which enables quality cooking to be undertaken in a separate, but adjoining area, to the entertaining. Needless to say there has been more than one "Karaka Master Chef" battle at Greg and Toni's Stan Wright Road property. He is also proud of the workmanship that has gone into his family home and the quality job done by Hayden and his team at Roose Butcher Builders.

Other unique, fun and functional features include a Japanese style water garden, which flows from the Atrium entrance to the North facing decks and entertaining area, floor to ceiling doors, a sunken wine cellar with a glass ceiling that you can walk over, concealed LED lights throughout the house, a floating roof over the kitchen area and 2.7 metre high sliding doors, in lieu of walls, which open out onto the out door dining area creating a completely seamless indoor / outdoor flow.

The overall concept was to create not just an impressive and aesthetically pleasing home but one of timeless style that was uniquely New Zealand with its strong Pacific flavour. In essence a quality home, that would stand the test of time and be relatively maintenance free, with its weatherboard cladding, aluminium joinery, plaster finish and Metrotile Shingle roof.

The Metrotile Shingle tile was the ideal product for this project as it is lightweight, which was particularly important due to the 15 metre long truss spans. The Shingle tile also has an attractive low profile finish that compliments the Tropical design of the house and is suitable for the collection of drinking water.

Scott Harris from SH Roofing, who undertook the installation of the Metrotile Shingle roof, was recommended to Greg by Cameron Ross, one of the Directors of Metrotile. Scott Harris has been roofing for 20 years and has owned his own roofing company for 15 years. Scott has actively worked with Metrotile in the trialing of their new products and profiles and specializes in high end metal tile roof installations. His skills were put to the test in the roofing of the Charteris home, which is a particularly steep, complex and highly visible feature roof.

Over all this is an impressive quality home which has been created using the very best in materials, design and original decor. A credit to all involved.

Greg, who owns Timber Construction Solutions, has over 40 years experience in timber framed design and construction and has been exporting prefabricated timber frames and other products and services for over 18 years to a range of Pacific rim markets including China, the Cook Islands, Fiji, The Solomon Islands, French Polynesia, Hawaii, India, Japan and the Maldives. Whilst Greg does not actively "sell off" of his family home he has found that an increasing number of his customers and markets are looking at utilising a number of the special features included in his home in their upcoming projects. This includes the Metrotile Shingle roof.

Clients: ; *Greg & Toni Charteris*

Designer Details:
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Roofing Installer: Scott Harris
SH Roofing Ltd.
Telephone: 021 424 542
e-mail: scott@shroofing.co.nz

Roofing Manufacturer:
Metrotile Roofing Systems
Telephone: 09 299 9498
e-mail: info@metrotile.com
www.metrotile.com

Tile Profile: Metrotile Shingle
Finish: Textured
Colour: Charcoal

SEASIDE GETAWAY

The Brief

The owners of this seaside property have worked with Stephen Ansley on several projects and approached him to design a family holiday home on their hill site, South Bay, Kaikoura. The brief was to maximise the magnificent coastal view to the south west and mountain view to the north west. This presented a challenge in design as the stunning views were in the opposite orientation to the sunny aspect. The brief asked to site the house as high up on top of the site as possible to optimise the views and connect with the adjacent bush reserve. It was also to provide a sheltered, sunny outdoor living area, closely linked to kitchen and living rooms, three bedrooms with one large enough to accommodate extra guests. The clients specified stack bond concrete block and corrugated Colorsteel cladding.

Design Solution

The house has been designed with minimal cut and fill to naturally step up the site. The entry, sheltered by a porch, is on the lower level and leads up a light filled stairway/gallery to the open plan living area. The kitchen and dining area open out to a sheltered, sunny outdoor deck/ living area. All living areas have a sunny aspect, panoramic views and open onto the surrounding timber deck.
Two bedrooms are located on the upper level with bedroom 1 opening onto the deck leading to the outdoor area with views of the mountain and bush. Bedroom 2 has a coastal view. Bedroom 3, with a coastal view, is on the lower level. A bathroom is located on each level.
A minimalist kitchen features a macrocarpa slab island bench top and a stainless steel bench top to the outdoor servery. Clutter is relegated to a pantry cupboard.
The subtle interior is paint finished Gib board walls, trim and ceiling.

A stack bond concrete block wall provides a feature to the entry foyer and provides thermal mass in the family room. The entry, bathrooms, kitchen and dining have tiled floor areas. The remaining areas are carpeted.

