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SCOPE

NZ METAL ROOFING MANUFACTURERS INC.

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NOVEMBER 2020

Scope is the official publication of
The NZ Metal Roofing Manufacturers Inc.
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Published by ICG Limited.
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Below is a brief introduction to the 2020 executive of The Metal Roofing Manufacturers Inc. It is intended that Scope be representative of the Metal Roofing and Cladding Industry in both commercial and residential sectors. Your submission of material you consider is of interest is welcomed be it design, research, manufacture or construction.

PROJECTS

ARTICLES

LOCAL LEGEND EMBEDDED IN DESIGN OF NEW PLYMOUTH'S AIRPORT TERMINAL

Jo Wong

Some key design principles were established by a collective Beca design team, liaising with the local hapu to ensure the iwi's story and history was reflected in the New Plymouth Airport terminal. Located 11km from the city centre, the building is located on a historic coastal site where Puketapu Hapu has been based for centuries until the land was taken under the Public Works Act in the 1960s.

The project's genesis began back in 2013 when altering an existing terminal, built in the 1960's, was under consideration but 2016 marked a turning point when a workshop was held that included Puketapu and a current brief was established for a modern, regional gateway to Taranaki to be developed.

The new $28.7 million facility reflects a distinctive cultural narrative to match other contemporary structures in the region – notably the iconic Len Lye Centre with its curtain-like stainless steel façade or the Te Rewa Rewa bridge at Fitzroy with its wave-like composition. The new terminal is a welcome addition to an unmatched little corner of Aotearoa, embracing the area's rich history.

"New Plymouth Airport presented an exciting opportunity to co-design with Puketapu Hapu to create an iconic asset that was uniquely and distinctly Taranaki", says Beca's project lead architect, Campbell Craig.

"The partnership between the iwi designers and architects and the willing investment and sense of ownership from all involved exceeded expectations. The collaborative design process required hard work, dedication and all-day workshops without hierarchy or boundaries. Matthew Low from Beca who has done an enormous amount of work on this project was the Project Manager for the overall project."

The design team considered all the functional requirements of the building and how it would adapt to the future needs of travellers. From a capacity of 50,000 passengers per year the new airport is designed to now cater for 450,000 per year with provision for expansion to happen when numbers rise.

Project Director for the New Plymouth Airport Redevelopment, Gaye Batty says from the outset it was important the building incorporated a sense of welcoming with curves at the passenger departure and arrival gates, symbolising the embrace of passengers and visitors. The roof form became integrated into the fabric and structure of the building, stepping around these curves with a design reflecting the Te Atiawa legend of a whatu kura, or celestial being called Tamarau-te-heketanga-a-rangi who as legend would have it, came down from the heavens when he saw a woman called Rongoueroa bathing in the local Waiongana river.

This theme of the sky meeting the earth is central to Beca's creation for a sweeping high-low dual roof structure where one side appears to descend from a landscaped earth mound while the other sweeps down from the heavens from where the planes and passengers descend.

The hapu legend was the perfect story to be implemented in how the design team approached the design – people arriving at a welcoming, physical meeting point.

Many hours were spent deliberating over the roof and how it was paramount that no penetrations could go through it. Together with Beca Services engineers this was achieved by placing all service terminations into four purpose-built service rooms located at the junction between the higher and lower roofs. All these rooms had floor to ceiling louvres allowing all the services to terminate in these rooms.

The proximity to the coast and strong winds meant certainty was required that a clip fix system would work in this location. Independent reports were undertaken to ensure the roof would withstand the forces present and Metalcraft's Metdek855 system in 0.9mm aluminium was able to achieve this. Metalcrafts Metdek 855 dedicated rollformer rolled the 40m sheets onsite as the sheets were too long for road transportation.

The two roofs, made up of sheets up to 40m in length provided 285mm wide pans giving a strong pattern of clean lines for an important 5th elevation of the building when viewed from planes flying above, the 4,600m2 roof eventually having only one small 100mm terminal vent penetrating the roof with no mechanical fixings present.

The two legendary entities – The Lifting of the Earth and Descending of the sky - are expressed in the two roof forms. One roof form appears to step up from the landscaped mound (Rongo-ue-roa) to meet the second descending roof form (Tamarau), their symbolic and literal joining materialised along the full length of the public concourse by the intersection

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Mark Scowen

The terminal has been designed with a layout to create welcoming “wayfinding” outcomes.


Mark Scowen

(Te Hiringa). The chevron Kaokao is subtly cut into the acoustic blade ceiling, linear lighting, floor tiles, custom Decortech panels and three pairs of tawa pillars running down into the centre providing form and function to support the roof. These columns are laminated and cigar-shaped.

The terminal has been designed with a layout to create welcoming “wayfinding” outcomes. Passengers can easily see the next destination in their terminal journey with the open plan layout to create calm and ease throughout their time in the terminal. Congestion points were a hot topic – a fine balance between pinch points on the public spaces against over-compensating and having a space that was too large.

Mt Taranaki is seen from inside the terminal satisfying the visual connection of the brief: the location, orientation and alignment of the public concourse and the overall terminal is informed by the original foot track leading from the mountain to the mouth of the nearby Waiongana river – so passengers enter and walk down the concourse – walking the same path as Te Atiawa ancestors walked many years before.

Close attention was given to paint systems, neutral colours chosen for the walls and ceiling and these were reviewed very thoroughly during construction. Much consideration was given to the building orientation to maximise passive solar gain and reduce energy loss. Enhanced building fabric elements such as insulation, low-e glass and an internal living wall increased indoor air quality and energy and water metering along with various technological innovations with the HVAC systems and lighting fixtures and BMS controls were incorporated resulting in lower energy costs.

The faceted glazing is designed as an acoustic barrier from aircraft noise and limits thermal heat transfer as an energy saving feature: the glass is tinted blue airside and a slightly browner tone landside. The wide eaves also shelter the building from direct penetrating sunlight.

“The result is an absolutely clean roof line which will have a very high resistance to the elements”, says Gaye Batty.

Campbell said a project charter was established for the main parties to the contract (Embracing our past – Building our future) involving main contractor Clelands Construction, Puketapu Hapu, New Plymouth Airport, Beca and Rider Levett Bucknall providing a single vision for the way everybody would work together on this project.

“Clelands Construction were excellent to work with and the quality of work and good communication between the key parties to the contract continued for the duration of the project.”

“This building is like no other and could not be meaningfully placed anywhere else in the world. It is iconic in form with two intersecting stepping volumes and faceted curved glazing. It is unique in its storytelling and exclusive contemporary

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Andrea Bozzi

toi tangata. It is distinctly Taranaki, rich in aesthetic, storytelling, meaning, cultural heritage and collaboration."

Beca designed the New Plymouth airport terminal as a collective team of many and this team approach has contributed to the success of the project. In some cases, someone needed to 'make the call' when discussion had gone around in circles for too long, but for the most part the team worked well together and aligned to the vision presented to them.

ARCHITECT

Beca has just celebrated its 100-year anniversary, with the architecture section of the business being over 35 years old. Twenty-five team members are spread across Auckland, Tauranga and Christchurch. The practice works across a wide range of market typologies including commercial, retail, industrial, process, education, health, tourism, civic and infrastructure. Beca takes pride in the buildings and spaces it helps to create and the numerous industry design awards are recognition that those results achieve not only what the client is looking to achieve but Beca's successful integration of the build form into the environment with care and consideration.

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Roofer:
Farnsworth Roofing
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www.farnsworthroofing.co.nz

Roofing Manufacturer:
Metalcraft Roofing
Telephone: 06 755 2113
www.metalcraftgroup.co.nz
Profile: Metdek 855
Colorcote® Alumigard X
Colour: COLORSTEEL® Grey Friars and Titania

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Photographers credit Andrea Bozzi

CHEATLEY HOUSE IN WANGANUI

Symmetry and bold looks were key elements for the Cheatleys when it came to the design and execution of their Wanganui home.

Both those elements were captured by using tray cladding – Steelform Roofing Group's Steelform TCS using COLORSTEEL® substrate in matt Tempest colour – with horizontal cedar cladding as a feature and counterpoint to the vertical black tray cladding.

