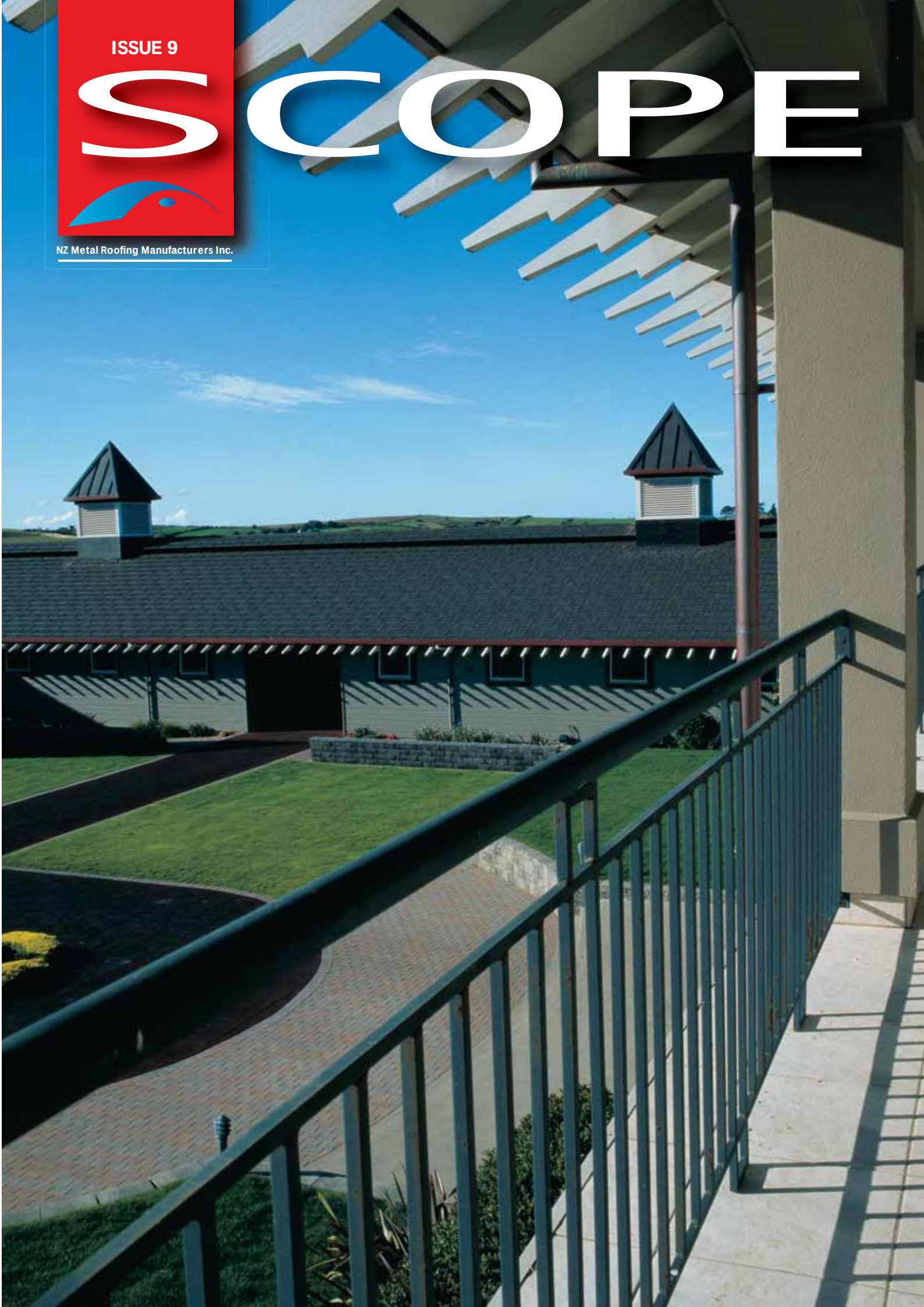
ISSUE 9

SCOPE

NZ Metal Roofing Manufacturers Inc.



SCOPE

PRESIDENTS FOREWORD

Welcome to the ninth issue of SCOPE magazine. We have been increasingly excited and pleased with the quality of the projects which have been submitted for publication in SCOPE magazine over the last two and a half years. Though it was difficult to start, we are increasingly heartened by the continued and growing response, distribution and enthusiasm for SCOPE.

As you are aware we have been able to secure a modest budget for photography to profile quality projects. Please feel free to contact the editorial committee directly if you would like to feature a project in SCOPE magazine.

As a regular reader of this magazine you will be aware that the use of Metal Roof and Wall Cladding Code of Practice has been steadily increasing. However we are expecting a stepped increase in demand for the Code of Practice following the introduction of the new E2 / AS1 provisions. The Code of Practice has been recently used by the Department of Building and Housing in formulating the new NZ Building Code. As a result the DBH is now referencing the NZMRM Code of Practice in a number of places in order to provide detailed explanations to the solutions identified in E2 / AS1.

The NZMRM Code of Practice is an invaluable tool, with clear and detailed reference material for Alternative Solutions to AS1, for the design and installation of metal roofing and wall cladding as produced in New Zealand for New Zealand conditions.

I trust you enjoy this issue.

Darrell Back
President
The NZ Metal Roofing Manufacturers Inc.

NZ Metal Roofing Manufacturers Inc. Executive Committee 2004 / 2005

Darrell Back President
Darrell Back is the Managing Director of the Steelform Group of Companies.

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Tony Barbarich is the Director of Business Development for Metalcraft Industries.

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Gary McNamara is the New Zealand Sales and Marketing Manager for Gerard Roofing

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Philip Meyers is the Marketing Manager of Roofing Industries Limited

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Warren Oliver is the Managing Director of Franklin Long Roofing.

