

Free Span

Free Span is a popular commercial profile that has superior spanning capability compared to other trapezoidal profiles. Additionally, Free Span can be used for residential purposes as a cost effective and aesthetically pleasing, roof or wall cladding option.

AUTHORISED SUPPLIER



COLORSTEEL



New Zealand
Steel



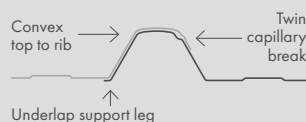
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PROFILE TECHNICAL SUMMARY

FREE SPAN LAP

All profile dimensions are nominal and in mm

Standard



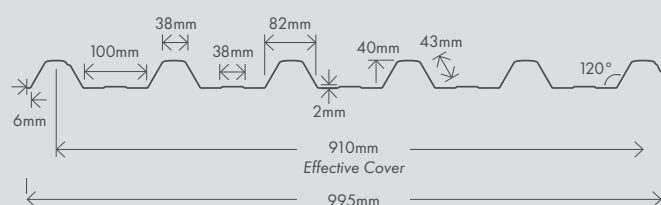
Reverse Run



FREE SPAN

Roofing and Wall Cladding

Dimensioned Drawing of Free Span



MINIMUM PITCH

The minimum roof pitch for Free Span is 3 degrees (approx 1:20).

When a combination of sheets provide a run of in excess of 40 metres and up to 60 metres the roof pitch should be increased by 1 degree.

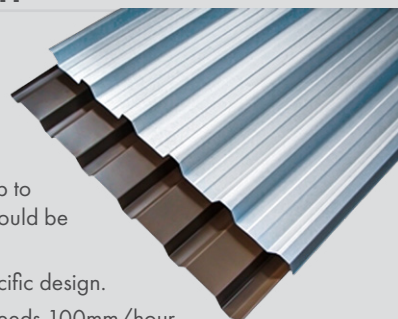
Longer lengths require specific design.

When rainfall intensity exceeds 100mm/hour the minimum pitches need to be increased by a further 1 degree for every 10 metres of run over 40 metres.

The building design pitch may need to be higher to take into account any cumulative deflections of the frame, purlin and roof sheeting or penetrations.

With curved roofing the roof cladding must not terminate at a pitch lower than permitted above.

Side laps of curved sheets must be sealed to any areas below the minimum pitches permitted above.



COMPOSITION OF MATERIALS AND FINISHES

Defining the boundaries of distinct corrosion zones proves challenging due to the numerous factors influencing the corrosiveness of specific sites. Selecting suitable materials for each location is crucial, ensuring they align with the NZ Building Code's durability standards and fulfil customer anticipations.

Zinc/aluminium-coated steel adheres to AS 1397:2011 standards.

Available pre-painted metals offer diverse environmental solutions encompassing multiple metals, metallic coatings, paint systems, and varying paint thicknesses. These paint coatings are manufactured in line with AS/NZS 2728:2013 regulations.

For project-specific environmental zone product selection, please contact Freeman Roofing for further details.

MANUFACTURING BRANCH

Ashburton

ashburton@freemanroofing.co.nz
03 307 0593



Manufactured custom cut to length subject to transport and site limitations.



Sheet lengths in excess of 28 metres require specialised transportation.



As sheet lengths increase higher transportation costs may be applicable.



Maximum recommended sheet lengths for aluminium is 10-12 metres for dark coloured and 12-15 metres for plain and light coloured. Refer to Roof Expansions Provisions of this summary.

INFORMATION TABLE

Substrate Material	Steel		Aluminium	
Thickness (BMT)	.40mm	.55mm	.70mm	.90mm
Aprox weight per lineal metre for Zinalume based material (kg/lm)	4.05	5.48	2.39	3.07
Purlin Spacings - General	Separate section.		Separate section.	
Unsupported Overhang (mm) ¹	250	350	200	300
Drape Curved Roof min Radius (m)	N/R ²	85	N/R ²	85
Purlin Spacings for Curved Roofs				
- Intermediate (mm)	N/R ²	2400	N/R ²	2400
- End (mm)	N/R ²	1600	N/R ²	1600
Precurved Roof				
- min Radius (mm)	N/A ³	N/A ³	N/A ³	N/A ³
- Recommended Minimum Radius (mm)	N/A ³	N/A ³	N/A ³	N/A ³

¹Not suitable for roof access without additional support

²N/R - Not recommended ³N/A - Not Available

This technical data sheet is for steel and aluminium based substrates. Free Span can also be manufactured in other metals such as Colorsteel®, Aluminium, Zinalume® and Galvsteel®.

