

# Kāhū<sup>®</sup>

Elegantly Strong



## Code Compliance:

### B1 - Structure

#### Acceptable solution:

Kāhu® can be installed as per the loadspan, fixing requirements and expansion requirements as per E2/As1.

#### Alternative solution:

Kāhu® has been load span tested to AS/NZS 1170.2 at the Metal Roll-formers Manufacturers Associations testing facility in Huntly, New Zealand. Please refer to load span tables - AS/NZS 1170.2 and relevant guidance notes.

### B2 -Durability

Kāhu® is manufactured from New Zealand steel, COLORSTEEL® ENDURA® or COLORSTEEL® MAXX® depending on environmental categories. New Zealand Steel's base material complies with AS/NZS 2728:2013 - Prefinished / pre-painted sheet metal products for interior / exterior building applications.

COLORSTEEL® ENDURA® prepainted steel is warranted by New Zealand Steel to meet the performance requirements of NZBC B2.3.1(b) for a 15 year durability when used for the manufacture of roof and wall claddings.

COLORSTEEL® MAXX® prepainted steel is warranted by New Zealand Steel to meet the performance requirements of NZBC B2.3.1(b) for a 15 year durability when used for the manufacture of roof and wall claddings.

### E2 - External Moisture

#### Acceptable solution:

E2/As1 8.4.4 classifies Kāhu® as a type b) trapezoidal profile. Kāhu® is a symmetrical profile with crests widths at centers less than 210mm and crest heights are greater than 19mm.

Minimum pitch for Kāhu® is 4 degrees (As required by Metalcraft Roofing).

Where the building is designed to comply with E2/As1, the spans and fixings must be accordance with those specified in E2/As1.

#### Alternative solution:

Compliance is supported by:

Kāhu® has been load span tested to AS/NZS 1170.2 at the Metal Roll-formers Manufacturers Associations testing facility in Huntly, New Zealand. Please refer to load span tables - AS/NZS 1170.2 and relevant guidance notes.

### Supporting Evidence:

In-service history of screw fixed trapezoidal profiles similar to Kāhu® in New Zealand for at least 20 years and these have performed. The base material for Kāhu® has been supplied for roofing and cladding applications for over 30 years.

Refer to Metalcraft Roofing's installation details, specifications and loadspan and fixing tables. These can be downloaded from [www.metalcraftgroup.co.nz](http://www.metalcraftgroup.co.nz).

Metalcraft Roofing is a member of the New Zealand Metal Roofing Manufacturers Association Incorporated (NZMRM) and the NZMRM Code of Practice is additional evidence that can be used to support the above statements. The Code of Practice can be downloaded from: [www.metalroofing.org.nz](http://www.metalroofing.org.nz).

### Greater weather performance

The double capillary overlap provides an extra capillary barrier to the standard capillary groove, giving you extra peace of mind.

### Cost effective solution

The double capillary overlap requires only a one rib lap. This increases the cover sheet size and speeds up installation time.

For wall cladding applications the exposed capillary groove on the overlap can be omitted providing for a smoother appearance.

## Double capillary overlap

### Style and performance

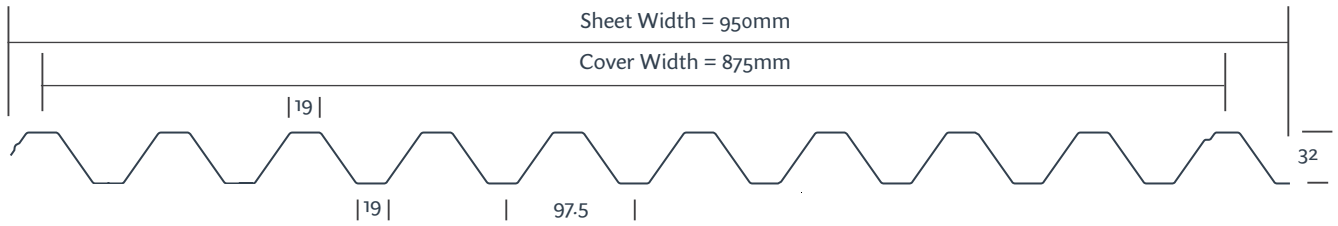
Kāhu® has been designed for elegance, style and extra performance in mind and is Metalcraft Roofing's new roof profile. The ribs create strong defined shadow lines and combined with the double capillary barrier provides for greater weather performance.

High strength steel G550 from New Zealand Steel is used to give the product extra strength and rigidity. Kāhu® is a symmetrical profile and is available reverse run.