Gregg Somerville Executive Member
Gregg Somerville is Marketing Manager for Dimond.

Mark Winnard Executive Member
Mark Winnard is General Manager for Steel & Tube Roofing Products.

Above is a brief introduction to the 2005 executive of the Association. 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.

You can visit our website at:
www.metalroofing.org.nz

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

Advertising and editorial 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.

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HORSES FOR COURSES

WESTBURY THOROUGHBRED HORSE STUD AT KARAKA

Westbury Stud decided to relocate their horse stud from Cambridge to Karaka in 2000. Russell Warwick of Westbury Stud set out to provide a new horse breeding stud with facilities which were of the highest quality and a destination which would be attractive and desirable for both visitors and horse buyers.

Russell provided a very detailed planning brief to Glasgow Architects for both the farm access and paddock layout and for the building requirements for the stud farm. The result is impressive.

Existing fences on the farm were removed and the farm was re-contoured prior to installation of timber rail fencing for the new paddock and a new farm roading layout. All of the farm roads and paddock surrounds were planted with new shelter rows of trees.
The buildings were designed to provide the optimum facilities possible for horse breeding and horse accommodation, based on the wide experience of Russell and his team of horse breeding and handling personnel.

A long winding driveway leads from the Linwood Road entrance gates, past some newly constructed landscaped ponds to the buildings which are sited on the highest part of the farm.

The exterior of the buildings was required to have an established appearance and was designed to incorporate the type of building materials which have been common to rural areas over many years. The buildings generally have stained timber weatherboards and wide eaves with exposed rafters.

The very large areas of the roofing presented a fairly dominant feature. The Architect required an economical lightweight material which would also provide a reasonable amount of detail in the surface texture. After reviewing various materials it was decided to use a matt paint finished metal "shake" from Gerard Roofs.

The main group of buildings are designed to surround the four sides of a sheltered central courtyard. This courtyard is landscaped with lawns and gardens and contains a parade ring for showing off yearling horses to the visiting horse breeders.
The two storey administration building lies between the entrance drive and the courtyard, allowing for reception of visitors before showing them to the remainder of the stud facilities.

The remaining three sides of the central courtyard are surrounded by the three wings of the yearling stables which provides accommodation for 52 yearling thoroughbreds, as well as provision for horse showering and grooming and the staff lunchroom and toilets. Other buildings contain storage for feed, a horse exercising gymnasium and veterinarians facilities. There are separate buildings which house the service barn which is close to the stable for the stud stallions and the associated stallion parade ring.

Client:
Russell Warwick of Westbury Stud

Architect:
Glasgow Architects
37 Scanlan Street,Grey Lynn.
Telephone: 09 360 4477

Contractors:
Stables: B. J. Wallace Builders
Porchester Road, Takanini.
Telephone:09 298 3630

Administration:
Pukekohe Builders
70 John Street, Pukekohe.
Telephone:09 238 7758

Fencing contract:
Ivan Bevins Limited
State Highway 2, Mangtawhiri.
Telephone: 272 714 718

Roading and Earthworks:
Excell Corporation Limited
357 East Tamaki Road
East Tamaki.
Telephone: 09 272 8930

Nursey contract:
The Big Tree Company
445 Ormiston Road, East Tamaki.
Telephone: 09 274 4934

Roofing Manufacturer:
Gerard Roofs
Profile: Gerard CoronaShake
Colour: Dark Green
Telephone: 0800 104 868

Roofing Contractor:
John Taylor
Cooper Roofing
Telephone: 09 478 5588
and
Harvey Roofing Centre
Telephone: 09 978 9020.

DESIGNED FROM THE OUTSIDE IN

Design Statement

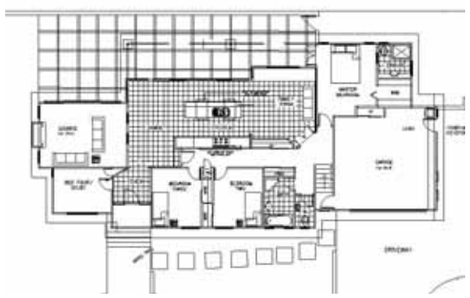
My clients approached me and suggested, unlike many others, that we remove the existing 1960's two bedroom bungalow. I needed no further encouragement.

Their brief to me was for a three bedroom, plus study home to be essentially one level, with spacious living oriented to the sun, and with good indoor-outdoor flow. It was to look interesting from the street as it is on a corner site and is reasonably prominent. The outdoor courtyard was to be private and sunny, and should contain room for a pool in the future should they wish to have one.

My clients gave me an open brief on architectural style but did ask that the house be innovative and unique.

I suggested that we use corrugated zincalume® for the roof as this would allow a low roof pitch to keep the overall profile of the house low. I suggested to them that along with good indoor outdoor flow we should incorporate some outdoor space that was covered so there could be shade as well as shelter in more inclement weather. The long northeast facing alfresco area adjacent to the kitchen, dining and family areas has proved its worth with over 20 people seated comfortably under shelter for Christmas dinner. With a 6m wide 6 panel bi-lineal stacking sliders giving near 4m of opening from the kitchen to this space they blur the line between inside and out.

The generous double garage is set approximately 1m down from the rest of the house making access in from the street relatively level. An adjacent hard area is also a useful space for guest parking or extras such as a boat or caravan.



The front entry makes a striking note opposed to an otherwise restrained street elevation, leaving approaching guests in no doubt as to were the front door is.

With a muted simple duo tone colour palate on the exterior the house sits comfortably in its very suburban landscape.