BUILDING DESIGN/PERFORMANCE CRITERIA/PRODUCT SELECTION

During the design of buildings, it is necessary for the designer to take into account a number of issues to ensure that the most appropriate roofing and cladding product is chosen.

Whilst aesthetics and product availability do play a part, the chosen profile must meet certain performance criteria. These are centred around the profile's ability to shed water from the roof and the ability of the product to span purlin and girt spacings and meet design criteria. The minimum pitch for this profile is outlined elsewhere within this literature.

In terms of purlin spans and girt spacing it is necessary to follow due process.

If a building is being designed and constructed in full accordance with E2/AS1 and roofing and cladding products as covered by that document are chosen, then it is necessary for the design spans and fixing methodology to comply with those of E2/AS1. However E2/AS1 states that the use of the manufacturers information may provide a more optimum spacing of fixings, and this is recommended by Freeman Roofing.

Further where a building is outside of the scope of E2/AS1 and the building or parts thereof are of specific design then it is necessary for the roofing and cladding to be suitable for the design and vice versa.

Loadings referred to in Freeman Roofing graphs are the result of testing to a serviceability limit state which is more conservative than an ultimate limit state as quoted by some manufacturers.

Our Design Graphs are presented in a form to allow the designer to select suitable products and purlin spacings.

For most roof installations the purlin spacings will be limited by the trafficable limitations of the profile or the structural design. It is then necessary for the designer to calculate the design wind load for the roofing and cladding in accordance with generally acceptable practice, by reference to AS/NZS 1170.2: 2011, and/or NZS 3604: 2011 as appropriate. For a fuller explanation of this refer to the NZ Metal Roof and Wall Cladding Code of Practice. This result should be referenced to the Wind Load Span Design Graphs.

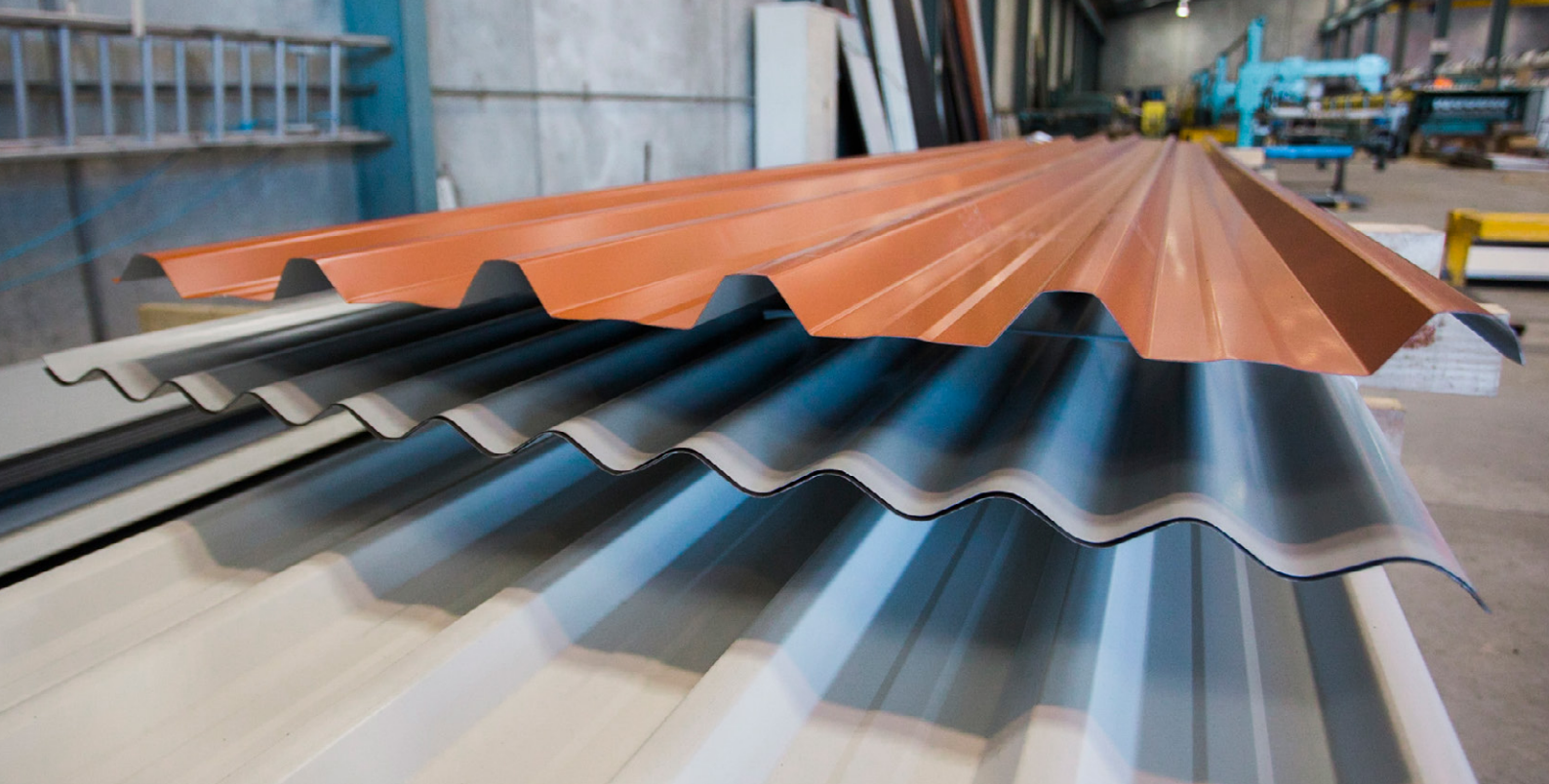
The purlin spacings should be limited to the lower of the trafficable limitations and design wind load with the capacity of the structure being greater than the design load for the application. However for roofs that are not able to be walked on and for wall cladding applications, the trafficable limitations may be exceeded providing the design wind loading criteria is met. However this should be done with caution as it may require considerable extra secondary fasteners within the laps.