A variety of colours and coating options from New Zealand Steel are available and are especially suitable for NZ conditions.

Sheet Width / Cover Width	950mm / 875mm
Roof Pitch	3° minimum pitch. Pitch must increase to accommodate rainwater run off requirements. Refer to comments on reverse and the NZMRM code of practice section 4.8.2.
Cladding	Horizontal or vertical wall cladding Specify without the double capillary for a smoother appearance for wall cladding only.
Sheet Lengths	Dependant on chosen colour and freight / site limitations.
Options	Reverse run is possible for wall cladding options only
Manufactured	Metalcraft Roofing - Christchurch branch. Available nationwide.
Steel Options	0.4mm and 0.55mm BMT G550 Steel COLORSTEEL® ENDURA® and COLORSTEEL® MAXX®. For other metals please contact Metalcraft Roofing.

**Cross Section** All dimensions are nominal



**Loadspan tables - Alternative Solution:**

The following load span tables are to be used when the building falls outside the scope of E2/As1 and NZS 3604 or where the building is required to be specific designed. Loadspan tests have been carried out as per the parameters set out in the NZMRM Code of Practice - section 15 and in accordance with:

- AS/NZS 1170 - Minimum design loads on structures
- AS/NZS 1170.2 Part 2 - Wind Loads
- AS/NZS 1170.1 Part 1 - Dead and live load combinations

**Fixing patterns: - Alternative Solution:**



Hit 1, miss 2...

**Fixings: - Alternative Solution:**

Timber:

14G Length to suit -minimum embedment into structure to be 30mm and greater than 6 times the screw thread diameter. Use load spreading washers if required for expansion.

Steel:

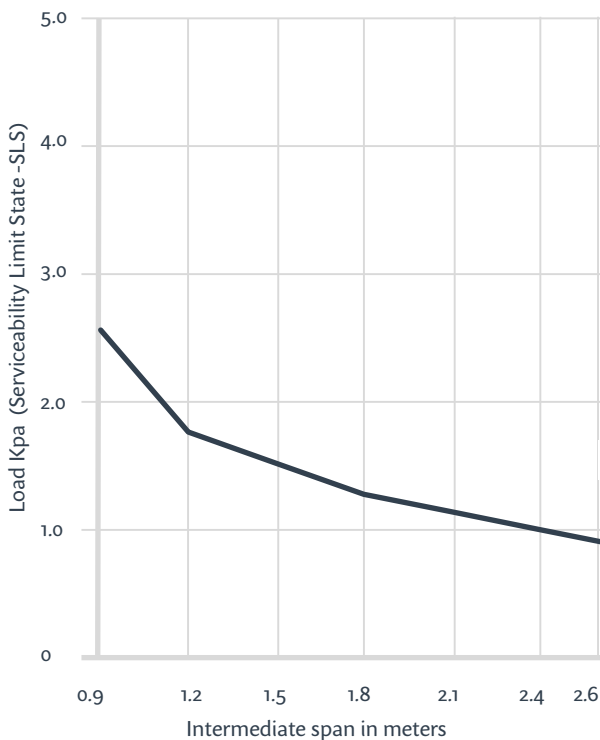
12G self-drilling fastener. Length to suit -minimum steel embedment should be 5 - 6mm beyond the drill point with a minimum of 3 threads beyond the drill point. Use load spreading washers if required for expansion.

**Expansion - Alternative Solution:**

See page 5

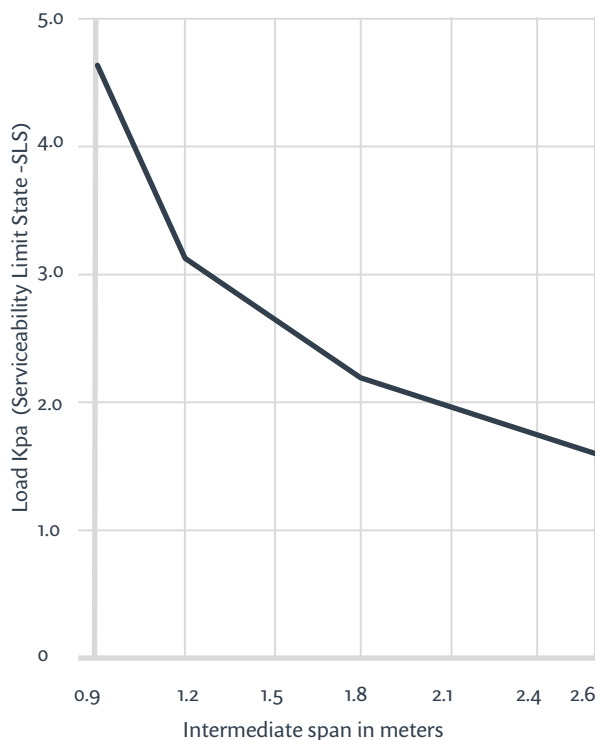
**DESIGN LOAD High strength 0.4mm BMT Kāhu®**