The master bedroom also has access to the alfresco area by way of French doors, which gives an extension to an already generous room.

The family room has a built in window seat with storage under and a stacking slider window down to the seat level. You can sit on the seat with your back against the wall and enjoy the long vista right through the living spaces and on into the living / courtyard.

My clients have expressed to me their pleasure in living in the house, and have found it to be very practical with the indoor outdoor flow better than they could have imagined.

MGB Design Ltd

MGB Design Ltd pride themselves on imaginative architectural design which is unique to the site characteristics and the lifestyle or working environment of their clients.

The principle, Mark Brown, established the Auckland based company in 2000. The senior staff of MGB each have over 20 years experience and the company is committed to continued professional development in industry standards, trends and regular seminar attendance. “We consider that staying abreast with the latest developments, products, trends and good practice is vital to the success of our practice. Our clients deserve nothing less.”says Mark Brown.

The practice has been commissioned on a wide variety of national and international projects but consider they have a special affinity for unique residential design with special attention to the clients individual needs and the relationship of the building to the site. To this end MGB offer their clients a wide range of design skills and complimentary expertise ranging from subdivision to interior decorating.

“We consider our success can be attributed to our innovative approach to projects from the smallest alteration to multi million dollar homes and commercial projects. The attention to detail, costing, supervision and documentation is of the highest standard ensuring our projects run smoothly”, says Mark. “This is vital to our business and our clients.”

Designer: MGB Design Ltd.
Mark Brown, Chris Wood
Pakuranga, Auckland.
Telephone: 576 7472
Mobile: 0274 480 317

Builder: Rob Grant
Telephone: 027 293 6292
Telephone / Fax: (09) 521 5002

Roofing Manufacturer:
Steel and Tube Roofing
.40 mm Custom Orb Endura®
(corrugated) Color: Ironsand

Roofer: Sawden Roofing
Unit 4,119 Harris Road, East Tamaki
Auckland.
Telephone: 09 274 6415
Mobile: 0274 707 647

Cladding:
Rockcote EPS 40 Classico swirl,
Linea Weatherboard

Photography: Peter Beattie

USE OF METAL ROOF AND WALL CLADDING CODE OF PRACTICE INCREASES

Usage of the Code of Practice for New Zealand Metal Roofing and Wall Cladding has "now exceeded the 600 copy mark and is expected to grow steadily," said Gregg Somerville, Executive Member of NZMRM.

The Code of Practice is being used widely by designers, installers, training institutions and practitioners in general and is expected to grow considerably over the next year with the introduction of E2 / AS1.

The Code of Practice has been used by the Department of Building and Housing (DBH) in formulating Acceptable Solution 1 (AS1) of Clause E2 of the new NZ Building Code.

As a result the DBH (previously the Building Industry Authority) are now referencing the NZMRM Code of Practice in a number of places in order to provide detailed explanations to the solutions identified in E2 / AS1.

Clause E2 is the part of the NZ Building Code which deals with external moisture and buildings and is being revised to address concerns over leaking buildings in New Zealand.

The Metal Roof and Wall Cladding Code of Practice (COP) was the culmination of four years research in New Zealand drawing on the widest possible consultation with all sectors of the industry, directly and indirectly associated with the installation of metal roofing and wall cladding. The result is a complete guide to the correct specification and use of metal roof and wall cladding in New Zealand with extensive diagrams and detailed drawings. The 400 page COP comes complete with a searchable CD version.

"The wide usage and acceptance of the COP in New Zealand and the referencing by the new Department of Building and Housing provides some justification for the considerable investment made by the NZMRM and its members," said Stuart Thomson, the principal consultant for the project who compiled the material for the Code.

Its value demonstrates the benefit of drawing on the expertise, experience and skills of such a wide range of sources.

In addition to providing detailed explanations of the solutions identified in AS1, the Code of Practice also provides clear and detailed reference material for Alternative Solutions to AS1 as widely used and accepted in the industry.

"The NZMRM Code of Practice is an invaluable tool for the design and installation of metal roofing and wall cladding as produced in New Zealand for New Zealand conditions," said Darrell Back, President of the NZMRM.

For your copy of the COP complete the attached order form or visit our website: www.metalroofing.org.nz

EMPATHY WITH THE ENVIRONMENT

"Architect Tim Heath has a proven track record of trying to fit buildings with context - in this case the coastal landscape.

The Otago Students' Association Aquatic Centre project managed by Glen Sinclair, is testimony to the empathy and synergy they both seek."

Photography courtesy of Stephen Goodenough.

Architect's Statement

The Otago University Students Association (0USA) Aquatic Centre, a facility for rowing, kayaking and windsurfing, comprises a boatshed, storage areas, changing facilities, erg room, rowing tank, clubrooms and viewing deck. The brief was for safe and efficient facilities which relate to use and place. The budget was tight.

The site - a public reserve close to a seawall - is subject to strong southerlies and salinity is high. Building forms and materials were specified for this microclimate, and details and materials are unique to the building's uses. Views of the harbour are carefully presented to connect building users to the water. Colours and forms are intended to recede into the immediate context, especially when viewed from across the harbour. The aerofoil roof reduces sky glare and enhances the view of the harbour.

Rowing shells and oars are fragile; separate storage and set-up areas

are arranged to avoid accidental damage (OUSA designed and constructed boat and oar storage racks). The buildings are sprinkled (fire destroyed the previous facilities). The unique rowing tank is the result of collaboration between client, mechanical engineer and architect. The re-use of timber oars as handrail and door furniture is credited to Glen Sinclair.

Some reflections.