Over the years, Dayle and Cath Cheatley had seen vertical tray cladding used to striking effect on various homes and it was always going to be a key design element along with a 3.5-degree monopitch roof, in the same Tempest colour but in a Styleline profile, also from Steelform Roofing Group.

They also wanted a home with open plan living that maximised its elevated rural setting to capture the sun and views of Mt Ruapehu, Mt Taranaki and the Ruahine Ranges.

They designed the floorplan themselves based on houses that they had owned before.

As Dayle says, "We took a little bit of each one and put what we liked together in this home. It is very much open plan living, all facing north looking at Mt Ruapehu.

"We wanted to maximise the elevation we have and use of the sun. It is a very warm house in winter when the sun is lower. The sun streams into the master bedroom, kitchen and lounge all day. The kitchen, scullery, dining and front entrance have polished concrete floors – great for retaining that heat in winter – and the remainder of the home is carpet.

Sliding doors from the living area open up to a large covered deck for entertaining. The guest bedrooms and bathroom are in a separate part of the house to the master bedroom, giving privacy.

The Cheatleys contracted local builder and good friend Tom Francis and took advice from him about the types of tray cladding that would fulfil their vision.

Dayle says, "Because we also wanted to incorporate cedar, the steel tray section cladding and cedar had to work with each other. Tom came to us with some design options of steel cladding and, being locally produced by Steelform Roofing Group, the TCS fit the brief perfectly.

"The colour choice for us was always going to be black cladding – my wife loves the look of it – and we just like the way it looks with the cedar."

Tom says, "I took the aspects of the tray cladding sections that are currently used and modified their appearance and their set-out to mimic more of a board and batten look, and one that was more symmetrical than examples we had been studying.

"My main focus was around the joinery and how the cladding and the joinery could meld together to be symmetrical.

"I folded up quite a few different prototypes and developed the sizing and how they would fix to the exterior. I finally ended up with a 400mm tray separated by a 45x45 treated timber batten; the upturn on the tray was capped over the batten by gluing on a U-shaped COLORSTEEL® cap. He adds, "I modified the floor plan and the joinery openings to suit the width of the tray and batten perfectly; every window was a multiple of a tray and every space between units was a multiple, which had to be specified to the frame manufacturers and

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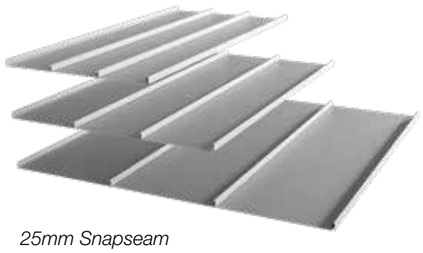
in turn had to be carried out and made to within a few mm to ensure the system worked out onsite as it did on paper. This was my quest to achieve perfect symmetry and ensure there were no uneven trays." And this is where Steelformers came in, with its Schlebach Quadro+ profiling machine, which can run the five different profiles in the Steelform Quadro range, including the Steelform TCS that the Cheatleys wanted for their home.

The profiling machine is transportable so can be used on site and has an exchangeable cassette system that allows very short retooling times for different profiles. When profiling from a coil, the desired width, length and the item count are entered first via a touch panel. When the programmed length is reached, the crosscut shear executes an automatic cut.

Tom and his team installed the cladding themselves. He says, "Ever since my apprentice days I have had a fascination and a love for working with metal cladding.

The profiling machine is transportable so it can be used on site, and has an exchangeable cassette system that allows fast retooling for different profiles.

TCS Cladding



25mm Snapseam

25mm Nailstrip Snaplock

45mm Snapseam

25mm Double Standing Seam

"The opportunity does not arise often so I really enjoyed this project. I like the skillset required to work with metal claddings; you have limited tools, and your skills determine the final finish and quality of the installation. The buck stops with you. If you do a poor job, there are no plasterers or painters to wave their magic wand. So the applied method and the attention to detail really appeal to me."

Tom adds, "We love the Tempest colour; the matt finish really appeals to installers and homeowners alike. We had solid timber soffits of clear pine. We used 150 PFC extensions to the top chord of the truss to form a covered deck area.

"Elements of cedar were used to complement the Tempest COLORSTEEL®. We were careful where we applied the cedar. We chose to locate it in the positions it was most likely to perform with the least minimal amount of maintenance required – as this is a COLORSTEEL® house, that's the beauty of using this product: low maintenance.

"So that ruled out west-facing and exposed north-facing. We chose the front door alcove and garage door wall on the south side of the house – no direct sunlight – and the undercover deck area facing north – limited sunlight but with biggest impact visually.

All the cladding was installed on an Eco Ply Barrier Cavity, on 140x45 framed walls with R3.6 insulation. In the middle of winter, after it was closed in during the construction process and with no heat source, the temperature never dipped below 18.5 degrees Celsius inside.

Dayle says of the build, "Working with Tom was very easy. We wanted someone young and full of energy – we got that – along with attention to detail and immense pride in his workmanship. We also had a group of young local tradies working alongside Tom and this was important to us."

Before the home was started, a large external shed was erected and this served as a base for the builders and tradesmen during construction. It has

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The floor plan and the joinery openings were modified to suit the width of the tray and batten perfectly; every window was a multiple of a tray and every space between units was a multiple

the same Steelform TCS cladding so it gave Tom and his crew a chance to work with the material before they started on the home.

Inside, the home has a modern look with a neutral colour scheme and a mix of polished concrete and carpeted floors.

A centrepiece of the home is a 5m-long black steel hearth, which serves as a platform for the woodburner and as a bench seat.

The folded, single piece steel hearth was designed by the Cheatleys' friend Clint Black, and took eight people to lift it in.

Dayle says, "With the fireplace being elevated, the heat flows through the open plan living very well and heats this big space. We wanted to it to be a feature and I think we got that. It is also a big bench seat, fantastic for afternoon wine in the sun – as my wife says and does!"

Quadro TCS Cladding

Steelform TCS Cladding is the latest cladding product by Steelform Roofing Group. The 26mm U-panel cladding system is available with standard pan widths of 250mm, 330mm and 470mm, but can be customisable, allowing the user to alter the widths to suit their design requirements. The added ability to have the product formed on site is a big advantage for larger scale projects. The cap provides added boldness while concealing the fixing system, creating a clean, modern exterior.

Available in: 0.55mm (G300) BMT ZINCALUME®, GALVSTEEL®, COLORSTEEL® ENDURA® and MAXX®

Fixing method: Timber batten (typically 45x45mm H3.1) fixed over 20mm horizontal ventilated cavity batten. Spacings of the battens are dictated by the cladding's pan width.

Each TCS Cladding panel is screw-fixed (using a stainless steel countersunk screw, at 400mm centres) through each 26mm upstand into the timber batten.

The custom made cap flashing is then fitted over the top of the batten and pop riveted (at 400mm centres) to the sheet upstands.

For additional securing of the pan, Steelformers recommends using a bead of silicone along each batten.

Building and cladding Manufacturer:
Steelform Roofing Group Taranaki
Cladding: Steelform TCS in 'Tempest'
Roofing: Steelform Styleline in 'Tempest'
Telephone: 06 344 5142
www.steelformers.co.nz

Builder and cladding installer:
Tom Francis Building, Wanganui
Telephone: 027 305 2379
www.tomfrancisbuilding.com

Roofing installer:
Gullery Roofing, Wanganui
Telephone: 06 347 9396
www.gulleryroofing.co.nz

SOUTH PACIFIC ARCHITECTURE CAPTURES THE QUALITIES OF THE TUVALU CULTURE

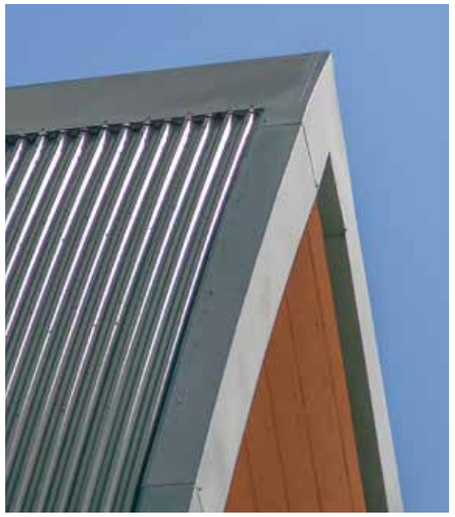
The brief to Architect Megan Rule, South Pacific Architecture, was to design a place of worship that captured the qualities of the community and South Pacific culture of the Tuvalu Christian community.

