

ISSUE 14

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COPE





Below is a brief introduction to the 2006 executive of The NZ 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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Scope is the official publication of
The NZ Metal Roofing Manufacturers Inc.
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Photography: D & K Photography, Gisborne.

If you would like to submit material please contact any member of the executive or the publisher.

Opinions expressed in Scope do not necessarily reflect the views of the NZ Metal Roofing Manufacturers Inc., it's executive, committees or publisher unless expressly stated.



TOWARD GREEN BUILDINGS

Today there is global awareness of the effect our buildings, culture and product usage has on the environment.

Professor Ray Cole, an internationally-eminant building scientist, argues that the rate and scale of global environmental degradation, and access to information about it are unprecedented, and that "we won't be able to plead ignorance in the history books."

So what are we doing to find solutions?

Tom Evison, of Technical Press Service, reported on a new rating scheme which aims to transform the New Zealand build environment.

The NZ Green Building Council, supported by the Ministry of the environment, have access to the wealth of experience offered by Dr Cole. Dr Cole co-founded the Green Building Challenge - an international collaborative effort to benchmark progress in green building performance and environmental assessment. He was also instrumental in developing the Canadian rating scheme and is currently helping New Zealand set up its own schemes for residential and commercial office buildings.

Being familiar with the various rating schemes now operating in many countries, Dr Cole is in a strong position to advise us which components will work best. "In New Zealand, the same emphasis should be given to designing the system of output and delivery as to the technical framework of the schemes themselves," Dr Cole advises. "We could easily draw on the structural and technical component systems in other countries with the unique implementation context of New Zealand", he says. "We need to create a clear vision, inspired leadership, broad partnership, full co-operation and common language which will bring this about."

He strongly advocates the NZ Green Building Council in the leading role, providing a trusted source of rational, unbiased information. NZGBC membership must be made up of the widest



possible group of stakeholders including scientists, academics, industry, manufacturers, government and the media.

Two pathways to the mainstream adoption of green building practice were described by Dr Cole. The regulatory approach assumes that increased international environmental attention and public concern will create political intent. This will then manifest as more demanding environmental policy and subsequently as increasingly stringent regulations related to building performance requirements.

By contrast, Dr Cole identifies that voluntary assessment methods are a primary mechanism for creating interest and providing focus in building environmental issues. No other approach, he suggests, has had the same effect in giving definition to the field.

Now the issue is providing a comprehensive, objective building assessment and the time, effort and cost involved in doing so.

To make our rating schemes successful, Dr Cole favours developing a suite of related tools designed to create positive change in the way that buildings are produced - not just a system that simply scores the environmental performance of a building. "The tools," he says, "must enhance the dialogue between the various members of design teams, establish common ground and help navigate through often fundamentally different positions and priorities."

In the following pages are three projects designed by three independent architects in New Zealand with a common objective.

Helen Richards home, "Concept One" illustrates the contemporary flair possible with creative Solar design.

CONCEPT ONE

Architect Helen Richards has always had a passion for sustainable building design and capturing solar energy.

Conventional homes, globally, use huge amounts of energy that consume natural resources and are responsible for approximately 50% of the Co2 emissions which have a profound effect on our environment and Global warming. The proto-type, 'Concept One' has captured the attention of many and raised the awareness of the environmental issues and the benefits of solar design. In 2005 Helen's home was recognised by BRANZ as the first New Zealand house design, assessed by their revised Green Home Scheme for environmental Performance, to achieve a rating of excellence. It was also the first house to ever meet all the space heating requirements through passive means only.

'Concept One', Helen Richards own home, is the culmination of considerable research and collaboration. Whilst Helen is not the first to recognise style in architecture, her home is testament to this, she is adamant that it is the fusion of style and performance that is most important. In the order of priorities the choice is clear - solar design comes first.



The concept of 'Concept One' has been in progress for some years with a variety of expertise contributing. In particular Helen found a shared enthusiasm and philosophy with Wellington architect, Roger Walker, who has contributed his experience to the project.

Helen's vision was to create a template for a passive solar home using thermal mass to collect, store and release the sun's energy making it cost effective to build and run. The objective was not to create a 'one style fits all' but rather a concept which could easily be adapted to suit the tastes and styles of prospective clients at realistic cost. The proto type deliberately uses many traditional building materials and techniques which sit comfortably with the building fraternity and clearly puts 'Concept One' apart from the

perception that 'green' houses, with eco-energy efficiency, do not have to be made from materials less suited to the New Zealand climate, such as earth buildings.

The position of the 'Concept One' house was critical, with the glazed areas being oriented within 30 degrees of true north, as was the relationship of the glazing to the concrete floor and walls. To prevent heat loss the insulation under the floor slab is 1.5 times higher than stipulated by NZ building regulations. The concrete has been highly polished and honey coloured resulting in a flagstone appearance. "A challenging and complex task to get right," says Helen. The concrete floor, being the primary heat store, is kept uncovered with the exception of porcelain tiles in the bathroom area. Carpet is avoided as it prevents heat absorption.



In the centre of the house is a tilt concrete wall that provides additional thermal mass with the balance of the walls and roof being conventional timber framing insulated with 'latitude', a 100% natural wool product, which performs well keeping the house warm in winter and cool in summer.

Double glazing has been fitted through the home with the northerly profile being 80% glass to trap the maximum sunlight. Unshaded glazed areas to the west are kept to a minimum to prevent over heating and the south has only 20% glazing to prevent heat loss.

The roof is clad in 5 Rib Colorcote®. North/west exterior walls are clad in timber and the south walls are of vertical Zinalume® Corrugate.