Construction

Lower level: insulated reinforced concrete slab floor with stack bond concrete block retaining walls strapped, lined and insulated.
Upper level: combination of insulated suspended timber floor and insulated reinforced concrete slab floor. 140x45 mm exterior wall framing. hyJOIST purlin mono-pitch roof structure with ColorCote® ZRX™ Plumbdek profile Roofing and Ardex Butynol on ply sarking to flat roof areas.
Exterior cladding; Concrete block stack bond to lower level,ColorCote® ZRX™ Corrugated profile cladding on cavity battens, macrocarpa board and batten cladding to entry and kitchen servery bay. Double glazed, aluminium framed exterior joinery by First. Vitex decking and Vitex framed glazed balustrade structure.
The home is designed to be passively energy efficient and insulated above code requirements.
High level windows located on the east wall of kitchen provide passive ventilation.

As the site is in a Sea Spray Zone materials and fixings where selected to comply with the requirements for this environment.
The building of the project was completed earlier this year.
Mark and Margaret are thrilled with the completed project from the design capturing the sun & the view to the workmanship & quality of finish by Murray Paul and his team on the site.

Mark and Margaret are spending as much time as possible in residence. Unfortunately they do not have much time for fishing at the moment as they are busy completing the landscaping. However they do make time at the end of the day having a well earned beer/wine watching the sunset.

STEPHEN ANSLEY DESIGNS

Working with his clients Stephen offers creative design solutions specifically tailored to the site and client requirements for quality residential, commercial buildings, alterations and new kitchens.
Hill projects, character house renovations & kitchens a speciality.
Passive solar and energy efficient principles are incorporated into the project design.
Stephen operates a one man practice which ensures clients of personal service throughout their building project. Stephen provides a complete design service from initial concept to working drawings, specification, tender documentation, liaising with consultants, councils, lodging of applications for resource consent, building consent, calling of tenders and contract administration to completion of construction.
Stephen has a long history in the industry, in 1982 was a foundation member of the Canterbury Branch of ADNZ, in 2010 was honoured in being made a Life Member.
Stephen holds a Licenced Building Practitioners Design Licence.
Over the years Stephen has been rewarded with a number of ADNZ regional and national design awards for a variety of projects.

Design: Stephen Ansley Designs, Christchurch.
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Mobile: 027 204 7541
Email: ansley@clear.net.nz

Main Contractor:
Murray Paul Building, Kaikoura
Telephone: 021 615 495
Email: muzapaul@xtra.co.nz

Roofing and Cladding manufacturer:
Pacific Coil Coaters.

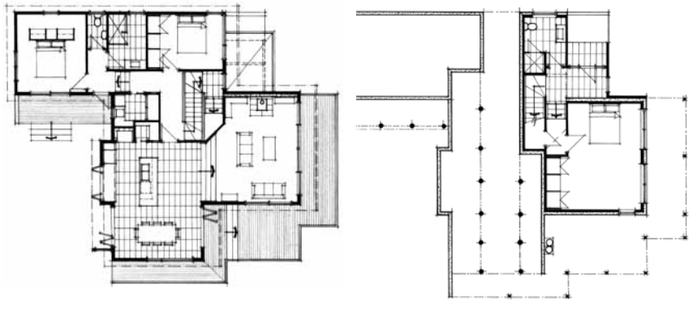
Steel and Tube Roofing
Coil-on clear cut edge protection lacquer to roof and wall cladding.

Roof: ColorCote® ZRX™ Plumdek Profile,
Colour: Metallic Gunmetal
Walls: ColorCote® ZRX™ Corrugated Profile,
Colour: New Denim Blue

Cladding and roofing installer:
Murray Paul Building

Interiors and Landscape:
Mark and Margaret

Engineer: Stephen Barrow,
Lewis and Barrow Ltd,
Christchurch
Telephone: 03 372 4330
Email: steve@lewisandbarrow.co.nz

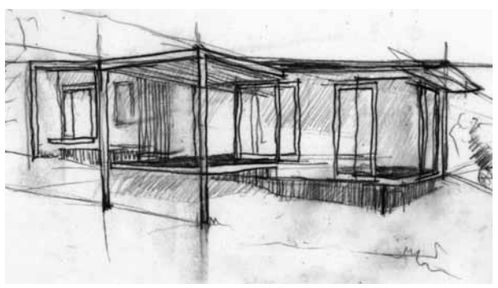


CLEVER THINKING AND INNOVATIVE SOLUTIONS

Strachan Group Architects

This small project is unique in many ways, including the project team consisting of Dave Strachan, in conjunction with 16 third year Unitec architecture students, John Cocks and Marshall Cook. This team not only designed the Onemana Bach, they built it.