The traditional churches in the Tuvalu Islands are designed to cope with a hot humid climate which featured shaded refuge, open light transparent sides, and heavy colonial arched styles that allow natural ventilation. It was within this context and these influences the notion of separate roof and walls, with many junctions, gave way to a simple continuous curved roof that falls from the ridge line to almost touch the ground.

The Tuvalu Christian community was established in West Auckland in 1992 with a growing congregation of family with strong participation from children and youth. The church captures the qualities of the community with a sense of welcome that utilizes building methods, materials, including woven mats and floral steamers to enhance the sense of belonging. Young children often sit on mats at the front of the congregation or participate in child / parent services that precede the main service. The church's objective is to enhance the relationship between the family and church in a familiar and comfortable environment. This co-operation was evident as many Church members provided assistance and skills with carpentry, paint finishing and scaffold deinstallation during the build.

The new church and joining annex building were to complement the hall that had served as an interim church since 2001. The church auditorium was to operate independently for Sundays with weddings, family functions and sermons. The existing hall was situated on the southern half of a relatively flat, double site with partially sealed and graveled car parking over the remainder of site.

The generous height control on the site's industrial zone allowed the church to evolve, from the more typical industrial box, into a tall softly curved form



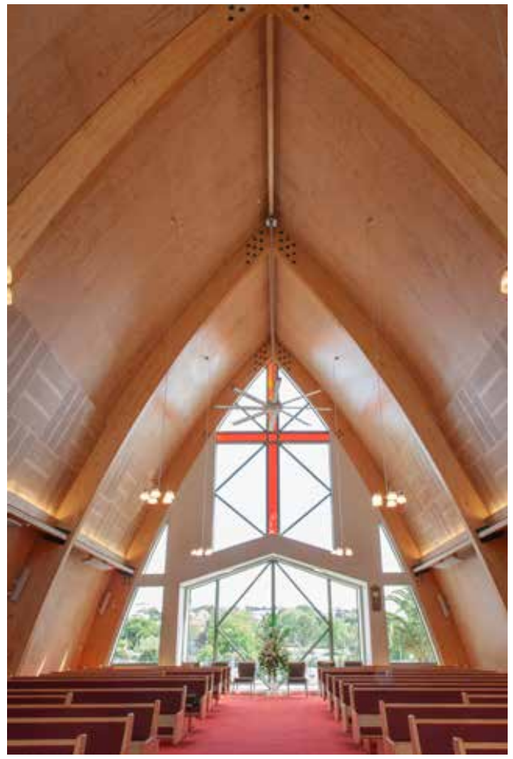
that provokes dialogue with its utilitarian context, offering an outreach beacon amongst a wider urban fabric.

An initial design compliance challenge for parking arose and was resolved by eliminating a basement car park, by identifying convenient access to public transport and shared parking. This significantly saved building costs and resource use.

The building is reviewed against petal performance imperatives. Key sustainable features include:

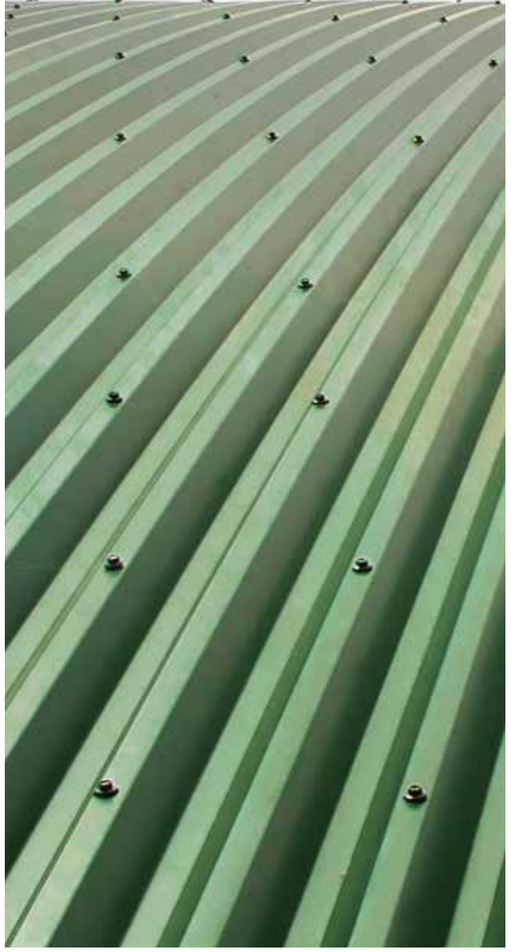
- Brownfield site regeneration with walkable proximity to public transport reducing car parking
- Local sourced timber for the structure, cladding and finishing materials
- Efficient recyclable modular, off site prefabricated design for fast construction and minimal waste
- Building components are salvaged and adapted, affordable and enduring

The exposed, curved timber portals, provide ambiance and a decorative reflection of culture



- Above standard building envelope thermal performance to reduce energy use
- Natural lighting and ventilation
- Unique and personal character for community

The Church is connected to the large open space hall that also provides kitchen facilities, servery, toilets, office and storage and is accessed from a shared entry foyer. The existing hall has remained largely unchanged except to expand the toilet facilities and entry into new building annex connector on the north elevation, making way for new storage and a larger commercial kitchen.



Further fellowship considerations included: accessibility, acoustic performance for speaking, choral music, and live band, natural and artificial lighting, lower and upper level natural cross ventilation during peak summer, heating boost winter services, overhead projection facilities, security systems (fencing, lighting, alarms,) landscaping, and a children's play area.

The metal profile roofing was selected for its capacity to fall in continuous curve, drawing emphasis to both height and a linear shadow line.

An underlying framework has been generated with a series of uniform bays supported by curved glulam portals, taking their cue from the rural and industrial sectors, though intentionally with a display of warmth in clear finishes to timber elements. This is contrasted with the decorative, glazed open ends and bays that allow natural daylight to penetrate into the space while providing a degree of shade and shelter.

With influence from their Pacific oceanic culture the Tuvalu community have selected shades of green to feature in the building's finishes including its joinery, cladding and roof. The linear shadow line is enhanced by using Metalcraft Kāhu® COLORSTEEL® Endura®, in Permanent Green. The

The linear shadow line is enhanced by using Metalcraft Kāhu® with high angular ribs creating deep shadows for a bold visual statement.

Kāhu® profile is specifically designed to maximise impact with high angular ribs creating deep shadow lines for a bold visual statement. Kāhu® also provides greater weather performance with the double capillary overlap giving an extra capillary barrier to the standard capillary groove. The double capillary overlap requires only one rib lap increasing the sheet cover size and reducing installation time making it a cost effective roofing and cladding solution.

The project as a whole offers reconsideration to local grown, demountable, recyclable and renewal resources familiar to the Tuvalu community from their vernacular tradition. Economy, local availability and empathy with its neighbourhood were factored into choosing a metal roofing profile.

South Pacific Architecture

South Pacific Architecture is multi award winning Auckland based practice whose work has spanned adaptive and new residential, cultural, community, waterfronts, mixed use, commercial, education, master planning, heritage and landscape in UK and New Zealand. Work has featured in Italy, UK and NZ exhibitions and in the Phaidon Atlas of 21st Century World Architecture. The practice seeks thoughtful economy and crafted architectural responses that are an enduring contribution, and specific to their environment and locale.