The designer should always take into account in areas of heavy roof traffic, snow loadings, or where the roofing supports such items as air conditioning units, purlin spacing should be reduced accordingly. Consideration also needs to be given to limitations of purlin spacings for any translucent sheeting. Reference should be made to the notes in the graphs.

It is our recommendation that for commercial and industrial roofing applications that .55mm BMT steel or .90mm BMT Aluminium is used as it has more resilience to damage particularly by other trades. Underlay as per the project specifications should be used.

With an aluminium substrate steel netting should not be used where it may be in contact (either directly or through underlay degradation) with the aluminium roofing or cladding. Alternative material such as polypropylene strapping should be used where support is required, or the cladding separated from the underlay by a high density polystyrene batten or Thermakraft Drainage Matt or similar, and the use of an aluminium gutter flashing. This is also applicable to coated metal and zinc roofing in severe marine applications. In all the above cases self supporting paper should be used, including when support is required.

When specifying Freeman Roofing Free Span into design plans, always cite this product as: 'Freeman Roofing Free Span'. This will ensure that the product used on the project is compliant and accurately manufactured using genuine NZ Made Colorsteel®.



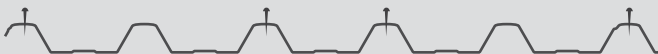
PRIMARY FIXING METHODS

Roofing Application

A - Fixed every purlin, every rib with approved screws and neos, load spreading profiled metal washers and EPDM washers.



B - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos, load spreading profiled metal washers and EPDM washers. End purlins and periphery of roof to be fixed every rib.



C - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos and 25mm Aluminium embossed washers. End purlins and periphery of roof to be fixed every rib.



D - Fixed every purlin with the same pattern, (hit-miss-hit-hit-miss-hit) with approved screws and neos without washers. End purlins and periphery of roof to be fixed every rib.