'Concept One' favours a contemporary style to have mainstream appeal. This was a deliberate choice to illustrate clearly that energy efficient homes do not have to look 'hippy' and do not have any limitations in concept. Helen points out that Powered Living houses use the same materials and methods as non-solar houses. The difference is in the layout as it relates to the sun.

"The challenge with passive solar design is to store the heat and distribute it evenly to all parts of the house - even those that never get the sun." To aid in this process the house is open plan with levels and partitions creating separate spaces.

The efficiency of the house has now been well tested and documented and has lived up to



expectations. Dataloggers have recorded the temperatures inside and out every 30 minutes for the past 3 years and show the temperature variation within the target area. 'In reality' the temperatures were very close to the goal of 17-21 degrees without any other form of heating. Passive ventilation is also an important part of the design with clerestory roof windows that ventilate the entire house keeping it cool in summer.

In addition to the solar heating benefits the house includes many eco-friendly features. Solar panels assist with water heating, rain water collection and organic waste is composted in worm bins

Helen is the first to acknowledge that it is difficult to be 'pure' in every respect when approaching sustainable design.

She describes the process as, "Making the right choices in the right order which is where solar design takes priority. Self-sufficiency is a good feeling and we are trying to demonstrate a better way."

'Concept One', without a doubt, is an excellent example of energy efficiency combined with excellence in design flair.

Architect: Helen Richards.

Helen has been passionate about sustainable design and solar energy since she was a student at the London School of Architecture.

After graduating Helen worked on numerous projects in UK earning membership to the RIBA (Royal Institute of British Architects). She also worked in Kuala Lumpur prior to visiting and settling in Nelson, NZ. The projects she has been involved with range from sports stadiums to office developments, government housing to London mansions.

The climate in Nelson afforded her the opportunity to seriously pursue her long term interest and goal to create energy efficient housing which would benefit the clients who live in them and the environment.

Architect: Helen Richards.
Powered Living, Nelson.
Telephone: (03) 548 1680
www.poweredliving.co.nz

Main contractor: Phil Hay Builder

Roofing and Cladding:
Contour, Nelson.
Telephone: (03) 546 4260
Profile: 5 Rib Colorcote®
and Zinalume® Corrugate.

Photography by: Stirling Images.

NOW HOME

The Rotorua NOW Home is the result of a collaboration between Beacon Pathway and Housing New Zealand Corporation. The home is now a part of the Corporation's housing portfolio reflecting their commitment to research into more sustainable and energy efficient homes. In 2006 Housing New Zealand invested about \$80 million on improvements to its homes through its healthy housing, community renewal, energy efficiency, modernisation and re-configuration programmes.

This conventional looking, family home is far from ordinary. It's the result of extensive research and planning to achieve an attractive, comfortable and safe home.

The house design by architectural firm, APR Consultants, was in response to a clear budget and brief outlining research criteria that:

- ❑ is cost-effective to build
- ❑ is cheaper to run
- ❑ is healthier to live in
- ❑ uses fewer resources
- ❑ uses less energy and water
- ❑ effectively disposes storm water
- ❑ generates as little waste as possible.

The design features, products and materials chosen for the Rotorua NOW Home reflect a balance of

criteria that considered environmental, social and economic aims. They were selected to make the best possible use of the site and to meet a careful budget.

Products were preferred if they had lower life cycle costs, could be recycled or were made from renewable materials. The Rotorua NOW Home has used Shadowclad primed wall cladding combined with Dimond Corrugate in COLORSTEEL® Endura™ prepainted steel for the roof and wall cladding.

COLORSTEEL® prepainted steel cladding was selected after assessing each product for its potential cost over its life time. Prepainted steel products over a Zinalume® substrate are durable and lightweight.

These products score well on the BRANZ Ltd Life Cycle Tool rating:

- ❑ very well for Lifetime Financial Costs
- ❑ medium well on life cycle embodied energy
- ❑ medium on recyclability.

The single-storey, three bedroom home of 141.2 m2 (including garage) was built to a budget. It features a butterfly roof line and the U-shaped footprint creates a large sheltered patio area. Attention has been given to room size, layout and indoor-outdoor flow to ensure a comfortable, flexible home catering for extended family.

With an insulated concrete slab floor, northern orientation and large north facing windows, the Rotorua NOW Home absorbs, retains and releases solar warmth. High levels of insulation and double glazing have been installed, meaning the NOW Homes will be warmer in winter and cooler in summer, with significantly less energy cost. A solar water heater, supplemented by electricity, provides hot water needs. Appropriate ventilation (passive, where possible) and high levels of insulation minimise moisture and dampness in the



homes. The passive solar heating is supplemented by a low emission pellet fire. Care was taken to select and use products with low toxicity.

Rainwater is harvested to an underground tank for all non-drinking purposes. Limiting water flow and dual flush toilets further reduce water consumption. Composting bins and dedicated under-sink containers encourage residents to recycle and re-use waste.

The home used low maintenance, durable materials and where possible, construction waste was re-used or recycled.

The COLORSTEEL® Endura™ prepainted roofing system is designed to provide protection against corrosion in areas where moderate to severe environmental conditions are experienced and will exceed the service life of most traditional post painted systems. It carries a 15 year surface warranty and a durability warranty of 30 years.

The Rotorua NOW Home is a live research project and its energy consumption, water consumption, moisture and temperature levels will be remotely monitored for two years.



The monitoring process is already underway in the first NOW Home in Waitakere, completed in September 2005. While it's been life as usual for the young family living in the home, Beacon has been busy behind the scenes, monitoring the performance of the home to evaluate the effectiveness of the design.

On the basis of data collected so far in the project, compared to similar sized homes in Waitakere, the NOW Home uses:

- ❑ about 30% less energy
- ❑ about 25% less water

Beacon Pathway Ltd (established in 2004) is a collaborative research consortium working to find affordable ways to make New Zealand homes more resource efficient, cheaper to run, healthier to live in and environmentally friendly.