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Roofing Manufacturer:
Metalcraft Roofing
Telephone: 06 755 2113
www.metalcraftgroup.co.nz
Profile: Metalcraft Kāhu®
Colour: COLORSTEEL® Endura® Permanent Green

Builder/Installer:
JPL , T Malcolm Builders

HAWKES BAY REGIONAL SPORTS PARK

While fund raising in Hawkes Bay for a sports park facility was in full swing, a significant development in roof innovation was happening that would ultimately benefit this world class complex: a newly released warm roof system was chosen for the $28m first stage of the new sports hub. Dimond Roofing had developed a solution to the vexed problem of condensation reducing the effectiveness of insulation in commercial, industrial and public buildings.

Coinciding with work starting on the sports facility, located on the Napier-Hastings expressway, Dimond Roofing's Tricore® product, a three-in-one roofing solution, would be the first install of the system in New Zealand. Tricore® provides weather tightness, insulation and noise control, thereby extending the life of the insulated roof.

Fundraising for a centre of sporting excellence began in 2016 to establish what is fast becoming a world class sports and recreation hub at the existing Hawkes Bay Regional Sports Park. The project is the vision of Hawkes Bay's Community Fitness Centre Trust (HBCFC), led by philanthropist Sir Graeme Avery who has had a 45-year involvement with athletics in New Zealand with noted enthusiasm for throwing disciplines. Sir Graeme has been the brains behind the creation of this multi-sports training environment for the people of Hawkes Bay – Napier and Hastings in particular.

Architects for the project, Pacific Environments NZ Ltd were approached in 2016 to develop a Master Plan for the future development of the Hawkes Bay Regional Sports Park, the first stage of which was to be a multi-function sports hall. The brief from the HBCFC and stakeholders outlined multiple sports courts, indoor track and field disciplines, exercise gyms, offices, sports labs, a medical clinic and public café space.

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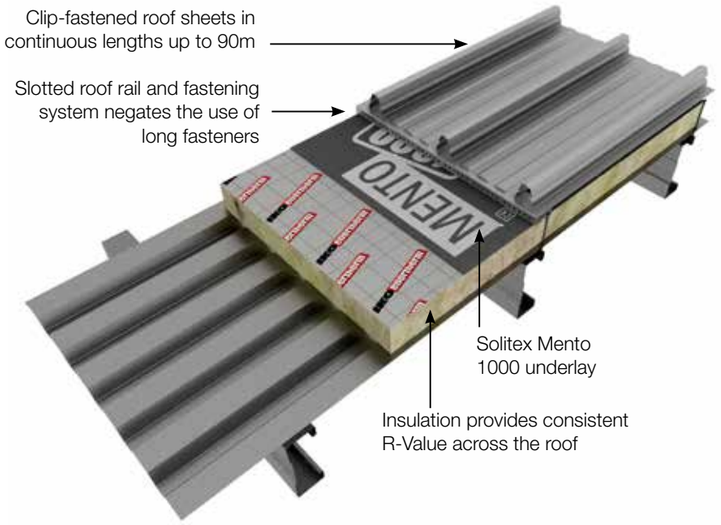

The sports hub will support all age groups across the Hawkes Bay region offering community health and fitness, school sports development and community sport along with sports and health science research. The $28m Stage 1 of the complex was completed in 2019 to be followed by a second tier of works to include a 50m Olympic pool and a learn-to-swim school. Also included will be a hostel to accommodate visiting sports teams and others for training camps and competition locally. The development has conference and meeting rooms with an indoor arena under a Dimond® Tricore® insulated roof system, built to a height to accommodate pole vault training and Olympic-level rock climbing disciplines. This sports hall has an athletics training area, a strength and conditioning centre, training courts for basketball, netball, volleyball and badminton.

The Tricore® roofing system

The choice of Tricore® helped construction teams to meet deadlines and stay within budget .Basically a couple of months was saved across the project, says Project Architect, Tane Pratt. Designed for New Zealand weather conditions, which sometimes can be extreme, the Tricore® system means once the first base layer of MPN 900 goes on, the whole building can be effectively waterproofed immediately so that interior work can continue below. A beneficial time saving on a job of this magnitude. This base layer provides a working platform for additional layers of the system to be installed. Insulation is MFP PIR board followed by Solitex Mento 1000 underlay with a slotted roof rail system providing the vital ventilation to allow moisture to evaporate. The 3000m2 roof area required 36m lengths of concealed clip Dimondek® 630 rolled on site and craned into position on the roof to be clip fixed so there is no penetration through the roof cladding.

A feature of the system is the high-quality roof underlay which sits on top of the insulation with sealed laps that allow transfer of water vapour but prevents condensation moisture from passing through to the insulation below. There is also a galvanised roof rail that is positioned above the insulation board and roof underlay to create an air space immediately below the metal roof sheet.

RANZ member Turfrey, a family business which had its beginning in Waipukurau in 1975, operates now as a group enterprise with branches throughout Hawkes Bay, Waikato, Bay of Plenty, Manawatu and Wellington. With a HQ/support office in Hastings, Turfrey has been a warm roofing specialist across the North Island for a number of years; securing the sports park development contract was important for the company due to the significant social and economic benefits it brings for residents in Turfrey's Hastings home base. In addition to installing the roof and wall cladding of the main complex with Dimond Roofing's Tricore® warm roofing system, the RANZ member also installed some clear sheeting on the walls and provided rainwater services to the complex.

Project Architect for Pacific Environments NZ Ltd, Tane Pratt describes entering the building under a simple canopy stating "Be the best you can be" – the objective of the trust being to dramatically improve community health and wellbeing in addition to driving high performance athletes to compete on the world stage. To the left of the entrance, around the café fenestration is a nod to a key supporter of the sports hall, Pak'n Save.

The eastern elevation at ground level features a concrete base which is imprinted with a "band saw" undulating pattern offset above by timber fins which provide virtual intrigue, morning sun shading and together this represents forestry from Hawkes Bay as an important social and economic link to the community.

Concrete precast wall panels wrap the base of the building to provide durable and low maintenance cladding which is offset by the dark metal cladding above. Along the southern end of the sports hall the exterior wall twists vertically and horizontally to allow the running tracks run off area to extend and also to provide for a indoor rock climbing wall in the future as funds become available.

Says Tane Pratt: "The training requirements for high performance athletes requires training to be conducted as per competition conditions without compromises which this sports hall achieves while allowing for versatility of sports and use of the facility for the wider community.

"The first floor comprises a communal kitchen and seating area promoting the cross pollination between Eastern Institute of Technology students, athletes and tenancy staff and this space overlooks the main entry providing expansive views of the sports hall".

Pacific Environments

Pacific Environments is an environmentally considerate architectural practice supported by a team of over 30 passionate and dedicated architects, designers, and technicians. Over the last 60 years, Pacific Environments has been involved in a diverse range of projects including master planning and urban design, civic and community centres, commercial buildings, retirement villages, large and small-scale residential, community housing education facilities, and sports and recreation projects.

Architect:
Pacific Environments NZ Ltd
Telephone: 09 308 0070
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Roofing Manufacturer:
Dimond Roofing
Profiles: Tricore® and DD630
Telephone: 0800 346663
www.dimond.co.nz

Installer:
Turfrey Group, Hawkes Bay
Telephone: 0800 182 182
Website: www.turfrey.co.nz

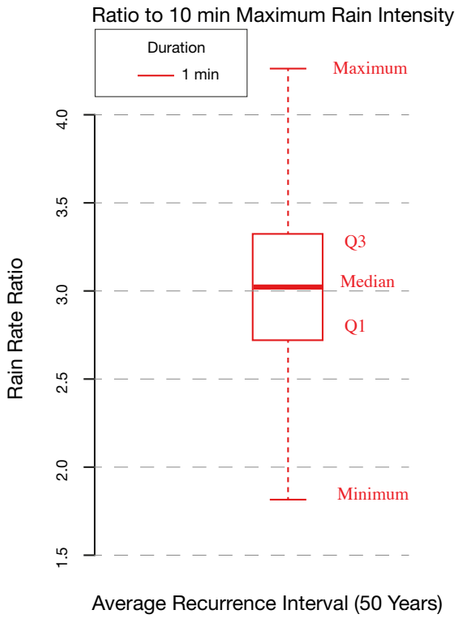
ROOF DRAINAGE

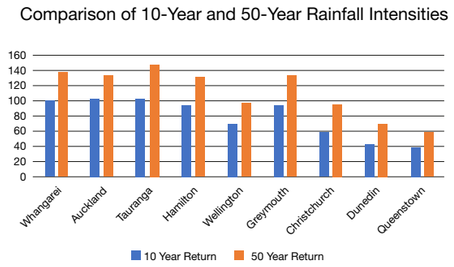
58% of designers canvassed at a recent webinar had experienced troubles with flooding internal gutters. This is not surprising, because gutters designed in accordance with the Acceptable Solution, E1/AS1, are designed to fail.