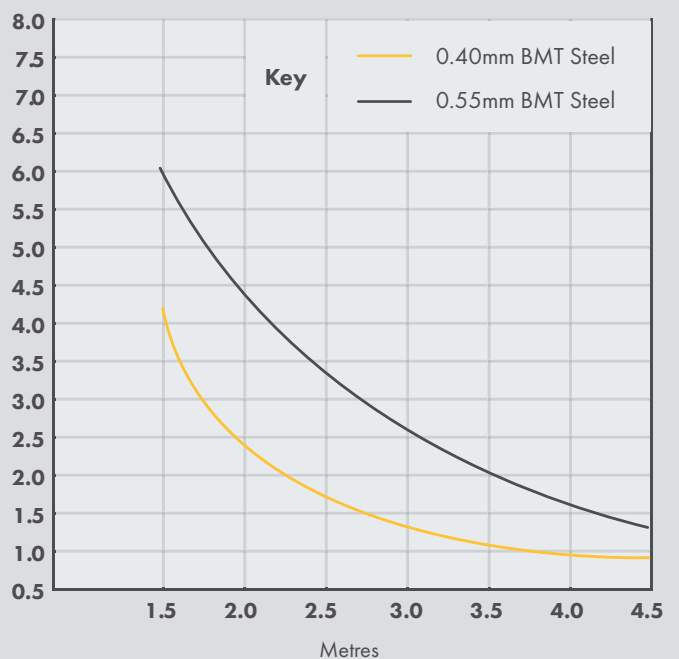
Drape Curved Roofing

It is recommended that the first two purlins at each end of the sheet in drape curving situations, should be fixed using profile metal washers and EPDM washers to every crest, with the balance of the roof fixed as above.

Wall Cladding

Steel Based Material.

kPa



Classification type

All roofing and cladding has been tested in accordance with the NZMRM test procedure.

Classification Types are from the NZ Metal Roof and Wall Cladding Code of Practice and is adjusted for practical application.

- Intermediate span in metres.
- End spans to be a maximum of 2/3 of this span.
- Type 3 Classification.

Fixed in the pan adjacent to every rib every girt, with approved screws and neos. At the laps the fixing is to be adjacent to the lap rib.





PURLIN/GIRT SPACING LIMITATIONS AND RECOMMENDATIONS

E2/AS1 states that a specific design may produce a more optimum spacing for fixing than as presented in this document. For profiles such as Free Span that is particularly applicable and as such the manufacturers information should be used.

Manufacturers recommendations for maximum spacings in accordance with NZ Metal Roof and Wall Cladding Code of Practice.

		Steel Based Material		Aluminium H36	
		.40mm	.55mm	.70mm	.90mm
Restricted Access Roof (Type 2B) (Where walking is permitted within 300mm of the purlin line or in the pan of the profile)	Intermediate	2.400	4.000	1.800 (2.5kPa)*	3.000 (1.9kPa)*
	End	1.600	2.700	1.200 (4.0kPa)*	2.000 (3.2kPa)*
Unrestricted Access Roof (Type 2A) (Where walking is permitted anywhere on the roof cladding)	Intermediate	1.200	3.000	1.100 (4.5kPa)*	2.100 (3.6kPa)*
	End	0.800	2.000	0.750 (4.7kPa)*	1.400 (5.2kPa)*
Non Accessible Roof and Wall Cladding (Type 3)	Intermediate	2.900	4.100	1.800 (1.8kPa)*	3.000 (1.9kPa)*
	End	1.900	2.700	1.200 (3.3kPa)*	2.000 (3.2kPa)*

*Wind design load for Aluminium using Primary Fixing Method A. See Summary Charts for steel.

Classification Types are from the NZ Metal Roof and Wall Cladding Code of Practice and do not allow for any congregation of foot traffic.

Purlin spacing limitations to be read in conjunction with Wind Load Span Design Graphs and Charts.

In areas of heavy traffic purlin spacing should be reduced accordingly.

For curved roofing refer to Information Table.

When roof pitch is 8 Degrees or higher and self supporting paper is preferred to be used (without any support) purlin spacings must be limited to a maximum of 1.200 mtr centres for vertically run underlay and 1.150 mtr centres for horizontally run underlay. This is particularly relevant with aluminium and /or severe marine environments for the reasons designated under Building Design/Performance Criteria/Product Selection part of this document.

SNOW LOADS

When the possibility of snow exists it is necessary to allow for the extra imposed snow loads by increasing the strength of the structure, and/or minimising the build up of snow, and this is generally achieved by increasing the roof pitch by allowing easier shedding of the snow or otherwise as the designer determines.