Beacon's object is to create economical homes that work well into the future. To achieve this Beacon are researching building technologies, construction industry practices, urban planning, policy and regulation and consumer attitudes.

This information will be available to home-owners, the building industry, and those working toward improving the quality and sustainability of New Zealand's housing.

Beacon's shareholding partners are organisations with a considerable stake in the quality of the residential sector: New Zealand Steel, Fletcher Building, Building Research, Scion and Waitakere City Council. Shareholder contributions are matched, dollar for dollar, by funding from the Foundation for Research, Science & Technology (FRST).

For more information about Beacon's NOW Homes visit www.nowhome.co.nz.

Client: Beacon Pathway Ltd, Housing NZ Corporation.

*Architect: APR Consultants, Rotorua.
Telephone: (07) 349 8333*

Main Contractor: Warren Monk Builders, Rotorua.

*Roofing and Cladding Manufacturer: Dimond.
Telephone: 0800 Dimond
0800 346 663
Profile: Dimond Corrugate in COLORSTEEL® Endura™ prepainted steel.
Colour: Grey Friars.*

Craig Robertson Photography for Beacon Pathway Ltd.

KNAPDALE ECO LODGE

The owners, Mr and Mrs Weytmans, briefed architect, Graeme Nicoll of Nicoll Blackburne Architects, Gisborne, to design and plan a proposed 3 stage hospitality Eco Lodge. The owners vision is to create an upmarket conference/reception facility to cater for approximately 100 guests and to provide chalet accommodation. Stage one of the project, the family home, is now complete and won Gisborne 2006 House of the Year and PlaceMakers Supreme Award for building contractor D Stevens Ltd.

The Weytmans had some plans drawn prior to approaching Graeme Nicoll and although they felt there were some good ideas in these plans they also felt it did not entirely fulfil their expectations to take full advantage of the site and their desire to incorporate sustainable 'green' features.

The well-developed eco-property at Knapdale near Gisborne, has a gentle north-facing slope of approximately 12 degrees. The approach to the building site was along a 400 metre driveway that passed through a large wooded area and overlooks a man made lake. The home was to take advantage of this vista and the surrounding tranquil forest and farmland.

The owner, Kees Weytmans, of European descent, has had a long association with forestry and was keen to include exotic untreated timber in the building. These



timbers, which the owner supplied, include, Lawson Cypress, Douglas Fir and Oak that was used in the large pivot doors and lintels. Only a limited amount of Pine was used in the roof trusses.

The brief encompassed Eco management in energy efficiency aspects such as solar energy water heating, solar energy floor slab heating, extra insulation to walls and ceiling, northerly aspect, roof windows, wetback system, thermal mass considerations and the collection of rain water and redistribution of grey water.

In general the requirement was for a 3 bedroom home which included some features such as coat and boot storage, freezer room and exterior access to wash and shower facilities. The European influence is reflected in the alfresco dining area that takes full advantage of the countryside and lake panorama. The accent is on bringing the outdoors in where possible.

The vaulted ceilings instone/precast that were detailed in the Jorn Utzon's 'Can Feliz' house influenced the architect. This feature was

redesigned in keeping with the owners' empathy with timber and forest.

The entire concrete footprint of the building slab is heated by passive solar energy. Large expanses of glazed areas in the north facing profile capture the maximum sunlight. In addition to this skylights with double-glazing are strategically positioned to assist in heating the tiled concrete thermal mass and provide extra light. The rib-raft waffle slab floor is well insulated with polystyrene sheeting and contains built-in Alcatene piping. A separate circuit of polythene piping is also set into the floor slab. A hundred metres of similar black plastic piping is fixed between the battens supporting the Gerard Colortile textured roof. These tiles were selected because of the lightweight benefits, to give the building a traditional European tiled appearance and to absorb heat the dark pepperstone texture was chosen. Water heated by solar energy is pumped into the floor slab and foundation piping at two levels - the lower one running under the foundations during summer to reduce heating and the floor slab circuit runs in winter to increase



heating. A significant benefit of this system has been noted during the months of autumn and spring.

Linked to the solar heating system is a wetback fire burning timber from the property, and an electric hot water system.

Walls of the lower storey are concrete block to provide thermal heat storage and reduce temperature variations. They are adobe plastered inside and out.

The Eco Lodge satisfies the owner's keen interest in environmental friendliness, looks completely 'normal' and fits beautifully into the established landscape.

Graded 4 Star PLUS Qualmark Member, Guest & Hosted.
2006 Husqvarna Farm Forester of the Year, North Island.
2006 House of the Year, Gold & Supreme Award, Gisborne.
2003 Rural Environmental Award, Gisborne.

Architect Graeme Nicoll expresses some enthusiasm for the project which set it apart from "suburban" influences and incorporates many sustainable "green" features. As with all projects there are always budget limitations and the objective is to work within the budget and achieve the result that matches or exceeds the client's expectations.



Client: Mr & Mrs Weytmans, Knapdale Eco Lodge, Gisborne.
Telephone: (06) 862 5444
www.knapdale.co.nz
kees@knapdale.co.nz

Architect: Graeme Nicoll, Nicoll Blackburne Architects, Gisborne.
Telephone: (06) 867 9622

Builder: D Stevens Ltd, Gisborne.
Telephone: (06) 867 5700

Roofing Manufacturer: Gerard Roofs.
Telephone: 0800 104 868
Profile: Gerard Colortile Textured.
Colour: Pepperstone.

Roofing Installation: Tony File Roofing, Gisborne.
Telephone: (06) 867 0794

Photography: D & K Photography, Gisborne.