Limitations of E1/AS1

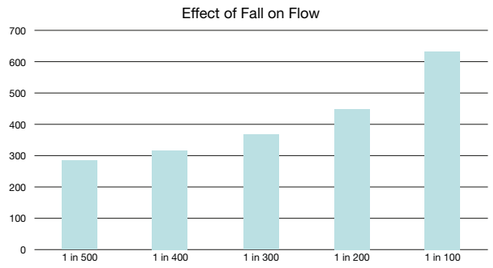
At the core of this problem is the rainfall intensity calculations; the main reasons for the discrepancy are duration periods, and recurrence intervals.

E1/AS1 uses rainfall intensity over a 10-minute period. That may be fine for ground water, but roofs can flood in a very short period. Measured over a 1-minute period, rain intensity may be as much as 4.4 times as much as the 10-minute intensity.

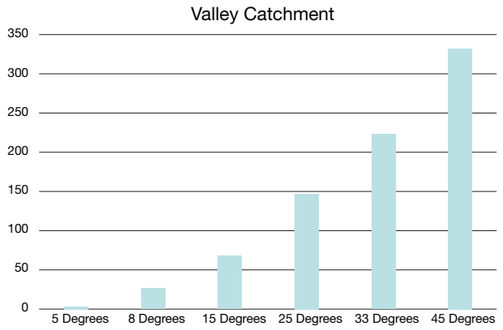




E1 requires buildings to have no more than 2% probability of flooding. That requires the use of 50-year recurrence intervals for rainfall intensity. Yet the rainfall charts in E1/.AS1 are for 10 year return intervals. That is responsible for another 34% variation in rain intensity.



The problems do not end there. By working solely off the roof plan area, E1/AS1 makes no provision for water coming off an adjacent wall, which can have a significant effect on catchment area. It also has no minimum fall for gutters, which in turn can affect water flow by over 100%



The Code Of Practice (COP) provides a simple calculator to avoid the pitfalls in roof, valley, gutter and downpipe drainage capacity.

Code of Practice Roof Drainage Calculator

This has been solved by the inclusion of a roof drainage calculator in the Code of Practice. This uses the formulas in AS/NZS 3500, but makes the calculations for you. It also allows minor variables such as length of run, wetted perimeter, corners, to be factored into the equation. For downpipes, it takes into account the head of water above the outlet, and for valleys, it calculates the capacity of any sized valley at any fall.

The system is user friendly, users just need to enter simple information and the calculator does the rest. First, enter the address and rainfall intensity, then the type of gutter.

Calculating drainage capacities of gutters, downpipes, and valleys involve various factors such as rainfall intensity, roof pitch, gutter size, downpipe size, valley angle, etc. The NZMRM COP provides online calculators to derive the maximum allowable roof area drained under various scenarios.

Project Name
Scope HQ
Site Address
123 Sample Street, Anytown
Note that this site address is used only for convenience if printing calculations to attach to documentation.
*This address is **not** factored into calculations - you must determine intensity from Rainfall Intensity Maps or NIWA's HIRDS tool.*
The address is not recorded or shared with any other parties.

Gutter | Downpipe | Valley — *Show all help*

Rainfall Intensity - I
(10 Min Duration, 50 Year Return Period) 127 mm/hr
Options

Type of Building	Type of Gutter	Overflow along Gutter	Overflow at Downpipe
Commercial	External	No	~~No~~
Residential	Internal	~~Yes~~	Yes

Short-Term Intensity Multiplication Factor 2.2
Minimum 2.2 for current selections
Gutter Fall 1:200 = 5 mm per metre
Enter 1:X or mm per metre- the calculator will automatically convert
Minimum Fall 1:500, Maximum Fall 1:100
90 Degree Bends 0 bends
Gutter Length served by outlet 6 m

Here we have selected Commercial Internal gutter, so the short-term Multiplication Factor is set at 2.2. That is because water takes about 2 minutes to travel 25 metres at 3º. For Residential buildings this factor is pre-set to 3.1. For more security, these factors can be increased, but not decreased below the default. The calculator has also defaulted to no overflow along the gutter, and that there will be an overflow at the outlet.

Enter the fall, length of gutter, number of bends, and freeboard. Again, 20 mm is pre-set minimum for freeboard. Enter preferred gutter dimensions.

Select Gutter Information Source

Rectangular Gutter | Manufacturer's Data

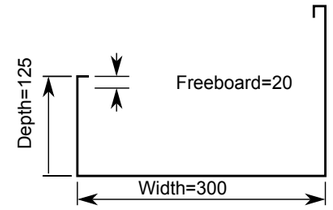


Illustration is for explanatory purposes only and is not to scale.

Gutter Width (Entire Width)	300	mm
Gutter Upstand - D	125	mm
Freeboard	20	mm

Minimum 20 for current selections

Max Capacity Roof Area - $A_{Roof\ Max}$ 223.27m² Go

Conditions and assumptions for flat gutters:

1. Mannings n assumed to be 0.014 to represent long term friction conditions.
2. Equations valid for gutters with min gradient 1:500, max gradient 1:100.
3. Bends are accounted for by local loss coefficients (0.5 for each 90° bend).

The answer is given, in this case the maximum capacity that can be served is 223 m2. If this is insufficient, any of the variables can be adjusted to get the required capacity.

The same address and rainfall intensity information is retained for Downpipe. Here the only required addition is head at the outlet. Here's a tip, check the internal diameter table on 5.4.2 before you start. Did you know that a 200 mm PVC round downpipe has an internal Diameter of only 178mm?

Gutter | Downpipe | Valley

Show all help

Rainfall Intensity - I (10 Min Duration, 50 Year Return Period)	127	mm/hr
Options		

Type of Building	Type of Gutter	Overflow along Gutter	Overflow at Downpipe
Commercial	External	No	~~No~~
Residential	Internal	~~Yes~~	Yes

Short-Term Intensity Multiplication Factor	1.1	

Minimum 1.1 for current selections

Select Downpipe type Circular Vertical | Rectangular Vertical

Downpipe **Internal** Diameter (see 5.4.2 Capacity Table for Common Size Downpipes for common dimensions)	178	mm
Head at Downpipe (H_1)	65	mm

Max Capacity Roof Area - $A_{Roof\ Max}$ 297.31m² Go

Gutter | Downpipe | Valley

Show all help

Rainfall Intensity - I (10 Min Duration, 50 Year Return Period)	127	mm/hr
Short-Term Intensity Multiplication Factor	3.1	

Minimum 3.1 for current selections

Roof Pitch - RS	15	°0.26 rads

Enter Valley Dimensions

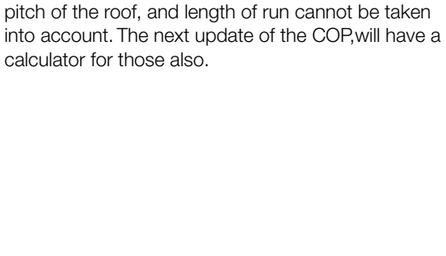


Illustration is for explanatory purposes only and is not to scale.