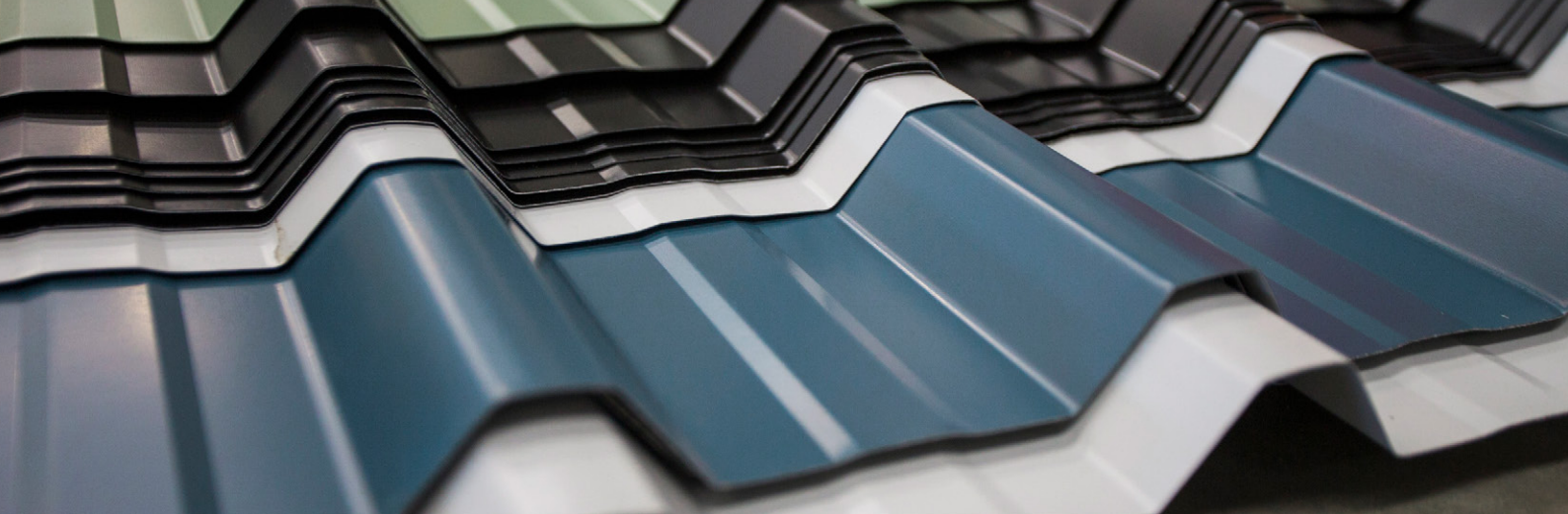
The objective is to simplify rather complex loading patterns while remaining adequately cautious. The design loads should take account of drifting snow due to wind, but wind loads are not required to be combined with snow loads.

As snow loads are uniformly distributed loads they are similar to wind loads.

Snow loadings are not required to be taken into account for the North Island of New Zealand north of a line drawn from Opotiki to Turangi and New Plymouth.

However for other areas snow loadings may need to be taken into account dependent on the area and altitude of the proposed project.

A fuller reference including a map and chart is available from the NZ Metal Roofing Roof and Wall Cladding Code of Practice Section 3.5.



SUMMARY CHART FOR ROOFING SPANS IN STEEL

Incorporating Wind and Concentrated Load Span Design Graphs, Primary Fixing Methods and Foot Traffic.

Int (P) = Intermediate Periphery Loadings other than end spans (eg gable ends)

For wall cladding refer to Wall Cladding Graph. When fixed in accordance with the Primary Fixing Method loadings will always be higher than the above roofing charts.

Foot traffic classifications do not allow for any congregation of foot traffic.