Designed and built at Unitec, Auckland and transported to the coastal town of Onemana, this small project is more than meets the eye. Whilst it was small in both budget and footprint, clever thinking and innovative solutions have produced a bach that ticks all the boxes; the clients, Andrew and Shiree Morrison "couldn't be happier." They did not want a large, elaborate beach house, nor would their budget allow for it. They wanted a well designed, compact, stylish yet simple easy care place to go with their two girls.



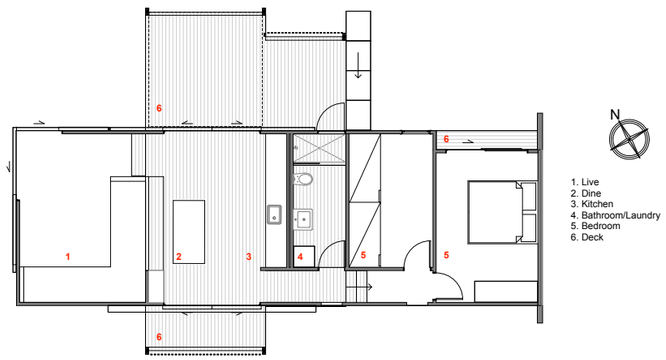
With a budget of $120K and a total footprint of only 100m2 (75m2 interior + 25m2 covered decks) Onemana Bach offers a master bedroom with private deck, bunkroom, bathroom/ laundry with both interior and exterior access, kitchen, living, dining with decks to both the East and West and built in furniture and storage throughout.

A number of design decisions have elevated a simple building to a project which is full of interest and rich in character; A key move is the timber slatted breezeway which penetrates the high performance thermal envelope, running North East South West, this assists with natural cross ventilation and highlights the play of light with the late afternoon sun filtering through the trees and timber slatting. Designing for a tight build time and with the intention of transportation had its challenges and set parameters for the project. Plywood interiors give a warmth and casual nature to the spaces, fitting for a New Zealand bach, as well as providing some extra bracing for the building's three hour journey to Onemana. One of the building's stand out features is the experimental use of a Metalcraft

Thermospan EPS roofing system, not frequently used in the residential context. By combining structure, cladding, and insulation all–in-one, this Structurally Insulated Panel was a great solution; it was both competitive on price and offered savings in terms of labour and time. It also offers almost double the thermal efficiency required by the NZ Building Code. From arrival onsite in 6 panels, each 15.5 metres long, the complete installation took only 4-5 hours. A standard trapezoidal profiled cladding, of a matching colour, was used to wrap the roof down the South wall, making the roof a distinct architectural element. The custom gutter, designed specifically to work with the thickness of the roof panel, further strengthens the appearance of the roof as a singular element, rather than a build up of individual components.

The building also includes a take on traditional board and batten, offering rhythm and relief and double floor step works with the natural contours of the site. The North Eastern corner hovers above the slope with large timber doors peeling back to open the corner; and the material palette is largely locally sourced, boasting timber throughout including decking inside and out, slatted ceilings and privacy screens and plywood on both walls and ceilings.

Aligning with the design principles of Strachan Group Architects, this project encourages its occupants to interact with New Zealand's beautiful physical environment by focusing on a sensitive and appropriate approach to materials, climate, and sustainability. The project has also won an NZIA small project award, and was one of the 5 finalists in Home of the Year 2012.



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Architects:
Strachan Group Architects
Telephone: 09 638 6302
www.sgaltd.co.nz
With Marshall Cook of
Cook Sargisson & Pirie
Sixteen 3rd year Unitec School of Architecture Students

Main Contractors:
Dave Strachan
John Cocks
With sixteen 3rd year Unitec School of Architecture Students

Roofing Manufacturer:
Metalcraft Insulated Panel Systems (Metecno Ltd)

Roofing: 150mm Thermospan EPS Maxx
Colour: Colorsteel ® Foam Maxx

Roofing Installer: Unitec Students
Gutter and flashings: Pacific Roofing

Photographer: Simon Devitt
(all photos except 'the team' & craning roof into place which were provided by SGA)

BEST PACIFIC INSTITUTE OF EDUCATION

The owners of the property requested a face lift to transform and update their building which caters for both a Private Pacific Education Centre and a WINZ office on the ground floor.