OUSA said they wanted a building which belonged to the edge of the harbour and looked like a rowing club. I think we satisfied those design intentions. As designers we were partly motivated by the elegant simplicity of rowing shells and outriggers as well as the poetry of windsurfer designs."

The best innovations come from dialogue, collective ambition and a bit of lateral borrowing. A ply rowing shell was a perfect model for demonstrating skin and bone stuff. Glen Sinclair (OUSA) was keen to incorporate old timber oars as handrails. Glen, Howard Healey (FMA Mechanical) and David Wade (draftsman) invented and made work a rowing tank - a bit like a giant spa - for fours and sculls.

Photography courtesy of Stephen Goodenough.
Mobile 021 88 90 30
PO Box 36412, Christchurch, New Zealand.

I think the visual attachment from the erg room to the water, works. To be rewarded with the view, a rower must be seated and be prepared to do work. I admit this idea was distorted and borrowed from a Buddhist temple in Kyoto where humility is rewarded in a similar way. The view of the Otago Harbour from the clubroom and deck is a great experience - suddenly you realise the grandstand view has always been there, and all the little design considerations have been worth every drop of harbour.

Selection of materials.

Context and appearance.
It was important to OUSA that the building should fit the harbourside context and the use as an aquatic centre. They wanted something more than a shed.
The 'erg room' presents a tensile curved wall facing the harbour. The profiled metal product adapted to that shape well. The horizontal alignment of the material profile gave a visual strength to the curve.
Rowing, windsurfing and sea kayaking utilise craft designed to be lightweight and include a high proportion of finely tuned, tensile, structural components. Thus with the aerofoil 'wing' structure we selected steel to exploit that visual expression.

Resource consent requirement.
The consent required that the building not be obvious from the other side of the harbour - colour and forms were used to that effect. The buildings although reasonably bulky are difficult to see against the background.

Durability and warranty of performance.
The microclimate at the edge of the harbour is very aggressive. We used the top grade colour coated aluminium to give maximum protection and a warranted performance. For all other metal the finished coatings were as high spec as we could get them.

TIM HEATH

Tim Heath is a practicing architect and landscape architect specialising in site conservation and designing structures for fantastic clients on fantastic sites. The practice Architectural Ecology Ltd. was set up in Dunedin to do just that. He has an interest in bringing wider environmental issues to the design work that he does.

Tim has received national, local and environmental design awards for new and refurbished building projects. These have been widely published. He is a Fellow of the New Zealand Institute of Architects and has previously served terms on the NZIA Council and national design juries. Tim is a current member of the NZILA executive and a member of the Queenstown Lakes District Council Urban Design Panel.

He describes himself as a newly arrived old bugger with a bit left to do.

Client: Otago University Students Association
Project Manager: Glen Sinclair

Architect:
Architectural Ecology Ltd.
Tim Heath
Telephone: 03 474 9995
E-mail: tim@archeco.co.nz

Main Contractor:
Amalgamated Builders Ltd.
Area manager: Richard Johnston
Telephone: 03 474 1392
E-mail: dunedin@abl.co.nz
www.abl.co.nz

Manufacturer: Dimond
Telephone: 0800 346 663
Profile: Dimond V-Rib
in 0.90mm ColorCoat ARX.

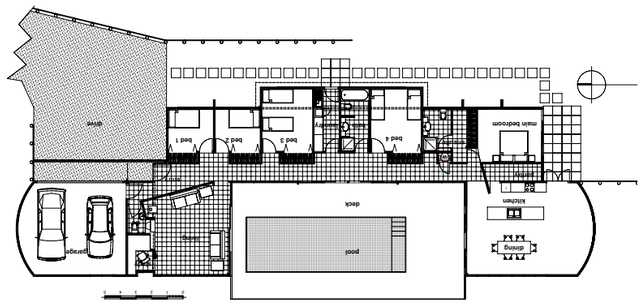
Roofing Contractor:
Dunedin Roofing
Reid Buchan
Telephone: 03 455 2252