A FIRST FOR NEW ZEALAND

Stadium Southland Velodrome located in Surrey Park, Invercargill, is the first indoor cycling facility of its kind in New Zealand.

The project was led by Calder Stewart Construction, who brought considerable local and overseas experience to the design and construction.

For a city of 50,000 this was an ambitious project which presented many challenges. Whilst Invercargill is home to a very strong cycling fraternity it was not practical to have a dedicated cycling facility but required the flexibility to cater to numerous community sport and leisure activities. The brief and challenge was to recognise the variety of uses and resolve the issues of often conflicting demands.

New Zealand's first indoor velodrome grew out of a combined need for additional indoor courts at the Stadium Southland sports complex and a new velodrome to replace the city's ageing outdoor track.

"Major sports facilities such as this are often built for one-off events such as Olympic or Commonwealth games, without regard for long-term use," says Steve Canny, President Cycling Southland, "We could not afford such luxury and the requirement was to produce a world class stadium which would serve the entire community and be economically sustainable."

The Stadium Southland trustees put considerable faith in the reputation of Calder Stewart Construction when they ignored the traditional tender method and approached Calder Stewart Construction for a Design and Build with GMP for the community facility. The exacting nature of the construction of a world class sport facility put every skill Calder Stewart Construction offers to the test. "We are proud to report," says Project Manager, Lindsay Bowmar, "that on completion the level of finish exceeded all client expectations."

With no direct New Zealand based facility such as this to draw on Southland Indoor Leisure Centre and the design and build contractor, Calder Stewart Construction, ventured offshore to Germany and the UK to assess successful World class facilities of a similar type to the proposed centre.



"From a design and construction perspective this experience proved invaluable," says Calder Stewart Construction's project Manager Lindsay Bowmar. "We were able to glean considerable information and made direct contact with a variety of skilled professionals in the field."

The project was a design and build to a GMP, using consultants from throughout New Zealand and internationally. The track itself was delivered as a separate contract with specialised velodrome designer and builder, Ralph Schurman from Germany. Schurman Architects are one of

only two companies in the world who specialise in the design and construction of cycling tracks at this level. The siberian pine for the track was imported in containers from Germany and was installed by hand-nailing into place in just 6 weeks.

The building takes its architectural and structural cues from the profile of the velodrome track in a straightforward 'honest' engineering solution. This is despite the obvious challenge of fitting a building around a continuously changing curve where each of the 4 bends is a different three-dimensional profile. The 'cad drawings' were not line drawings, but



hundreds of X, Y and Z coordinates. By nature the structure has very few corners and the building was set out by Alan Reay Consultants using these coordinates. The accuracy of this work enabled Calder Stewart Construction to build to within a 1mm tolerance which was verified by the track builder Ralph Schurman.

The experience of Calder Stewart Construction in both the manufacture and construction of pre-cast concrete, steel-framed and profiled steel clad buildings proved invaluable.

Statistically the project was one of mammoth proportions with 1300 cubic meters of insitu concrete, 60 tonnes of reinforcing steel, 7000

meters of cold rolled purlins and studs, 11,000 meters of roof and wall cladding, 2,800 meters of flashing and 69,000 fixing screws.

Approximately 400 individual pieces of concrete were required, many of which were manufactured in Calder Stewart Construction's precast yard in Christchurch, and transported to the site. Those too large to be transported were made on site to sit on 328 " 'frankie' piles that reach an average depth of 3.5m in testing gravels.

The roof structure that forms a complex three dimensional curve is constructed from 127 tonnes of steel supporting up to eight layers of either insulation, building papers, netting and MEGA 5 roofing.

While the velodrome track is undoubtedly the centrepiece the brief called for four indoor sports courts to cater for recreational and competitive netball, tennis, volleyball, soccer and athletics. The design also had to include facilities for corporate functions and trade shows.

On the practical side the project encompasses a large suite of offices for a variety of Southland sporting organisations, retail shops and a commercial gym.

"In essence," says Brent Knight, Project architect for McCulloch Architects, "it is a mini-community centre, an office building, retail centre, conference facility community sports centre and events venue all in one. To fulfil the criteria of all parties concerned represented a considerable design challenge and the result is a satisfying one making the project economically viable for the community. The facility has the added benefit of attracting events to the area which has benefits of recreational and economic value."

Calder Stewart Construction together with McCulloch Architects drew on a wealth of experience in urban design and master planning to manage the relationships between these activities and 'get the mix and relationships right' to make a vibrant, sustainable facility. The design solution was to wrap the public facilities such as the foyers, offices and retail areas around the perimeter of the building providing public street access.

"The velodrome is by virtue of its function an inward-looking building but the other facilities gave the opportunity to connect the building to the street and the park so it contributes positively to its environment," says John McCulloch.

Calder Stewart Construction

Calder Stewart Construction (est.1955) is a leader within New Zealand. With offices in Milton, Auckland, Christchurch, Cromwell, Dunedin, Invercargill, Wanaka and Queenstown its team of over 300 staff serve clients throughout New Zealand. Calder Stewart has expertise in serving the needs of clients in all areas of commercial construction. Their diverse array of clients share one common characteristic – demanding the best.

Calder Stewart Construction have a reputation for quality, experience and project management within the Construction Industry. Whatever the nature of the challenge Calder Stewart Construction assemble a team combining the skills needed. The Southland Stadium, which has been recognised internationally for its excellence, is testament to their success.

Client: Southland Indoor Leisure Centre Charitable Trust.

Contractor: Calder Stewart Construction. Telephone: (03) 214 5544

Architects: John McCulloch Brent Knight, Project Architect, McCulloch Architects, Invercargill. Telephone: (03) 218 8603

Structural & Electrical Engineer: Alan Reay Consultants. Telephone: (03) 366 0434
Fire engineering: Cosgrove Major Ltd.
Mechanical Engineer: Cosgrove Major Ltd.
Velodrome Track: Schurman Architects.