Graph has been discounted by a 1.17 variability factor



**DESIGN LOAD High strength 0.55mm BMT Kāhu®**

Graph has been discounted by a 1.17 variability factor



Note:

The intermediate spans shown in the graphs above are based on G550 Steel as the base metal. To calculate end spans please multiply the intermediate span by 0.66. Spans are based on unrestricted access and allow for a concentrated load of 1.1kN. For alternative metals please contact your local Metalcraft Roofing branch.

## Loadspan tables - E2/As1 Acceptable solution:

Kāhu® roofing and cladding profile complies with the New Zealand Building code and can be used in all wind zones as described in E2/As1. If an architect, designer or engineer is designing a building in full accordance with E2/As1 then it is necessary for the design spans and fixings to comply with those of E2/As1. The wind zones are given in NZS 3604 as: Low, Medium, High, Very high and Extra high. For full compliance the following spans and fixing patterns should be used. Please note E2/As1 spacings are conservative and a specific design is permitted under E2/As1 - for specific design reference should be made to the load span tables engineered to AUS/NZ 1170. PART 2. as indicated in Kāhu® loadspan tables- Alternative solution.

For low and Medium wind zones and with a fixing pattern of: Hit 1, miss 1... A maximum intermediate span of 1.2m and end span of 0.8 is required for 0.4mm BMT and for 0.55mm BMT maximum intermediate span is 1.8 m and end span 1.2m.

For high and very high wind zones and with a fixing pattern of: Hit 1, miss 1...A maximum intermediate span is 0.6m and end span 0.4m is required for both 0.4mm and 0.55mm BMT.

For high and very high wind zones and with a fixing pattern of : Fix every crest, a maximum intermediate span of 1.2 m and end span 0.8m is required for 0.4mm BMT and for 0.55mm Maximum intermediate span is 1.8 m and end span 1.2m.

For extra high wind zones and with a fixing pattern of : Fix every crest, a maximum intermediate span is 1.2 m and end span 0.8m required for 0.4mm BMT and for 0.55mm Maximum intermediate span is 1.8 m and end span of 1.2m. For intermediate spans greater than 1.2m specific engineered design is required for 0.4mm BMT for all wind zones please use load span tables engineered to AUS/NZ 1170. PART 2. as indicated in Kāhu® loadspan tables- Alternative solution.

## Fixing patterns - E2/As1 Acceptable solution:



Fix every crest...



Hit 1, miss 1...

## Fixings -E2/As1 Acceptable solution:

If the architect, designer or engineer is designing a building in full accordance with E2/As1 then it is necessary for the design spans and fixings to comply with those of E2/As1. Specific design is permitted under E2/As1 - for specific design and where reference has been made to the load span tables engineered to AUS/NZ 1170. PART 2. as indicated in Kāhu® loadspan tables- Alternative solution. Then the architect, designer and engineer should use Fixings as per indicated under: Fixings: - Alternative Solution.

When the architect, designer and engineer chooses for spacings and fixing to both fully comply with E2/As1 then all fixings are required through the crest and must comply with Class 4 of AS 3566: Part 2.

### Timber:

Screw fixings are recommended for metal roofing.

Minimum of 12 gauge screw fixings with a 30mm minimum embedment into the timber purlins. Nail fixings are required to have a minimum of 40mm embedment into timber purlins.

### Sealing washers:

Neoprene with a carbon black content of 15% or less by weight. Profiled washer and EPDM washers should be used where required for expansion of the profiled metal roof. Refer to expansion provisions.

Every crest to: Ridge, Hip, Valley, Gutter and Periphery Areas must be fixed.

## Expansion provisions - E2/As1 Acceptable solution:

No requirements for sheets upto 8m. For sheets between 8-18m use on top 50% of the sheet closest to the ridge, conventional fixings and neoprene washers, on remainder of the sheet use profiled washer and EPDM washer to allow for expansion. Sheets longer than 18m require specific design.

## Product Application:

The correct application of each grade of material is critical to product performance and life expectancy. Before commencing a project the user must refer to the environmental guide, the product data, the handling and storage guide and the installers guide as produced by New Zealand Steel.