Valley Width (One Side)	130	mm
Minimum 130mm for current pitch		
Valley Upstand - D	20	mm
Freeboard	15	mm
Minimum 15 for current selections		

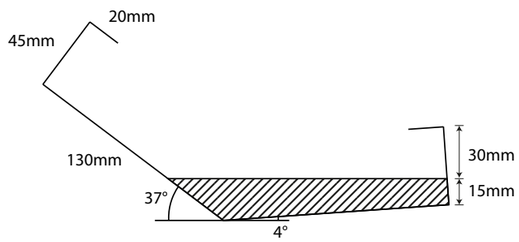
Max Capacity Roof Area - $A_{Roof\ Max}$ 74.68m² Go

If valleys are required, enter roof pitch, valley width and valley up stand height. The output will give allowable catchment, and also give internal angle for accurate manufacture.

Comparisons to E1/AS1 and E2/AS1

Compared to E1/AS1, the internal gutter calculations will be much more conservative using the COP. External gutters with overflows will be a little more conservative, and external gutters without overflows can also be calculated. Downpipes again will be similar, but are designed according to the site-specific rainfall. Valleys agree with the E2/AS1 table at 8°, but again are site-specific and can be sized to suit pitches above and below 8°.

This has already proven to be very popular with designers, but there is more to come. E2/AS1 has limitations on spreader catchment and catchment behind penetrations, expressed as simple tables. This means variations in rainfall, shape of the profile, pitch of the roof, and length of run cannot be taken into account. The next update of the COP,will have a calculator for those also.



Another upgrade is for asymmetrical valleys, where the two roofs discharging into a valley are at different pitches. Not only is there a perceived risk of water coming down the steep side overshooting the lower side, but tipping a valley on its side greatly reduces cross section area. This is a much more complex calculation and the next update will be able to resolve this increasingly occurrent problem.

ROLL TO ROOF: THE FUTURE OF LARGE-SCALE INDUSTRIAL ROOFING INSTALLATIONS

This 77,500sqm roof is equivalent to around nine rugby fields in area

The country's largest industrial roof has been installed using an innovative, safer and more cost-effective at-height system never used before in New Zealand. The roof on Foodstuffs' new distribution centre at Auckland Airport will become home to the country's largest solar panel farm to be installed later this year.

Years of research and exhaustive trials have preceded the roofing of the centre: the roll-forming machine being literally containerised and craned to roof height, enabling Kiwi Roofing installers to feed the 78 metre long sheets of quick fix Dimondek 630 directly into position.

Normal methods of roofing this 77,500sqm roof – equivalent to around nine rugby fields in area – could not be deployed so Fletcher Steel's Dimond Roofing and RANZ member, Kiwi Roofing Ltd came up with a novel approach.

From the outset, (the client had selected the DD630 profile), the scale of the job posed some significant challenges – namely the long sheet lengths. The shortest 17m sheet was manageable on site but the rest ranging from 25m to 75m in length meant site limitations for setting up the DD630 rollforming machine and where could the sheets be stored before lifting to the roof? Early discussions with the main contractors on the construction programme, the site constraints with the footprint of the rollforming machine, the logistics of transporting 28m long sheets around the site and the access and size of cranes needed to lift sheets onto the roof meant another approach was needed.

Paul Connell, Managing Director of Kiwi Roofing says discussions began with Dimond about the possibility of roll forming to the roof. It began with developing a conceptualised frame structure with a platform that the roll forming machine would sit on after being lifted to roof height by a crane and the product run directly onto the roof was conceived.

This concept seemed initially to be the best solution but it became apparent that the platform would have to be moved frequently - more than originally anticipated and that as construction of the building progressed further along the site, the height of the building also increased which meant the platform height would need to increase accordingly.

How safely could this be achieved and what impact would ground conditions have on this plan?

Says Paul: "After a fair amount of discussion we came up with the concept of suspending the rollforming machine in its container and following discussions with Auckland Cranes as to whether this could be done – and with Dimond that it was possible to do, we had several design meetings culminating in a lifting platform to accommodate both the rollforming machine and the de-coiler.

"Once the engineers finalised the design and the building of the platform commenced, Kiwi Roofing focused on the health and safety aspects: the methodology deviated significantly from conventional roll forming operations. Clearly defining each parties' functions and overarching health and safety responsibilities was critical.

"We still could only roll form from one side of the site so getting the longest sheets up and over the ridge and down the other side safely on a building that was over 200m wide became the next challenge.

"Handling a 75m sheet safely requires a lot of physical labour which meant there were a lot of men and women on the roof who had no previous experience working at height. Mitigating any risks these individuals could potentially be exposed to was paramount to everyone involved. We even went as far as having the egress from the scissor platform modified so they could walk from the scissor platform onto the roof".

Jason Whiteman (Dimond Roofing) spoke to Rooflink from the manufacturer's perspective saying a roof of this size has costly logistical and safety challenges with large mobile cranes and coordination between roofing and other trades on site. The concept of "roll to roof" was offered as a solution to this project.

"The system streamlines the two-step process of rolling and shaping the steel roof at ground level and craning it into place, into one continuous process that is completed on the roof, he said.

"The system has never been used in New Zealand before and the companies involved wanted to try something innovative and the scale of this roof made the project a perfect pilot for the system".

The system has never been used in New Zealand before, and the companies involved wanted to try something innovative

Several modifications were made by Dimond to the roll former. Extensive work was required to allow machine operators remote access from the roof to the machine's controllers. All this had to be done while the machine remained in service on other jobs leading up to starting on the Foodstuffs site. Once the platform was ready two test lifts took place to ensure everything worked as intended.

When the start day arrived an exclusion zone almost the size of an Olympic swimming pool was set up around the lift area involving two cranes and all the associated equipment required plus all the coils. There was intense scrutiny on the operation and most key stakeholders had H&S representatives on site to observe. The first run went off without any issues and after the coil exchange was completed it was obvious all the planning and collaboration had been a success.

From Kiwi Roofing's perspective, planning was key to bringing this unique project to a successful conclusion, safety being key to installing the sheets flowing over a series of rollers gutter-to-gutter on this significantly large roof, safety mesh, underlay and clips installed prior to installing the sheets along the roof. Two cranes supported the suspended containerised roll forming machine which was anchored by several ten tonne concrete anchors; the system can be utilised using one crane in the event that there is not enough room on site for two.

"One of the biggest challenges with installing a roof like this is wind", says Paul Connell. "When the wind is blowing it's not safe to be craning sheets of steel up to 16 metres in the air. With roll to roof and a moderate wind it didn't delay the process.

"We had a team of up to 15 installing the roof starting in July 2019 and finishing in March this year, the system proving to be safer and faster, saving an estimated two months' time on installation".

The roofing element of building the distribution centre was carried out while the building was under construction, the method allowing the steel fabricator to work unimpeded by the Kiwi Roofing team. As steel sections became available the roll to roof process could be completed.

Lindsay Rowles, General Manager of Membership and Property at Foodstuffs North Island says the installation of the roof at the new Foodstuffs distribution centre had been a massive task.

"The new roof will serve as the foundation for New Zealand's largest solar panel farm which is set to be installed later this year.

"Through our partnership with Dimond Roofing and Kiwi Roofing we are proud to use safer and more cost-effective tools within the building process and are excited to incorporate further innovations into the build".

Located at The Landing Business Park, Auckland Airport, the Foodstuffs new distribution centre is set to be completed and opened by the end of this year.

Key facts

77,500sqm roof comprising 108km of roll formed steel roofing (more than 1300 sheets

The roof manufacturing was completed by a team of 15 from Dimond Roofing and 14 from Kiwi Roofing comprising installers and labourers

The roof was installed over eight months – two months faster than usual methods

The process was safer – eliminating some of the risks associated with craning roofing sheets into place

This is the first time this method has been deployed in New Zealand so there is potential to apply this process to a range of roof sizes and designs

A highlight of the RANZ conference at Wintec, Hamilton in 2005 was the unveiling of Dimond's portable, on-site rollforming machine which members viewed in action producing a trough section sheet – heralding what has become commonplace now on many projects around the country. The innovative development of bringing the rollforming machine to roof height introduces many efficiencies over conventional site roll forming with its particular suitability for large scale projects.