Roofing manufacturer: Calder Stewart Roofing.
Roofing profile: MEGA 5.
Cladding Profile: Corrugate.
Telephone: 0800 115 232
Roof and Cladding Installer: Calder Stewart.



Rob heads SKM's New Zealand architectural design group which operates from Sinclair Knight Merz Wellington Office while Ian undertakes project management from the SKM office in Invercargill. Building services, lighting, fire and structural design for the project were all undertaken by SKM personnel.

SKM Architectural Team responsible for the Design
 □ Rob Ansell
 □ Enda McKiernan
 □ Cushla Dowman
 □ Engineering Disciplines all in-house
 □ Project Manager Ian Sutherland

Client:
 James Hargest College.

Architect: Rob Ansell,
 Sinclair Knight Merz.
 Telephone: (04) 914 8429

Project Manager: Ian Sutherland,
 Sinclair Knight Merz.
 Telephone: (03) 218 7102

Main Contractor:
 Cunningham Building and Construction Ltd.
 Telephone: (03) 214 1669

Roofing & Cladding Manufacturer:
 Calder Stewart Roofing.
 Telephone: 0800 115 232
 Profile: MEGA 5
 Colour: Metallic Gunmetal ZRX™.

SCOPE NEWS AND VIEWS

NZMRM CONFERENCE ADELAIDE, 15 to 19 September 2006.

Last year's NZMRM Conference was held at the Hilton Hotel Adelaide, South Australia and was an enjoyable and profitable experience for the 100 delegates and partners who attended. The city of Adelaide put on some of its fine weather and from the welcome lunch at picturesque Glenelg, to the final Happy Hour/Prizegiving, a great time was had by all.

Some notable memories are:
 □ Celebrity speaker Rowland McGabbon showing the power of the mind, as MRM members used Kung Fu power to split boards.
 □ A memorable New Zealand Steel Industry Dinner on Saturday night with brilliant local comedian.
 □ Superb venue for the PCC dinner at the historic Adelaide Oval with great cricketing atmosphere, and interesting speech from the curator.
 □ Great presentations by MRM Suppliers and Sponsors.
 □ Good networking opportunities throughout conference.
 □ Great Golf Tournament.

Thanks again to our loyal MRM sponsors without whom none of this would be possible.

The venue and timing for next year's conference will be announced shortly.

Fourth generation roofing business celebrating 100 years.

An Auckland roofing company in the stewardship of the fourth generation of the founding family is this week celebrating 100 years in business.

Cowperthwaite Ltd, founded in 1906, was a leading manufacturer

of concrete blocks from its Disraeli Street, Mt Eden factory and was the first company to manufacture cement tiles in New Zealand.

In the 1950s and 1960s Cowperthwaite manufactured the Alvista brand of aluminium joinery and was one of the first companies to roll aluminium roofing on site but the advent of long run roofing, which eliminated the need for sarking, resulted in this roofing style going out of favour.

The stock market crash in 1987, along with increased competition in the market, resulted in Cowperthwaite Ltd concentrating all its efforts into growing the contracting side of the business.

Today, as one of the country's largest specialist roofing companies, Penrose-based Cowperthwaite Ltd offers a wide range of roofing products from New Zealand's leading manufacturers and unusually offers the complete range of different types of roofing from concrete and clay tiles to long run metal roofing, metal tiles, asphalt and timber shingles, slate, copper, zinc and butyl membrane roofing.

Managing Director, Des Cowperthwaite, great grandson of founder William Thomas Cowperthwaite says, "The company's 68 salaried and contracting staff are our greatest asset and while I am always keen to expand the business this would always need to complement the core business of roof installation - which is the focus of our business 100 years on."

Cowperthwaite Ltd marked the centenary with a celebration dinner at Alexandra Park on Thursday 7 December 2006.

Issued on behalf of Cowperthwaite Ltd by the Roofing Association of New Zealand.
For more information contact:
 Jenny Bain, Communications Officer.
 Email: info@roofingassn.org.nz
 Phone: (09) 415-0278

Stuart Thompson receives the HERA Award for Distinguished Service.



This prestigious HERA award recognizes distinguished and outstanding services to the NZ Metals Industry.

Stuart's career began as an apprentice plumber and sheet metal worker. Having completed his apprenticeship he worked his way to the UK on a ship and found work as a plumber and roofer in London.

Having observed first-hand methods of manufacture at steel and aluminium mills in Europe, he returned to New Zealand and set up Thomson Metal Industries in Wellington. In 1963 he built this country's first roll-former for secret-fix roof cladding, and other roll-formers to make roof claddings and accessories.

In 1973 and 1975 Stuart was invited by Sir Edmund Hillary to join his building programme in Nepal. He made and installed solar water heaters at Kunde and Saleri hospital and put corrugated roofs on a number of schools in the mountains.

Thomson Metal Industries was sold to Dimond Industries in 1977 and Stuart became their technical manager. In 1982 he went to New Zealand Steel as development engineer and designed the Steelspan roofing profile for its

Glenbrook mill. Stuart wrote the first Profile Metal Cladding handbook and in 1984 he investigated cyclone damage in Fiji and consequently designed load-spreading washers for corrugated iron.

In 1988 he retired from New Zealand Steel and in 1993 designed and supervised the building of sixteen Cyclone Rotashelters (with corrugated roofs) for Samoa. His interest in the Pacific continued in 1995 when he designed and built a community hall at Ba, Fiji and in 1997 he returned to design and build fourteen earth-brick Rotacottages.

In 2000 he was commissioned to write the New Zealand Metal Roof and Wall Cladding Code of Practice, which was published in 2003. He is currently a member of several joint New Zealand/Australian Standards committees and practising as a building consultant.