The brief also required a maintenance upgrade due to years of neglect, all to be carried out within a tight budget and include robust weather tight detailing.

The team at Creative Arch, lead by Mark McLeay, set about achieving the brief by focusing on a distinct Polynesian flavour utilising low maintenance primary metal cladding. The desired aesthetic was to create a strong vertical ribbed effect which was achieved using the Multirib™ cladding material.

The existing entrance façade was enhanced with a 'Fale' effect, complemented by timber ply linings and patterned battens.

The existing solar shade frame was recycled with the corrugate cover being replaced with cedar battens, that provided a contrast with the dark metal cladding. This accentuates the space and leads visitors to the front entrance combining the Polynesian flavour with functionality.

Brief Project Summary

When approached to overhaul this Hugh Brown Drive property, ensuring both its weather tightness and overall aesthetic enhancement, Creative Arch was inspired by the introduction of a Pacific flavour to the existing building.

The beautiful, architecturally designed timber entrance has provided a cost effective and low maintenance solution to enhancing the overall street appeal of the building.

The Pacific elements of the design not only serve to enrich the building aesthetically, it is (as great design should be), reflective of the clients unique point of view.

Design features/ Creative Solutions

The most significant design feature of the project is the contemporary timber gable entryway. This provides striking visual impact through its structural aesthetic, which also serves to redefine the existing building.

This new frontage has provided an increased aesthetic dimension to the property. The elevated structure gives visual impact in a creative and economical manner.

To achieve this aesthetic, timber battens were attached to the existing solar shade as an innovative means in which to control direct sunlight, providing a comfortable working environment for the occupants.

In addition to the new frontage, a sophisticated roof was constructed from ventilated Ampelite Wonderglass GC 3050 g/m2 and utilised above an existing courtyard, in order to allow for additional light penetration into the space and natural ventilation.

The Pacific flavour of the design was a welcomed influence introduced by the client, whom has been proactive in the formation of the unique and rich aesthetic.

Creative Arch

Creative Arch is an award winning, multi- disciplined Architectural Design firm that was founded by Director and Architectural Designer Mark McLeay in 1998. Their range of work is as diverse as their clients and encompasses Residential homes, Renovations and Coastal Developments. It also extends through to Remedial work and Commercial Architectural Design Projects such as the Best Pacific Institute of Education project.

Client service is paramount at Creative Arch and therefore working as a team is a priority for designers. The company is focussed on supporting their client's vision and helping them to perpetuate their dreams through creative architecture. Creative Arch take time to listen and to gain a full understanding of clients needs, offering ideas and working collaboratively with them to achieve the desired result.
Creative Arch work closely with other professionals to ensure the project is within budget giving clients financial assurance. They have strong company values, investing a great deal in systems and computer technology to ensure a consistent and high standard of service to clients. Visit our website to see the standards achieved consistently through award winning architecture and numerous publications.

This project was a regional winner in the 2012 ADNZ / Resene Design Awards for Commercial/Industrial Design.

Client: Best Pacific Institute of Education

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Contractor: Arrow Remediate

Manufacturer: Roofing industries
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E-mail: office@roof.co.nz
http://www.roof.co.nz

Roofing / cladding:

Profile: Multirib® G550 Steel
COLORCOTE ZR8
Colour: Iron Sand

Translucent atrium roof
Ampelite_Wonderglass GC 3050 g/m2 to Multirib profile.

Installer: Karl Dixon
Dixon Roofing Contractors Ltd
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Mobile: 021 527 514
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The brief was to design a dental surgery that offered specialist care and facilities on a site that had a variety of residential and zoning restrictions. The site had already been developed and subdivided which presented further restrictions. This required very careful planning, design and engineering, a discretionary resource consent from council and approval from adjoining property owners.

FLOATING IN SPACE

Young Dental Centre + Kidz - Teeth, Meadowbank.

Design Development

The subdivision was approved based on landscaped area complying over two lots. As the adjoining lot was already developed, impermeable area on this site was highly restricted. Car parking needed to be under the building and utilised the R.O.W. to access carparks. To achieve this, the building had to be supported on pillars between each second carpark and half the building cantilevered to provide manoeuvring space from the driveway.

Effectively the building was balanced on central columns and beams carrying the full weight of the building. A light-weight metal roof was essential to minimize the weight of the building, seismic bracing and torsional loads as there are no supporting walls under one half of the building. The design concept would not have been possible without minimizing column and beam sizes maximizing headroom under beams. Footing size and pile depth was also reduced and the combination of these factors resulted in cost efficiencies and feasibility.