## Minimum Pitches:

The minimum pitch is determined by the ability of the roof cladding to discharge maximum rainfall without water penetration through the side laps, end laps or flashings. The minimum pitch for Kāhu® is:

- 3 degrees for sheet lengths of 40m.
- 4 degrees for sheet lengths exceeding 40m but less than 60m.

The above minimum pitch requirements have been calculated assuming peak rainfall to be less or equal to 100mm/hr. Please note the maximum sheet lengths for Kāhu® are determined by the chosen colour and roof application.

## Expansion Provisions and Maximum Sheet Lengths - Alternative Solution:

The NZMRM code of practice gives recommendations for roof cladding expansion provisions and these provisions are as follows:

The expansion of roof cladding depends on the materials, the constraints imposed by the fixing, the heat paths in the building and of course the actual temperature.

### Favourable circumstances are;

- Flexible Light Gauge Steel purlins <3mm
- Light coloured roof cladding
- Purlin spacings greater than 1.5m
- Crest fixing
- Building not insulated
- Ventilated air space below roof cladding and underlay
- Low rib profile

Light Steel upto 24m lengths and Dark Steel upto 18m lengths require no special requirements.

Light Steel 24m -30m lengths and Dark Steel 18m - 24m lengths require 9mm oversized holes and load spreading washers.

Light Steel over 30m lengths and Dark Steel over 24m lengths require a step joint or other special provision.

### Unfavourable circumstances are;

- Purlins made of hot rolled steel or thicker than 3mm
- Laminated timber purlins
- Purlin spacing less than 1.5 m
- Pan fixing
- Dark coloured roof cladding
- Insulation close to the roof cladding
- Skillion roof
- Rigid profiles e.g. high rib

Light Steel upto 18m lengths and Dark Steel upto 15m lengths require no special requirements.

Light Steel 18m -25m lengths and Dark Steel 15m - 25m lengths require 9mm oversized holes and load spreading washers.

Light Steel over 25m lengths and Dark Steel over 25m lengths require a step joint or other special provision. These are guidelines only and refer to roof cladding only, special engineering of the roof, or fixing, or ventilation may allow for greater spans.

## Handling and Storage:

Detailed information is included in the New Zealand Steel Installers Guide. Important considerations are as follows:

- Site Storage which ensures that sheets are kept dry and ventilated.
- Reducing risk of surface damage to surface coatings during handling, installation and by other trades.
- Ensuring that spans and pitches used are not outside those recommended by Metalcraft Roofing.
- Ensuring that correct and sufficient fasteners are used.
- Installation in contact with incompatible

## Fasteners:

The selection of the appropriate fastener is essential to performance of the roof. The durability of the fastener should be, as a minimum requirement, equal to that of the roofing or cladding. If in doubt, refer to your nearest Metalcraft Roofing branch.

## Environmental:

The correct grade of material for use in various environments is given in the New Zealand Steel Environmental Guide.

## Disclaimer:

As part of Metalcraft Roofing's policy of continued improvement, final specifications may vary from those contained in this publication. The company reserves the right at any time and without notice to change the design, materials or features and withdraw products from the market without incurring any liability whatsoever. This publication is issued as a general guide only and should not be treated as a substitute for technical advice. Contact with your nearest Metalcraft Roofing branch is recommended to confirm current specifications and availability.

## Quality Rest Assured

Kāhu® is manufactured from locally sourced NZ Steel COLORSTEEL® so you can trust Kāhu® to endure for many years to come.



Metalcraft Roofing are members of the Metal Rollformers Manufacturers Association Incorporated and the Roofing Association of New Zealand and this brochure should be read in conjunction with all technical information available from these associations and from the Metalcraft Roofing technical literature available on [www.metalcraftgroup.co.nz](http://www.metalcraftgroup.co.nz)



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## Satisfaction guaranteed

Metalcraft Roofing has more than 50 years experience in the roofing industry which ensures your satisfaction is guaranteed. With 12 branches nationwide we pride ourselves on being New Zealand's largest and most established privately owned building product rollformer and installer with an extensive range of longrun roofing profiles, lightweight metal tiles, metal fencing, rainwater system solutions and a variety of solar generation solutions. We also have a structural steel and insulated panel division.

For more information on Metalcraft Roofing visit:  
[www.metalcraftgroup.co.nz](http://www.metalcraftgroup.co.nz)

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[www.unitedindustries.co.nz](http://www.unitedindustries.co.nz)

Image of Kāhu on front cover © Simon Larkin Design.