Stuart was granted life membership of the New Zealand Metal Roofing Manufacturers Inc. in 1998 and in June 2006 was also made a life Member of RANZ.

The members of the MRM offer their congratulations to Stuart for this well deserved recognition of his service to the industry.

Gerard Roofs unique re-roof promo gets blown away!

Gerard Roofs Business Development Manager, Grant Williams, together with NewstalkZB came up with a unique, Auckland wide, concept to promote Gerard Roofs new re-roofing system.

Listeners were asked to register on-line (at www.newstalkzb.co.nz) to be in the draw for a free Gerard Roofs re-roof. Each entrant was issued with a "Gerard Roofs Roof Shout" flag which was then attached to the gutter of their house.



The plan was to fly over the greater Auckland area in a helicopter and spot a winning flag.....but the high winds of a vicious storm late October 2006 meant many flags were blown away.

Gerard Roofs pride themselves on a product that is not affected by weather extremes and it certainly was not going to affect their promotion. All entrant's addresses were logged in a database and allocated a number - a number was drawn at random - and that was our winner.

Mrs. Phyllis McNair of Epsom is thrilled that the property will now be restored to its former heritage state with a new Senator Shingle roof from Gerard Roofs. Her villa dates back to 1863 and began its life with a timber shingle roof. Subsequently it has been re-roofed more than once in longrun iron. "When I first approached Mrs McNair to advise her of her win I thought she was going to fall over! She was so thrilled to hear the news as she had just been contemplating the somewhat daunting task of having her old corrugated iron roof repaired again. It's so satisfying to see this prize go to this house. Not only will we be restoring it to its classic Shingle looks, but we also know that with our new overlay re-roof system there will be no disruption to Mrs McNairs' household or home," says Grant Williams from Gerard Roofs.

Because of the promotions weather dilemma anyone who purchases a re-roof using the unique Gerard Roofs 'tile overlay system' will be eligible for a separate draw to win a trip for a family of 4 for a week, staying at Sonasali Resort, Fiji. Offer closes 31 March 2007.



JAMES HARGEST JUNIOR CAMPUS TECHNOLOGY CENTRE

The Junior campus technology centre provides facilities for the technology curriculum for year 7 and 8 pupils. The Junior campus originates from an old intermediate school overtaken by the rationalisation of schools in the Invercargill area. The school's administration was taken over by James Hargest College. For the future of the school the school authorities were keen that it was seen to have the best practical facilities. For this reason the siting of the technology centre on the

corner of Layard Street and Queens Drive, a busy boulevard, was agreed as the ideal location. The eventual structure is composed of two wings linking at the corner of Layard Street and Queens Drive. One wing is brick clad and notionally 'domestic' containing the art and food areas. This continues the brick theme of the existing school buildings and with landscaping gives a soft domestic edge to Queen's Drive in keeping with the locality. The other is 'technical' containing resistant materials, science and eventually media studies. Here a

different theme is developed, designed to reflect the hard materials and science activity within. The cladding here is dark colour coated steel with roof and walls creating a wrap. Clustered here are heat pumps and dust extraction shielded behind an iconic wall. At the apex of the 'v' is a glazed 'hinge' which houses the fabrics and electronics workshop. The hinge terminates at the iconic wall, a signposting structure. The concept of the 'ionic' wall takes account of the critical view given by the corner location alongside the busy Queens

Drive. It was conceived as a vehicle for the school logo that could be made plainly visible from the Drive. It includes a cut out shape that is deliberately, symbolically and culturally ambiguous. While not belonging to one culture, its actual curve is the golden spiral which is based on the Fibonacci sequence. This simple shape denotes western learning on one hand but again it might be interpreted as the Maori derived foetal bird mouth representing the child or the naturalistic koru of the awakening fern frond. The cross cultural connotations are about development, learning and knowledge. The 'v' shaped wings enclose a covered, naturally ventilated internal courtyard that

provides for free circulation between rooms. Practically, the complex addresses a school quad as its front entrance. As part of the school development the quad is to be landscaped with the entrance of the technology complex in mind. It is the critical feature of the planning and design. Essentially there was no budget for this feature but the school were very keen to have it. It therefore needed to be delivered at low cost but would not compromise on achieving performance acoustics, ventilation or condensation prevention. Although a Spartan place at present the intention is that it be a 3 dimensional canvas, a vehicle for school expression and development. The canopy is composed of translucent twin skin

Alsynite cladding. This unique twin skin roofing system provides some thermal insulation, light and shelter to the courtyard and is designed to provide an opalescent glow externally, when lit, giving a dramatic night time effect. Good internal acoustic performance is achieved by the configuration of internal surface planes and some use of perforated corrugate. The distinctive lines of MEGA 5 make a strong visual impression when used as a low level roof and wall cladding.

Noise transfer of rain is minimized by the use of the twin skin which also prevents the development of condensation on the internal surfaces. The canopy provides a well lit internal, useful and unique facility for the school as a place for displays, shelter in inclement weather and special large group activities.

Architects Sinclair Knight Merz.

Architect Rob Ansell led the design team for James Hargest College working closely with Project Manager Ian Sutherland. Sinclair Knight Merz is a multi disciplinary consultant group represented with branches throughout New Zealand.

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Eddy Marten, who has used Gerard Roofs' systems in the past, agreed. "We have a high wind zone in this part of the North Island and I was confident of the quality of the Gerard product. It is aesthetically appealing in profile and the cost reduction, in comparison to similar looking products, is significant without compromising quality".

Because Gerard Senator Shingles are made for New Zealand conditions Bay of Islands Roofing director, Graham Moor, describes it as the ideal product choice for this luxurious home. Gerard Roofs' 50 year Pro-Rata warranty (offered even in coastal locations such as this) was further confirmation that the right product had been selected for the project.