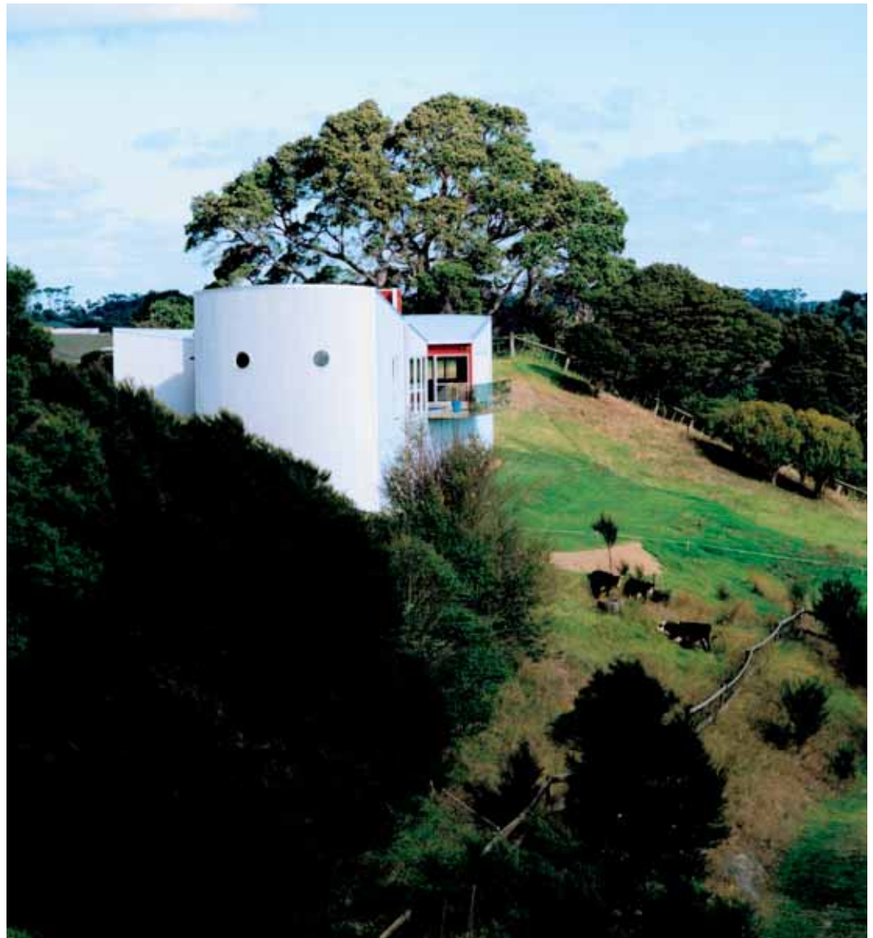
FAMILY LIVING AROUND THE POOL

CLIENT BRIEF

The clients Margaret and Murray Bond purchased this small life style block on the edge of Cockle Bay, Auckland because of it's position and views. The site is a hillside paddock, accessed by a ridge track with grassy south facing slopes that fan out towards a lower edge of native bush. There is a prominent Pohutakawa tree that marks the sites eastern boundary, and adds to the sites relaxed coastal feel. The site has panoramic views of Whitford, the Maungamaungaroa Valley and out towards Auckland City.

Margaret and Murray required a large home that provided the maximum amount of accommodation for their family. They needed plenty of living areas that allowed for the spatial dynamic of different ages of children and adults. They also wanted a large outdoor entertaining space (including a swimming pool) that was easy to use, and made the most of the views. The cladding had to be durable and easily maintained, and most importantly the house had to be affordable.





DESIGN RESPONSE

The budget provided a rigorous discipline to the design response; we examined and simplified those elements that form a large modern family house. To avoid extensive earth works the garage was located closest to the existing track. The bedroom and service facilities were zoned to the north along the spine of the house connecting the living areas with an enclosed 'veranda' and opening on to a central deck.

The deck area is flanked east and west with the two living areas, which are visually connected, yet acoustically separated. The elevated pool is central to the house lay out; totally private and secure yet open from all aspects of the house and the view.

The sites location was interesting, being between suburbia and the rural belt. This periphery context is expressed by the cowshed vernacular with an industrial functionality. The long access driveway skirting around the paddock contours, terminating at the houses level platform, like the last stop on a country railway line. The horizontal 'spread' of the site is expressed in the building's form, the curved walls create confident 'ends' to the house.

The house's structure is essentially a pole platform, so to avoid the building floating in space, the wall cladding was continued to the ground, 'anchoring' the house to the site. This also created a huge sub-floor space for storage. Zincalume® corrugated sheet was chosen as the main roof & wall cladding for its rigidity, self cleaning nature and its aesthetic qualities.

With the cladding around ground level being subject to boisterous kids as well as the occasional grazing stock the rigidity of the corrugated sheet is important. The wall cladding was fixed vertically because of its flexing capabilities, lining the curved walls comfortably.

Flashings were detailed in a robust 'agricultural' fashion for two reasons. Firstly to suggest a connection to the rural buildings across the valley, and secondly to provide effective weathering to a building that has no eaves. The clean roof forms and minimal eave treatment in an exposed environment allows for natural rainwater washing of areas that normally accumulate atmospheric pollutants.

The finished house has become an enjoyable home for the Bond family, encouraging the out door living that is part of the Auckland lifestyle.

Mark Gray Architect

Mark Gray started his practice in 1993, and initially specialised in residential work in his 'native' Howick, Auckland. Often undertaking different projects with repeat clients, the range of work has grown to include holiday homes, multi-unit developments, light commercial and sports facilities and various educational buildings.

“The practice philosophy is based around listening to the client. There is always something unique to the client and something unique about the site, the challenge is to express that in an innovative and practical way.”

From 1996 his practice has made a big commitment to cad software, enabling all staff members to model projects from modest alterations to multistory apartments. Computer modeling enhances communication between the client and the design team, allowing exploration of new and different ideas.

The practice recently opened a second office, in Queenstown, which Mark manages, while Jeff Stuart runs the Auckland office. “Because our work is all around New Zealand, opening a second office allows us to explore regional differences in design and building technologies.”

Client: Murray & Margaret Bond Howick.

Architect:
Mark Gray Architect
Telephone north: 09 5347 478.
Telephone south: 03 441 1014
www.markgray.co.nz

Consultant Engineer:
Tom Donald
MSC Consulting Group Ltd.
Ph 09 486 2210
www.msc.co.nz

Main Contractor:
Nigel Greaves
Suburban Solutions Ltd.
021 770 008

Roof and Cladding Manufacturer:
Metalcraft Industries Ltd.
Telephone: 09 273 2880

KEEPING OUR KIDS SAFE

The recent New Zealand documentary, “Are you ready”, brought some sobering reality to the potential effects a Natural disaster could have on our nation. The question was not “if” we have a disaster but more realistically “when” we have one.

In 1998 the New Zealand Ministry of Education undertook a Nationwide structural survey of all school buildings. The directive from the Ministry was for education boards to plan to rectify any building defects, which failed to meet their requirements, in each schools 10 year property plan.

Two schools featured here have taken the steps required. In both cases the cost effective way to meet the Ministry criteria was to replace the existing heavy tiled roofs with lightweight roofing.

Looking beyond our schools at the effect of natural phenomenon on our homes, should we ask if there is a lesson to learned?

Extracts from the Ministry of education directive.