Architect:
Eclipse Architecture
Telephone: 09 303 4759
eclipsearchitecture.co.nz

Roofing Manufacturer:
Dimond Roofing
Profile: Dimondek 630® (DD630)
Telephone: 0800 346663
www.dimond.co.nz

Installer:
Kiwi Roofing
Telephone: 09 263 9988
www.kiwiroofing.co.nz

Main Contractor:
TSA Management Auckland
Telephone: 09 550 1427
www.tsamgt.com

TWO SHEDS IN RAGLAN

Located in a small industrial park just off the highway on the outskirts of Raglan, Two Sheds is a mixed-use development that has been turning heads due to its simple but effective design. The project by Hamilton-based Red Architecture comprises two shed forms with attached office or residential spaces cleverly arranged around a beautifully landscaped water reserve.

Hayden Vink of Wainui Construction managed the build. Initially he was unsure who the tenants would be, so the brief to the architects included a need for flexibility and versatility. There was also a need to keep costs low, which was met through the use of a simple and reduced material palette, says architect Joe McKay.

“We used some Abodo Tundra cladding in the pockets and cut-outs in the building to soften the engagement for the people using the buildings but also to provide some contrast with the COLORSTEEL® cladding,” he says. “We wanted to design spaces that worked well as a light industrial environment while also being gentle enough for a residential setting if people were going to live and have showrooms on site. It also engages with the lovely landscaped areas that exist there.”

Further softening the look and feel of the building, Red Architecture opted to use pockets of a translucent fibreglass roofing product, Ampelite, on the wall of one of the warehouses. This allows daylight to flow into the warehouse space and also creates a lantern effect when the lights are switched on in the evening.

With a long-life span that requires little maintenance, and eligible for a Sustainability Factor of 1.0 within the Green Star Design rating tool, COLORSTEEL® was an attractive option for the majority of the cladding. Titania was chosen for its high albedo effect, explains McKay. “Because it’s a light colour, it reflects a lot of the sunlight away from the building. Raglan summers can be pretty warm. This reduces the heat load for the interiors and also for people walking around the buildings.”

The Trapezoidal profile gives a strong architectural finish over large areas of cladding and roofing, and references the rural roots of the area, harking back to the aesthetics of a farmer’s shed. The combination of the COLORSTEEL® and timber weatherboards brings a blend of colours and textures that anchor the building to its site and helps it to merge with the surrounding landscape.

“Because we were trying to make it as cost effective as possible, we stuck to some pretty conventional detailing apart from the Ampelite translucent wall,” says McKay. “We were trying to be as efficient as possible. We have a couple of strong design elements balanced against a minimal budget.”

Internally, the residential or office spaces are well insulated and light filled, with all the modern conveniences of a home. Timber flooring and sections of cabinetry tie in with the timber accents on the exterior. One shed features an upstairs apartment with a deck overlooking the pond, providing a sense of separation from the workspace below.

The placing of the buildings on the site is key to its success. “I was excited to do something that made the most of the lovely environment even though it is an industrial development,” says McKay. “The pond is a firefighters’ water reserve that was planted out 10-15 years ago. It was semi mature and provided a lovely backdrop for the development. The buildings were arranged to focus on the natural area while not blocking the view and engagement from the other building.”

The project was recognised in 2019 by the COLORSTEEL® Awards, taking out the inaugural COLORSTEEL® Building of the Year Award. The judges commented that the building “...had been built with versatility in mind, so the spaces could be matched to the needs of future tenants. The simple details provide a functional and artistic element that transform a ‘shed’ into an upmarket commercial destination.”

Looking to the future, a Stage 2 master plan has been developed for this project, including another two or three buildings orientated towards the pond, using the same palette of materials.

Red Architecture:

Founded in 2009, Red Architecture is a boutique architectural practice specialising in residential housing, commercial buildings and fit-outs. They have been recognised for their work at the Architectural Designers New Zealand (ADNZ) awards, including the Supreme and People's Choice awards for 'Modern Barn Form' and National awards for 'Shibui', 'Cabin' and 'Crows Nest'. Two Sheds also won the COLORSTEEL® Building of the Year Award in 2019.

Joe McKay

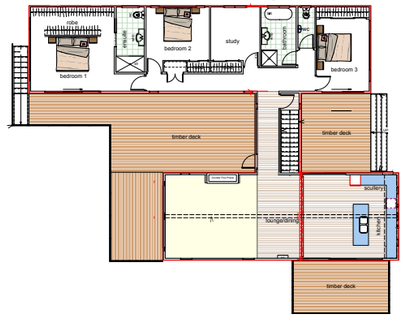
My design philosophy is based around care. Caring for the users of the space by designing with their wellbeing in mind, through providing healthy and engaging environments. Care for society at large through trying my best to make a positive contribution to our built environment by designing buildings and landscapes that are the best that they can be for whatever the budget so that people enjoy them and get utility from them for the life of the buildings. And finally care for our natural environment by the selection of materials and systems in buildings that seek to minimise the negative environmental impact and maximise positive environmental results.

Main contractor:
Wainui Construction
Telephone: 02 2028 5411
wainuiconstruction.co.nz

Roof & Wall Cladding Manufacturer:
Roofing Industries
COLORSTEEL®
Ampelite for the translucent roofing and cladding
Roof and Wall Cladding Profile: Ribline
Colour: COLORSTEEL® Titania

Roofing Installer:
Next Level Roofing
Telephone: 021 782 280
nextlevelroofing.nz

Pre-engineered sheds:
Shed Boss Waikato
Telephone: 0800 490 000
shedboss.co.nz



ARCLINE ARCHITECTURE ALDERTON PARK HOME

A retired Auckland couple's relocation to Kerikeri came with a brief to Arcline Architecture's principal Alan Simpkin for a home to blend with the Northland environment.

It was to be in harmony with Kerikeri's cultural history – think Rewa Village, a pre-European replica Maori fishing village with its whare gable roof.On a sloping, elevated site offering stunning views to the Kerikeri inlet, the dual-pod home at Alderton Park captures the owner's requirements for sun, views, wind, access and usability. The fact that the clients were 100% firm in their design decisions helped move the project smoothly through the design process.

Some large rocks on the site initially involved some re-design of the retaining wall footings and a large trench proved a better solution than standard pile holes.

The H shape of the home meant the roof was fairly simple, comprising two gable roofs with a connecting ridge over the centre. An option for the centre roof was for membrane but in view of durability and looking for years of leak-free hassle it was agreed to pitch the centre roof and run a gutter line around which meant the interior ceilings could be simple.

Arcline Architecture's design also satisfied the owner's requirement for adequate wall space for the couple's art collection which extends to some interesting art works which feature within the external landscaping. Slot windows have enabled art to be displayed at its best in this new setting. The pod-style home provides both private spaces and those for busy communal gatherings. A drive-under garage takes one into the centre of the home's internal access and a light-filled gallery connecting the sleeping pod of three bedrooms, bathroom, ensuite and study to the open-plan living area.

The lounge features two triangular-shaped windows at one gable end providing a large glass frontage offering views to the estuary beyond. Timber decking on three upper floors of the home also capture the sun and allow further appreciation for the Northland environment. James Hardie Linea Oblique vertical weatherboards match the T Rib roofing lines of the roof, a profile offering a more traditional finish.

Alan Simpkin says the pod layout worked particularly well with the slope of the site and the home relates to the traditional shapes of architecture in the area with similar pitched roofs both new and those of historical significance such as The Stone House, Kent House and the whare at Rewa Village.

Arcline Architecture

The early roots of Arcline Architecture were in building, Alan and Michelle Simpkin starting their design and build company in 1993. In 2003 the firm refocussed on designing homes – from North Cape to the Bluff. A building background has enabled Alan and the team to accurately design homes according to the range of budgets they are presented with, thereby breaking the cliché designers' habit of getting carried away with the style with little thought to the budget.

Architectural Design:
Arcline Architecture Ltd
Alan Simpkin
Telephone 09 408 2233
E-mail info@arcline.co.nz
www.arcline.co.nz

Main Contractor:
Circle D Construction

Roofing Manufacturer:
Metalcraft Roofing
Profile:T-Rib
Colour: COLORSTEEL® Ebony
www.metalcraftgroup.co.nz

Roofing Installer:
Slater Roofing
Telephone: 09 407 4036
E-mail: Slaterroofing@yahoo.co.nz
www.slaterroofing.co.nz

Exterior Cladding: James Hardie Linea Oblique vertical weatherboards

INNOVATION IN PAUANUI

Located near the coastal holiday town of Pauanui, this new Bach makes use of an innovative, smart and quick construction technique.