Textured Onyx was chosen to complement other tones used and the overall design of the house.

The owner says the final style of the roof is exactly what had been envisaged. "It looks great visually, working well within the parameters of the landscape and is suitable for the often harsh wind and rain." The Gerard Roof, now taking pride of place on the new house, fulfils these criteria. The design of the home and all the building materials used have culminated in a unique home on a truly unique slice of NZ paradise.

Reflecting on the project, Eddy Marten is quick to praise Gerard Roofs for the quality of their product and Bay of Islands Roofing for the exemplary workmanship and installation. "It was great to use a Gerard roofing system in conjunction with a local company employing local tradesmen. The end result speaks for itself."

Architectural Design: Bert Bam Viet and Clinton Grant.

Project manager: Eddie Marten.

Builder: Chris Harper.

Telephone: 0274 889 659

Roofing manufacturer:

Gerard Roofing.

Telephone: 0800 104 868

Product: Senator Textured Shingles.

Colour: Onyx.

Roofing Installation: Graham Moor,

Bay of Islands Roofing.

Telephone: 09 407 9288



Gerard Commercial Design Award Winner: Lodge Bordeaux.

Inspired by the homes around the French wine region of Bordeaux, the winner of the 2006 Gerard Roofs' Design Commercial Award blends modern design with the romantic look of the French provinces. When owners Alison and Peter Fitzgerald returned from touring France they knew the precise look and feel they wanted to create for their third motel.

Opening just 18 months ago, Lodge Bordeaux has a timeless French theme from the roof down to the luscious grape vines, extensive rock walls and the welcoming cellar in the reception. Lodge Bordeaux even has its own wine label! As a boutique lodge in New Zealand's coastal region of Whangarei, Lodge Bordeaux offers NZ Qualmark 5-Star luxury accommodation to the discerning traveller and executive corporate market. With the experience gained by designing their two previous motels Alison and Peter worked closely with their

friend and designer John Davies to develop a concept for a main house and two complementary accommodation buildings.

This concept was taken to completion by architectural designer Darrell Bell of Design Network (Waikato).

"We wanted to create an authentic French look – a style which wouldn't date and would improve with age. So a major feature of the design was the roof," says Alison, who, with her husband, selected all the products for the building. The couple chose Gerard Corona Shake Satin which has a clean, flat profile and a rugged yet stylish roofline to suit both the rural and town settings. "My husband and I saw exactly the style we were after in the Gerard Looking Up Guide," says Alison, commenting on how they discovered the Corona Shake profile. "At a pitch of 40 degrees, with many aspects which would be highly visible from the road, it was paramount that the roof looked good and complemented the building. The roof is a feature in its own right and marries perfectly with the rest of the Lodge," Alison says.



The slate tile appearance, typical of a French provincial home, was achieved without having to use traditional solid tiles and their inherent weight. Gerard Roofs' inter-locking Zinalume™ steel-based tiles also ensure total weather proofing and a long life against all the elements of New Zealand's coastal environments. Grant Williams, Business Development Manager for Gerard Roofs says the lodge is an excellent example of how a harmonious whole can be achieved when good design and craftsmanship is married to superior products.

Client: Alison and Peter Fitzgerald, Lodge Bordeaux, Whangarei.

Telephone: (09) 438 0404

Conceptual Design: John Davies.

Architectural Design: Darrell Bell,

Design Network (Waikato).

Telephone: (07) 839 3308

Roof Manufacturer: Gerard Roofs.

Telephone: 0800 104 868

Profile: Coronashake Satin.

Colour: Graphite.

Roofing Installation: Douglas Roofing, Whangarei.

Telephone: (09) 438 8485

Mobile: 021 892 770



Gerard Home Design Award Winner at Kerikeri.

As one of the most luxurious homes in the Bay of Islands, this exceptional new home represents a careful blend of impeccable design and exceptional product choice. It was taken from concept to reality by project manager Eddy Marten and builder Chris Harper with each step to realising the owner's dream home being carefully planned. The home is well situated on a north facing peninsula with panoramic sea views and private access to a sheltered, secluded beach. Because the focus of this comfortable home begins with the interior it was important for the house to appear more 'low profile' from the approach through the beautifully landscaped, seaside, 25 acre block.

From the exterior the home at first appears to be a single level dwelling however a less evident lower level provides private guest accommodation, office and separate kitchen facilities. Because of the buildings low profile and the elevated approach to the home it quickly became apparent that the roof was going to have a significant impact on the overall visual appearance. Neither the owner nor the designers wanted the roof to dominate and it was therefore of paramount importance to fastidiously consider all options available. The owner was, understandably, reluctant to start the project without a clear view of how the roof would ultimately look. After driving around and looking at many houses and listening to what design features were critical,



GERARD ROOFS' DESIGN AWARDS

The 2006 Gerard Roofs' Design Awards celebrated examples of excellence in design and building. Now in their fifth year, the awards showcase Gerard Roofs' continued commitment to recognising and rewarding top workmanship throughout New Zealand, Australia and the Pacific. Grant Williams, Business Development Manager for Gerard Roofs, says once again in 2006 the entries were of an incredibly high calibre and everyone involved in each project deserves congratulations for their attention to detail and their commitment to superior craftsmanship. He says the winners combined good design aesthetics with the selection and use of quality materials which enhanced the style of the buildings.



Chris Harper suggested using a Gerard Roof. The textured Senator tile profile provided the desired 'look' and the time-proven method of interlocking, horizontally fixed tiles provided the strength required in high wind zones.

Designers Bert Bam Viet and Clinton Grant suggested a more traditional 'pitch' style roof of 25 degrees.