The building forms part of Meadowbank shopping centre with residences to the side and rear. The pergola form relates to the adjacent flat roofed medical practice, while

the high gabled building, inspired by the church opposite, also reflects neighbouring gabled residences. Existing trees were retained and the front landscaped to fit the surroundings and residential zone context. Building levels provided R.O.W. access, complied with residential restrictions and minimized excavation.

As a public building requires disabled access, a sloping pathway (ramp) was designed within the entry landscaping avoiding the cost of lifts. A carpark for the disabled accesses the ramp with periodic landings.

The path also leads from the footpath and its sweeping curves create an attractive entry through the landscaped garden.

The design creates visual impact from the street but stays within the residential context. To achieve this, the building was divided with reception and waiting room in front with a high pitched roofline, and a curved roof was draped over the rear dental surgery facilities.

A heavy timber pergola over the entry provides visual interest leading to the bright and cheerful reception with plenty of natural light from large windows and skylights. The reception forms part of the waiting room that provides a comfortable and spacious area for patients to relax. In addition there is a glazed play area as the practice specialises in children's dental care.

Above the reception is a mezzanine common room for staff to meet and unwind. This is a very pleasant, informal retreat with a curved internal balcony, beams and extensive views to both front and rear providing a change from exacting dentistry in hygienic surgeries.

The surgery behind has a lower curved roof providing a reduced residential scale and form in keeping with the descending landform and houses behind avoiding shading. It is not seen from the frontage. It also allowed an air conditioning plant to be hidden behind the front foyer roof.

The lightweight coloured steel metal roofing was an essential part

of the design reducing weight and structural costs. The same roofing was used on both the high and curved roof sections.

The dental surgery was planned in conjunction with the unique needs of both paediatric and general clients. Two surgeries for each dentist allows the dentists to examine one patient while the second surgery is prepared for the next client. Service rooms are located to suit work flow and access from surgeries. Layout, room size and function were determined with considerable input and consultation with the owners who drew from their personal experiences in hospitals and surgeries.

Overall this project provides innovative solutions to numerous issues related to the site's context and residential zone restrictions. It is the result of architecture and engineering working together to resolve design problems in an attractive, effective and functional way.

Some of these include:

- the entry/waiting/office area has a high pitched roof & ceiling on laminated timber portals for aesthetics and structure of the mezzanine staff area.
- the surgery area utilises curved timber trusses and metal roof.
- a wooden suspended floor used Posistrut joists between steel beams to allow for services and commercial loadings.
- concrete block walls resist lateral and torsional loads while retaining entry ramp filling.
- compact circular steel carpark columns with beams carrying the cantilever. These tapered at the end providing headroom above the sloping vehicle access.
- bridging footings over council sewers.

APCON PATERSON LTD

Architects Engineers and Planners are a 'one stop design shop' for anyone wanting a home or commercial premises built. The company provides integrated design solutions including architecture, resource management and structural, civil, fire, geotechnical and drainage engineering.

Over many years Apcon Paterson Ltd has completed a wide variety of projects. Most work is in the greater Auckland area.

Due to stricter building regulations it is now virtually impossible for the average person to ensure they have met all the correct requirements. With Councils requiring more detailed information our aim to do things right the first time. We endeavour to keep abreast with the latest changes in regulations and follow through for our clients on consents and negotiations with Council.

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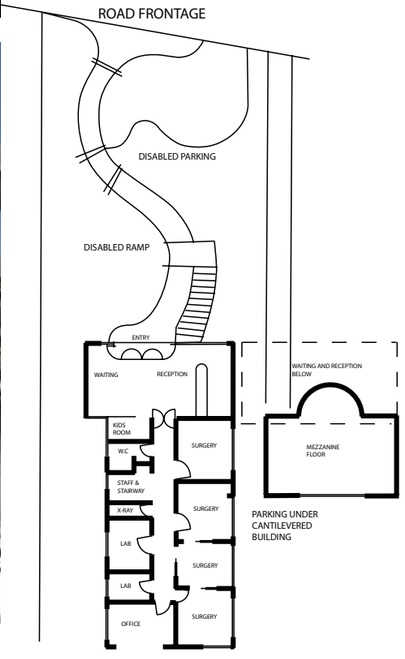
Telephone: 09 479 7736

Roofing: COLORSTEEL® Endura™ Corrugate



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