3.2 Heavy Roofs

Issue

As long as they are adequately connected to their foundations and do not contain a heavy roof or ceiling, school buildings are expected to perform adequately during a severe earthquake almost irrespective of configuration. The major reason for this is the lack of seismic mass at roof level generating significant lateral forces. This is not the case if the building has a heavy tile roof. All buildings with heavy tile roofs have been identified.

Recommended Action

All heavy tiled roofs are required to be removed and replaced with a lightweight roof. The only exception to this is if the school wants to retain the tile roof and this would need to be agreed to by the District Property Manager. In the latter circumstances, a detailed analysis of the building would be required and strengthening provided, as necessary, to meet the full requirements of NZS 1170.5 including the 1.3 return period factor.

The costs that were allowed in the 1998 National Survey were for replacement of the heavy tiles with corrugated iron. This also included some allowance for replacement of damaged roof framing members and bracing should this have occurred. At the time that the heavy tile roof is removed, the connectivity between the top of the walls and the roof and ceiling members should be checked by a structural engineer to ensure that the load transfer between the ceiling or roof diaphragm and the walls can take place. While on site, the engineer should also visually check the roof bracing and the condition of the roof framing.

National Structural Survey

Because many school buildings were built before modern structural design standards, the Ministry commissioned a nation wide structural survey of all school buildings in 1998. The purpose of the survey was to identify specific structural defects that could potentially cause death or serious injury during wind or earthquake or every day loadings. As well as buildings, site structures such as retaining walls were also checked.

For the full report visit the

The Southland Girls High School with it’s new Gerard roof now has a staggering 315 tonnes less weight over students heads.

Trevor Keeste from Permacoat Roofing Invercargill, won the roofing tender for the project which started in early January, for safety reasons, to ensure the bulk of the work would be completed before the beginning of the school term.

“The most challenging part of the work was removing 350 tonnes of old concrete tiles which were breaking as they were removed. The new roof weighs in at just 35 tonnes which is a huge weight saving of 315 over the 7000 square metre roof,” says Trevor.

”The primary reason for making a change to this roof is safety.” says Grant Williams, business development manager for AHI Roofing Ltd. “The Ministry of Education require that some schools with heavyweight roofs be either structurally strengthened or the heavy weight tiles be replaced with a lightweight alternative to meet earthquake regulations.”

Architect John McCulloch says, “Southland Girls High School in Invercargill needed to be structurally upgraded. The refurbishment included the installation of a new roof. The existing concrete tile roof was deemed to be too heavy, under the Ministry of Education building requirements, and a lightweight roofing was specified. Installing a new roof also provided an opportunity for the school to promote a new identity, particularly as it was extending and taking over the neighbouring intermediate school premises. Gerard Tuffcoat satin tiles were chosen for their light weight, their cost effectiveness and character, which is in keeping with the look of the former concrete tile roof. We opted to change the colour of the roof by choosing Wedgwood Blue tiles. The colour is sufficiently different to create an awareness of the new identity. It also enhances the sense of a large campus.”

Before re-

Southland Girls High

“The Tweedsmuir Junior High next door was closed at the end of last year and Southland Girls was expanded to take in years seven and eight,” says Yvonne Brownie, Principal of Southland Girls.

The decision was made to have Southland Girls combine the now empty buildings and the school.

Horowhenua College was re-roofed with Gerard tile in Christmas 2001 by Wellington Lightweight Roofing.

[1] *http://www.minedu.govt.nz/index.cfm?layout=document&documentid=8544&indexid=9383&indexparentid=9382*

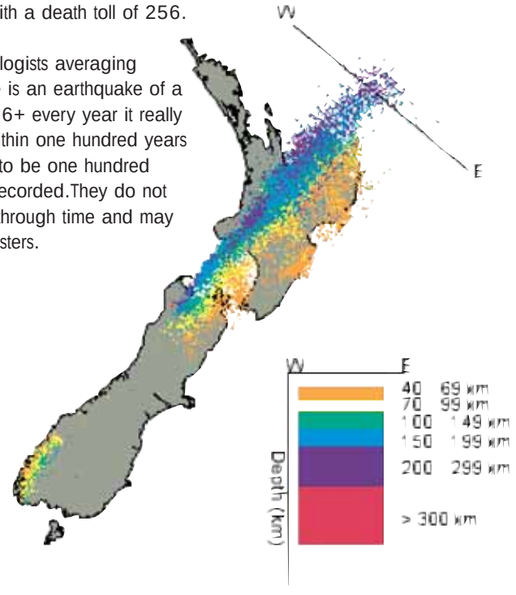
Earthquake damage North Ridge, California, 1994 registered 6.7. The heavy tile roof (top) collapsed while the lightweight Gerard roof (below) in the same street survived.

Earthquakes

New Zealand lies on the boundary between the Pacific and Australian tectonic plates which basically follow the country's mountainous areas, diagonally from east to west. The eastern areas of this divide generally experience shallower earthquakes than the western areas as indicated in figure 1. The Institute of Geological & Nuclear Sciences locates about 14000 earthquakes in New Zealand each year however most are too small to be felt. It is estimated that between 100 and 200 earthquakes are significant enough to be felt.

Most earthquakes which cause damage are of a magnitude of 6+ and we generally experience one of these per year. A magnitude of 7 occurs about every 10 years and a magnitude of 8 about once a century. The largest known earthquake in New Zealand was the Wairarapa earthquake in 1855 which was an estimated magnitude of 8.2. The biggest New Zealand earthquake since instrumental recording began was the 1931 magnitude 7.8 Hawke's Bay earthquake with a death toll of 256.