Looking at this beachside Bach, it is hard to believe it could be built in just five weeks. While a little smaller than some of the sprawling Bach's in this popular holiday town, the 120m2 contemporary-style beach house doesn't appear out of place.

Configured so that living spaces and bedrooms look out towards the water, and with easy summer living in mind, the house has a modern aesthetic, with COLORSTEEL® used for the roof and wall cladding, and cedar baseboards used to off-set the darker tones of the steel.

The project makes uses of multiple COLORSTEEL® colours, with the roof clad in Slate and the walls clad in Sandstone Grey. Where it gets interesting though, is when you step inside. Not only has COLORSTEEL® been used for the exterior cladding, it continues indoors where it's finished in the dark and textured tones of TidalDrift® and FlaxPod® Matte.

The metal internal walls are due to an innovative construction technique using Structural Insulated Panels (SIPs). These panels are made from pre-painted steel sheets continuously bonded on both sides over an Expanded Polystyrene (EPS) core. Due to the thermal properties of the EPS core, and the prefinished internal skin of the SIP, no further finishing is required.

Homeowner, builder and designer Nathan Findlay of SIP Design Homes says this house was a prototype that allowed the company to figure out the finer details of using this construction technique.

"This is a method we've always wanted to use. I like the style of construction, mainly due to the speed it offers and the fact that it has high thermal properties as well. The efficiency in terms of price is also good. I can have contractors coming in once and finishing off. It involves a lot of planning and we have to do some things differently, but we can speed the build process up massively."

Nathan was initially concerned about the glossy finish of the panels when used inside, until a chance conversation with an architect led him to the COLORSTEEL® Matte range. "As soon as we looked at that, it was a no brainer. It would take the shine off the product and be the right fit for what we're trying to achieve."

Working alongside some in-house and contracted designers, Nathan and his team worked on a concept that embraced the metal look of the interiors. With copper water pipes and suspended cable trays complimenting the COLORSTEEL® TidalDrift®, the result is a striking and industrial look.

"We didn't know how the building was going to act in terms of noise, but after living in it we've been pleasantly surprised with the performance," says Nathan. "Moving forward we're going to do some similar builds using this technique, but we're going to hide the wires and go for a homely, modern feel."

The utilisation of Structural Insulated Panels as roof & wall cladding is not an approach often seen, but with excellent thermal properties and obvious advantages in installation, it may just become much more frequent.

SIP Design Homes

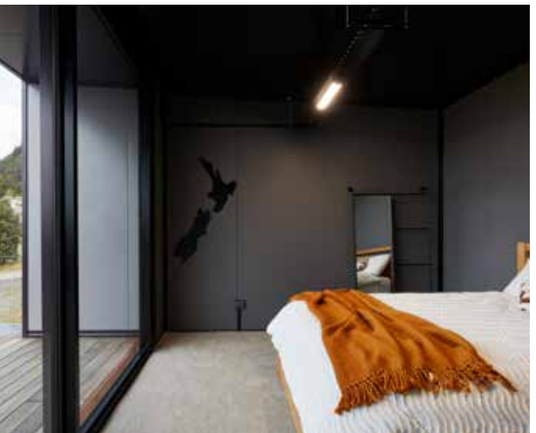
Based in Waikato, SIP Design Homes focusses on designs and builds that use structural insulated panels throughout, as a faster, smarter way to build.

Nathan Findley

My design philosophy is around embracing the site. For this particular home, you'll see the whole glass front designed to take in the views, and that seamless transition from inside to outside. We design these case-by-case, depending on the site and what we're trying to achieve.

Designer & Installer:
SIP Design Homes
Additional design assistance:
Leilani Morgan, Danielle Cooper, Tessa Symons

Roofing and Cladding Manufacturer:
Metalcraft Insulated Panels
9 Earthmover Cres, Hamilton
Terry Stevenson
Ph 027 493-0423
terry@metpanels.co.nz
Thermo Panel and Thermospan Insulated Panels
Exterior: Roof – COLORSTEEL® Slate
Wall Cladding – COLORSTEEL® Sandstone Grey
Interior: Ceiling – COLORSTEEL® FlaxPod® Matte
Walls – COLORSTEEL® TidalDrift® Matte



SCOPE

NZ METAL ROOFING MANUFACTURERS INC.

Members

Ashburton Long Run Iron
5 McGregor Lane Ashburton 7700
Telephone: 03 3081850
Contact: Eliza Waszczak
www.longruniron.co.nz

Ellerys Roofing Direct Ltd
250 Main South Road
Karoro
Telephone: 03 7686514
Contact: Clark Ellery

B J Moss Ltd
PO Box 1007
Gisborne
Telephone: 06 867 1219
Contact: Roger Moss
www.bjmoss.co.nz

B R Roofing & Walling Co Ltd
Ford Road
Onekawa, Napier
Telephone: 06 843 6968
Contact: Phillip Fendall

Continuous New Zealand Ltd
PO Box 151
Takanini, Auckland
Telephone 09 268 1555
Contact: Peter Mullions
www.continuous.co.nz

Contour Roofing Nelson Ltd
PO Box 9015
Annesbrook, Nelson
Telephone: 03 546 4260
Contact: Dave Freeman
www.contourroofing.co.nz

Dimond Roofing
PO Box 13546
Otahuhu, Auckland 1643
Telephone: 09 622 4625
Contact: Aidan Taylor

Franklin Long Roofing Ltd
PO Box 151
Pukekohe, Auckland
Telephone: 09 238 9249
Contact: Warren Oliver
www.franklinroofing.co.nz

Gerard Roofs
PO Box 18071
Glen Innes, Auckland
Telephone; 09 521 8792
Alan Wilson

Marshall Industries Ltd
PO Box 846
Invercargill
Telephone: 03 218 2579
Contact: Tom Marshall
www.marshalls.co.nz

Metal Roofing Systems Ltd
PO Box 117
Takanini, Auckland 2245
Telephone: 09 268 8959
Contact: David Moselen
www.megamiroofing.co.nz

Metalcraft Roofing
PO Box 51286
Pakuranga, Auckland
Telephone: 09 274 0408
Contact: Tony Barbarich
www.metalcraftgroup.co.nz

Metal Design Solutions
PO Box 33
Drury, Auckland
Telephone: 09 294 9134
Contact: Jan Alberts
www.metaldesignsolutions.co.nz

Ross Roof Group
PO Box 72-062
Takanini, Auckland
Telephone: 09 299 9498
Contact: Mike Budd
www.metrotile.com

Quin Roofing Ltd
PO Box 1087
Levin, 5540
Telephone: 06 3679480
Contact: Bruce Love
www.quinbuildings.co.nz

Roofing Industries Ltd
PO Box 302 385
North Harbour Post Centre 0751
Telephone: 09 414 4585
Contact: Paul Ross
www.roof.co.nz/

Roofline Canterbury Ltd
PO Box 16302
Hornby, Christchurch 8441
Telephone: 03 349 8439
Contact: Colin Megaw
www.roofline.co.nz

Silbery Long Run Ltd
69 Montgomery Crescent
Upper Hutt
Telephone: 04 526 9343
Contact: Angie Silbery-Dee

Steel & Tube Roofing
PO Box 204216 ,Highbrook,
Manukau 2162, Auckland
Telephone: 09 273 7628
Contact: Tony Rallis
www.steelandtube.co.nz

Stratco (NZ) Ltd
PO Box 8494
Christchurch
Telephone: 03 338 9063
Contact: Andrew Staff
www.stratco.co.nz

Taranaki Steelformers Ltd
Wanganui Steelformers
King Country Longrun
PO Box 36 Stratford
Telephone: 06 765 5191
Contact: Darrell Back
www.steelformers.co.nz