.40mm BMT Steel														
		WIND DESIGN LOADINGS - kPa's												
Purlin Spacing (mtrs)		Fixing Method A			Fixing Method B			Fixing Method C			Fixing Method D			Foot Traffic
Int.	End	Int.	End	Int(p)	Int.	End	Int(p)	Int.	End	Int(p)	Int.	End	Int(p)	
1.2	0.8	4.5	4.7	4.5	2.3	2.4	4.5	1.9	2.2	2.8	1.2	1.3	2.6	Unrestricted
1.5	1.0	4.3	4.5	4.3	2.2	2.3	4.3	1.8	2.1	2.7	1.2	1.2	2.5	Restricted Access Walk within 300mm of Purlins or in pan of roof
1.75	1.17	3.7	4.5	3.7	2.0	2.3	3.7	1.7	2.1	2.4	1.1	1.2	2.25	
2.00	1.33	3.2	4.4	3.2	1.8	2.2	3.2	1.5	2.1	2.2	1.0	1.2	2.0	
2.25	1.5	2.7	4.3	2.7	1.6	2.2	2.7	1.4	1.9	2.0	0.9	1.2	1.8	
2.4	1.6	2.5	4.0	2.5	1.55	2.1	2.5	1.3	1.8	1.8	0.9	1.2	1.7	
2.5	1.67	2.4	3.8	2.4	1.5	2.1	2.4	1.2	1.8	1.8	0.9	1.1	1.6	Non Accessible
2.75	1.83	2.0	3.4	2.0	1.3	1.95	2.0	1.1	1.7	1.5	0.8	1.1	1.4	
2.9	1.9	1.8	3.3	1.8	1.2	1.9	1.8	1.0	1.6	1.4	0.8	1.00	1.25	

.55mm BMT Steel														
		WIND DESIGN LOADINGS - kPa's												
Purlin Spacing (mtrs)		Fixing Method A			Fixing Method B			Fixing Method C			Fixing Method D			Foot Traffic
Int.	End	Int.	End	Int(p)	Int.	End	Int(p)	Int.	End	Int(p)	Int.	End	Int(p)	
1.2	0.8	6.0	6.0	6.0	3.5	3.5	6.0	3.3	3.3	5.5	2.7	2.7	5.0	Unrestricted
1.5	1.0	5.5	6.0	5.5	3.2	3.5	5.5	2.9	3.3	5.0	2.5	2.7	4.6	
1.75	1.17	4.9	5.9	4.9	2.8	3.4	4.9	2.65	3.2	4.4	2.25	2.6	4.0	
2.0	1.33	4.4	5.7	4.4	2.6	3.3	4.4	2.3	3.1	3.7	2.0	2.5	3.4	
2.25	1.5	4.0	5.5	4.0	2.3	3.2	4.0	2.1	2.9	3.3	1.8	2.5	3.0	
2.4	1.6	3.6	5.3	3.6	2.15	3.1	3.6	1.9	2.8	2.9	1.65	2.4	2.7	
2.5	1.67	3.5	5.1	3.5	2.1	3.0	3.5	1.8	2.7	2.8	1.6	2.3	2.6	Restricted Access Walk within 300mm of Purlins or in pan of roof
2.75	1.83	3.3	4.7	3.3	1.8	2.75	3.3	1.6	2.5	2.4	1.45	2.2	2.2	
2.9	1.9	3.0	4.6	3.0	1.75	2.7	3.0	1.5	2.4	2.2	1.4	2.1	2.0	
3.0	2.0	2.9	4.4	2.9	1.70	2.6	2.9	1.4	2.3	2.1	1.3	2.0	1.9	
3.25	2.16	2.6	4.3	2.6	1.50	2.5	2.6	1.2	2.2	1.8	1.25	1.9	1.65	
3.5	2.33	2.3	3.8	2.3	1.35	2.2	2.3	1.1	2.0	1.5	1.0	1.75	1.4	
3.75	2.5	2.2	3.5	2.2	1.25	2.1	2.2	0.95	1.8	0.9	0.8	1.6	0.8	
4.0	2.70	1.90	3.2	1.9	1.1	1.8	1.9	0.8	1.7	0.8	0.75	1.4	0.75	
4.1	2.70	1.8	3.2	1.8	1.1	1.8	1.8	0.8	1.7	0.75	0.7	1.4	0.7	Non Accessible

PRIMARY FIXING CHART

Roofing Crest fixed (To be read in conjunction with Roof Expansion Provisions and Load Span Design Graph)