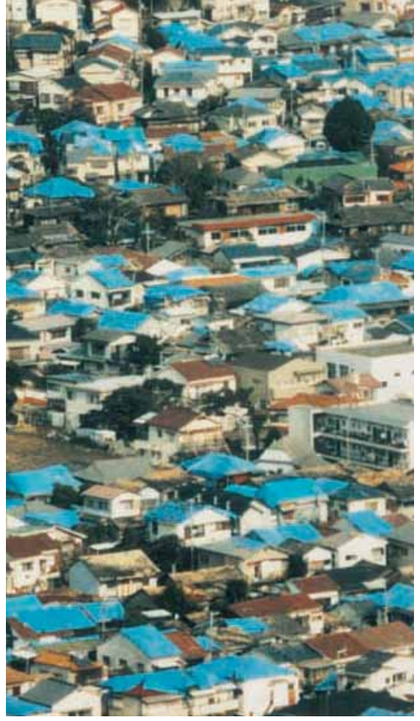
When seismologists averaging suggests there is an earthquake of a magnitude of 6+ every year it really means that within one hundred years there is likely to be one hundred earthquakes recorded.They do not occur evenly through time and may happen in clusters.



Some historical New Zealand earthquakes

Earthquake	Year	Mag.
Wairarapa	1855	8·8.2
Hope Fault	1888	7·7.3
Buller	1929	7.8
Napier	1931	7.8
Inangahua	1968	7.1
Edgecumbe	1987	6.1
Weber	1990	6.1
Arthur's Pass	1994	6.7

New Zealand is fortunate that whilst experiencing earthquakes in a similar Richter scale range to other countries we have not suffered similar loss of life. Much of this comes down to three factors. The standards of our buildings and building code, the density of our population and for want of a better expression, "luck". Most agree it is not an area for complacency as we continue to hear it is not "if" it happens but "when".



Centre: Earthquake damage North Ridge, california. 1994
Below: a mud slide engulfs this home demolishing walls. The Gerard roof retained it's integrity.

1995 Earthquake damage, Kobe, Japan. 5400 people lost their lives. The blue roofs are those with tarpaulins providing shelter to damaged roofs.

Wind and rain

The "wind uplift" performance of roofing products is becoming an increasingly important factor in New Zealand as more and more people build on sites that take full advantage of our undulating topography and coastal environment.

All Gerard roofs feature interlocking tiles secured in place with a unique horizontal fastening system. The result is a very strong roof with superior wind resistance, which allows specification in very high wind zones.

It has taken the force of tornadoes and cyclones to demonstrate the significant benefits offered by Gerard Roofs horizontal fastening system. High winds blowing over a roof cause a difference in air pressure between the inside and outside of the roof. The stronger the wind, the higher the pressure differential. This results in "wind uplift" perpendicular to the roof. This "wind uplift" is the primary cause of failure in roofs with vertical fastenings, where the fastener can be simply pulled out. Both Concrete tiles and Asphalt shingles are fitted with vertical fastenings. With the horizontal fastening method used with Gerard Roofs the fasteners must shear off for the roof to fail, a less likely proposition, especially considering there are eight fasteners holding down each tile.

Testing was carried out in Florida, an area which has strict regulations because of regular hurricanes. The roof panels were fixed, ie horizontally fastened to wooden battens which were fastened to the plywood "underdeck". The air stream was provided by the propeller of a 1500kw aircraft engine wind generator. Water spray was added to the airstream upwind of the eave at a rate equal to 200mm of rain per hour. The roofing panels and the "underdeck" were checked for any uplift or leakage. The wind speeds were steadily increased to 160m/h with no leakage occurring on the Gerard roof, even after prolonged exposure. The roof remained firm and no uplift was observed.

Top: Wind uplift damage to concrete tile roof. Kapiti Coast, NZ.
Below: A Hurricane in Jamaica damaged many roofs. Despite severe uplift the red Gerard roof remained intact.

A ROOM FOR MUSIC

Northcote Intermediate School needed some urgent repairs to the school hall and a new music room. The school Board seized this opportunity to undertake a radical appraisal of all support facilities including administration, amenities and the widely scattered teaching resource areas.

Copeland Associates were appointed to carry out a strategic design study. This analysed the current needs and identified potential solutions for centralising and upgrading these key support functions. From this initial involvement emerged a proposal for a staged project that will transform the support functions of the school over the next few years. The first stage came into use in August 2004. As well as a reconfigured school hall, a new music room and other smaller teaching spaces, it provides extensive computer teaching areas including an Internet café extension for the school library. The site to the south of the existing school hall was sunless and windy, and had been occupied by storage sheds and the old boiler house. A significant part of the first stage project has been the removal of obsolete outbuildings, stripping out of redundant services and the installation of an energy efficient gas-fired heating plant to replace the old coal-fired boiler.

The faceted planes of the new building wrap around the original structure of the hall, creating interesting internal spaces well lit from high-level windows. The angular forms help to diffuse the winds in this part of the school, and contribute to the acoustic design of the music room. The prominent corner windows have been designed to capture sunlight from above the shadow line of the existing hall structure.

Copeland Associates Architects

From a background of overseas experience, Copeland Associates was set up in 1997 by Barry Copeland. These architects specialise in complex projects for both private and public clients. Much of their work is in the fields of education, sports and health although they are currently taking on an increasing number of residential projects.

The Copeland team focuses at the starting point of each project on understanding the needs of the client - the long-term aims as well as immediate functional requirements. Those needs are kept at the forefront of thinking throughout the project." Helping clients succeed is a fundamental component of inspiring architecture" says Barry Copeland.