Left: The daunting task of building this complex roof design is a tribute to the skills of builder Chris Harper. The well proportioned aesthetics of this seaside home are apparent from every aspect with every room taking full advantage of the location. The lower level is cleverly withdrawn and not immediately apparent on approach.

ONE WAY

Article by Stuart Thomson

I have just returned from the North - as North as you can go and things haven't changed much. What was surprising was that those 'One Way' bridges are still there - dozens of them. Of course we all know that they are not one way because you can travel both ways.

Over the years many individuals and sometimes whole countries have attempted to impose 'One Way' on their neighbours or the rest of the world. Hitler tried and more recently the war in Iraq continues with each of the Muslim factions claiming their own 'One Way' and the fighting will not cease unless there is some compromise. There is always another way.

Architects and Designers by definition do not prescribe to the 'One Way' philosophy they are always looking for a new way - something different to benefit clients and to receive the admiration and recognition from their peers.



Above: The Guggenheim at Bilbao.

Below: The Walt Disney Concert Hall in Los Angeles.

Metal Roof and Wall Cladding offers Architects and Designers 'One Way' but of course it is not the only way but it can offer so much more. Energy efficiency and sustainability are high on the new NZ Building Code agenda there are new ways and exciting times ahead.

Frank Gehry is an exciting architect who loves Metal Roof and Wall Cladding - love him or hate him he is still exciting and I like the story of his Guggenheim art museum in Bilbao.

Immediately after winning the architectural competition Gehry acquired a shipment of sheet titanium at a bargain price from Russia. Then, at full speed he created a sculptural scale work model from cardboard and timber, which is something I used to do and maybe you did too. What was different this time was that he used his model to scan into the Airbus computer program 'Cattia' for the digital project work. This computer program was also used for the building's framework and when finally

realised at full scale it was to say the least - a shock. The location of the new Guggenheim, along a river and surrounded by one of the industrialised world's ugliest urban landscapes, places the building in an even greater architectural contrast.

The titanium cladding (0.3mm), as a material, is a somewhat rough approach to the museum's double-curved facades, as the individual panels have folded edges that cause the 'fish scales' to 'wrinkle' like aluminium foil, somewhat like the fully-supported roof panels now being manufactured by some of our NZMRM members.

Who says metal has to be flat?

This 'rough' approach and the wrinkled surface of the cladding turns out to be a textural advantage in that this extremely shiny metal manages to capture even the slightest changes in light. These constant variations on the facades of the museum offer a source of visual fascination throughout the day.

Another of his spectacular buildings which used Metal Roof and Wall Cladding is the Walt Disney Concert Hall in Los Angeles which will be familiar to anyone interested in contemporary architecture. Frank Gehry's buildings are also famous, if not infamous, to the workers faced with the challenge of building them. With a structure requiring so many changing double curvatures there was simply no room for normal industry tolerances. In this case Gehry used stainless steel, although it is difficult to state which is roof cladding and which is wall!

During his acceptance speech for the 1989 Pritzker Prize, architecture's highest honour, Canadian born Gehry said, "Architecture must solve complex problems. We must understand and use technology. We must create buildings which are safe and dry, respectful of context and neighbours, and face all the myriad of issues of social responsibility, and even please the client."

You can decide if he has succeeded.

Well in case you needed convincing, when building there is never only 'One Way'.

However back in New Zealand, our newly created Department of Building and Housing decided that they had 'One Way' which was acceptable and so they published Acceptable Solutions for the NZ Building Code. This does not provide any option other than to do it their way. If you do not want to follow their 'One Way' then an Alternative Solution is the only 'other' way to gain compliance with the Code.

So what's the problem?

Well it goes like this.

If a Building Consent is given by the Building Consent Authority (BCA) under the Acceptable Solution or where some details are missing they can assume that the detail should be the 'One Way' provided in the Acceptable Solution. If you do not comply then you will not get a CCC. Now you and I know that there is always another way. The DBH Acceptable Solution has become a default document.

This fact has caused many Roofing Contractors and quite a few Architects and Designers a few sleepless nights, a few hard words and a lot of dollars. Quite a few roofs have had to be removed for no good reason other than they did not comply with the Acceptable Solution.

Why should this be so?

An Acceptable Solution is approved by the Crown who accept the liability for it, but with a Producer Statement or an Alternative Solution, the BCA accepts the liability for a period of ten years. Understandably Risk-Pool, who are the insurers for the BCA's, are not very thrilled when an added risk is thrown their way and they have certainly let this be known. It's not

that the BCA's think that there is a 'one detail fits all' solution either, its just that they have had their fingers burned recently.

When approached about this problem of Building Control the DBH says' nothing wrong with our system, it's the BCA's fault - and they may be right but..... Our new Performance Building Code in 1991 promised us that 'Building Controls would be 'cheaper, easier and more innovative' - yeah right.

So what can we do about it?

In a past issue of Scope we enumerated those details which appeared in the DBH Acceptable Solution E2/AS1 that the Roofing Industry considered to be wrong. Now we know that there is always another way, and many of the other ways are detailed in the NZMRM Code of Practice.

You have bought it, haven't you?

The NZMRM are still working with the DBH to have our COP recognised as an Acceptable Solution.

So what can you do about it?

Our appeal to you, the architects and designers is that you do not just use the easy route and use Acceptable Solutions like E2/AS1 but use the Code of Practice which has many ways to do many things. Detail everything on the plans before the consent, do not make changes without notifying everyone including the BCA's.

If you have a tricky detail and it does not happen to fit your design then contact one of the NZMRM members detailed on the back of this magazine and they will be only too happy to assist.

Well that's 'One Way'!

For further information on Metal Roofing or Cladding or details of any of the articles which appear in this publication please contact any of the members listed below.

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