Many projects in the health and education sectors have challenging budgets. Exploiting modern materials and technologies to gain economic benefits is therefore essential. The way in which materials go together and contribute to efficiencies in construction as well as performance is at least as important as their individual characteristics. Profiled steel sheeting is a favourite material and is frequently used by the practice, not just for economics but because it often makes sound practical sense and has good looks.

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Telephone: 09 021 878 388

Cladding and Roofing Manufacturer
Brownbuilt Metal Folding Ltd
Telephone: 09 274 6487

Photography: Cherie Lamb

SCOPE NEWS AND VIEWS

The NZMRM welcomes a new member.

E.R. Freeman Ltd was established in the late 1960s by Eric Freeman to produce galvanized long run iron and hot water cylinders. As Roofing products became the primary focus of the business hot water cylinder manufacturing was terminated mid 1990s.

Currently in a new factory in Nelson, Freeman Roofing produce four roofing profiles, three spouting profiles and a metal fascia, roll formed ridging and the usual flashing accessories.

Roofline Marlborough, located in Blenheim,is a wholly owned subsidiary Company and they have their own rollformers and folder in a factory which is currently being extended to cater for the increase in volume in the Marlborough area.

Both companies service a geographical area extending from Haast through to south of Kaikoura, with the occasional drop of product into Canterbury.

For further information contact
John Archer
Telephone: 08 837 3362.

AHI appoint a new Specifier Support Manager.

AHI Roofing is pleased to announce the appointment of Saint Whatuira to the new Auckland based role of Specifier Support Manager.

This new role has been developed to support AHI Roofing's Business Development initiatives and will focus on the servicing and support of our Architectural and Specifier customer base as well as the development of incremental Group Builder and project opportunities.

Saint will redeploy from his current role of AHI Roofing's Regional Support Manager - Central North Island effective 01 July 2005.

Roof Manufacturers Carrousel 12 Decoiler.

Tauranga's Roof Manufacturers Ltd have recently installed a new decoiler designed and manufactured by Tauranga Die & Toolmakers, says Gordon Taylor.

There are many functional benefits offered by this carrousel 12 decoiler unit which was being developed to improve factory efficiencies. Following the success of the first machine in time saved, and the reduction in coil damage, the company has now purchased a second machine.

For further information contact
Peter Muegenberg
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THINKING OUTSIDE OF THE SQUARE

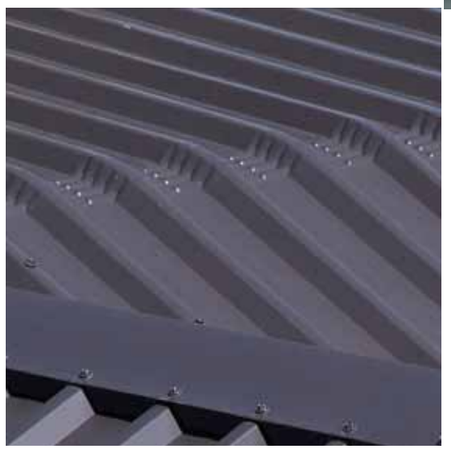
Every design project has it's own set of problems and peremetres.
On the Kate Sheppard Retirement Village, architect, Tim Goodwin found a unique and economical solution which met the client brief and the Town Planning requirements.

Kate Sheppard Retirement Village

Kate Sheppard Retirement Village is a comprehensive development for the elderly comprising rest home and hospital care facilities, serviced apartments, studio units and independent cottages together with support and administrative facilities. As part of the ongoing development of the village a new stand alone facility was required within the existing village to accommodate approximately 100 residents, with 40 rest home beds and the balance in hospital accommodation.

The brief required the new facilities needed to be contained in a single building with central administration, kitchen and laundry areas with separate rest home and hospital facilities related to the central core. Residents rooms were to be generously sized with full ensuites to each room.

The site boarders a significant natural wetland which has been recently upgraded by Christchurch City Council to provide an attractive local amenity with natural waterways, ponds, walkways and rest areas. There are expansive views to the north and west beyond the wetland.



To take advantage of the outlook the building was developed with a single storey rest home to the west and a two storey hospital to the east with the central core facilities in between.

Due to the scale of the building and generous bedroom and ensuite accommodation the various wings of the building were required to be over 13.40m wide. This created a number of challenges with the design of the building, particularly the roof. Town planning requirements placed restrictions on the maximum height permitted and also required the scale of the building to be residential in nature. These restrictions meant we could not build a conventional pitched roof system so a bit of lateral thinking was required.

The obvious answer was to pitch the roof up from either side of building and incorporate a flat portion of roof in the centre. Traditionally these flat roof areas would be covered with membrane roofing systems over plywood but with the amount of flat roof required (over 6.0m wide) the cost of this system would be prohibitive.

Our solution was to construct the whole of the roof in longrun trapezoidal Colorsteel® roofing by pitching the roof at 25 degrees from either side, crimp curving the roofing sheets at the change in pitch and finishing with 4 degree low pitch roofing to the ridge line. This enabled the roof to be constructed using standard nailplate trusses, timber purlins, and continuous longrun roofing.

Tim Goodwin Architecture Limited

Tim Goodwin established Tim Goodwin Architecture in 1995. The company undertakes building projects throughout New Zealand, across a wide variety of building types including residential, commercial, industrial, institutional and civic buildings. Tim Goodwin Architecture has vast experience in the design of specialist facilities for aged care, including retirement villages, rest homes, hospitals and facilities for dementia care.

We work closely with our clients to design and develop buildings that expressly meet their needs and satisfy their ongoing requirements. We place great importance on designing buildings that are not only attractive and cost effective but also highly functional and appropriate to their site and context.

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Kate Sheppard Retirement Village

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