	Steel Based Material	Aluminium Based Material
Wood Purlins	14-10x75 Class 4 Type 17 Timber or universal screws with neo washers or 14-10x100 Class 4 Type 17 Timber or universal screws with neo washers	14-11x73 Aluminium screws with bonded washer with Free Span load spreading profile 1.2mm Ali washers and 36mm EPDM, or Stainless steel grade 316, 14-10x100 Type 17 with neos through a 10mm dia. clearance hole with Free Span load spreading profile 1.2mm Ali washer & 36mm EPDM
Steel Purlins or girts up to 1.5mm	12-14x65 Class 4 steel or universal screws with neo washers	Stainless steel grade 304, 14-14x70 steel or universal screws with bonded washer through a 10mm dia. clearance hole with Free Span load spreading profile 1.2mm Ali washer & 36mm EPDM
Steel Purlins or girts 1.5-4.5mm	12-14x65 Class 4 steel or universal screws with neo washers	Stainless steel grade 304, 14-14x70 steel or universal screws with bonded washer through a 10mm dia. clearance hole with Free Span load spreading profile 1.2mm Ali washer & 36mm EPDM
Steel Purlins or girts 4.5-12mm	12-24x 65 Class 4 Series 500 steel or universal screws with neo washers	Fabco stainless steel grade 304, 14-14x70 Type B screw and bonded washer through a 10mm dia. clearance hole with Free Span load spreading profile 1.2mm Ali washer & 36mm EPDM
Washers (When required)	Free Span load spreading profile Steel and 36mm EPDM or 25mm Aluminium embossed washer	Free Span load spreading profile 1.20mm Ali and 36mm EPDM

Wall Cladding Pan fixed

	Steel Based Material Direct fixed	Steel Based Material 20mm Cavity	Aluminium Based Material Direct Fixed	Aluminium Based Material 20mm Cavity
Wood Purlins	12-11x40 Class 4 Type 17 Timber or universal screws with neo washers	12-11x50 Class 4 Type 17 Timber or universal screws with neo washers	12-11x35 Aluminium screws with bonded washer	12-14x55 Aluminium screws with bonded washer
Steel Purlins or girts up to 1.5mm	12-14x20 Class 4 steel or universal screws with neo washers	12-14x45 Class 4 steel or universal screws with neo washers	Stainless steel grade 304, 14-14x25 steel or universal screws with bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x70 steel or universal screws with bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer
Steel Purlins or girts 1.5-4.5mm	12-14x20 Class 4 steel or universal screws with neo washers	12-14x45 Class 4 steel or universal screws with neo washers	Stainless steel grade 304, 14-14x25 steel or universal screws with bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Stainless steel grade 304, 14-14x70 steel or universal screws with bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer
Steel Purlins or girts 4.5-12mm	12-24x32 Class 4 steel or universal screws with neo washers	12-24x50 Class 4 Steel or universal screws with neo washers	Fabco stainless steel grade 304, 14-14x20 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer	Fabco stainless steel grade 304, 14-14x70 Type B screw and bonded washer through a 10mm diameter clearance hole with 19mm bonded Ali washer
Washers (When required)	-	-	19mm bonded Ali washer	19mm bonded Ali washer

Note: All primary fasteners to have a minimum embedment into structural timber of 30mm. Adjust fastener length for both timber and steel fixings when necessary for battens etc. When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridding, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.

Secondary Fasteners (To be used in accordance with the NZ Metal Roof and Wall Cladding Code of Practice.)

These should be:

- Aluminium Blind Rivets AS5-3 x 4mm minimum (Residential)
- Aluminium Blind Rivets AS 6-3 x 4.8mm minimum (Commercial)
- Aluminium Bulb-tite Rivets
- 12-11x35 Aluminium screws with neo washers
- 12-11x25 Class 4 Type 17 Timber or Universal screws with neo washers (Steel based material only)

ROOF EXPANSION PROVISIONS

Fix with recommended fasteners and systems from the Primary Fixing Chart and additionally allow for the following where applicable.

Steel Based Material

NZ Metal Roof and Wall Cladding Code of Practice Compliance				
Sheet Lengths	Up to 15 metres	>15-18 metres	>18-25 metres	>25-30 metres
Zincalume and light colours	No special provision.	No special provision	Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM or approved 25mm Aluminium embossed washer.	Solid fix from the ridge down 12 metres & oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM or approved 25mm Aluminium embossed washer used for the entire sheet
Dark Colours	No special provision.	Solid fix from the ridge down 12 metres and oversize holes should be used for the remainder of the sheet with approved load spreading profile washers, and a 36mm EPDM washer or approved 25mm Aluminium embossed washers		Not recommended

Aluminium

Sheet Lengths	Up to 10 metres	10-12 metres	12-15 metres	>15 metres
Plain Aluminium & lighter colours in Favourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36mm EPDM washers			Not recommended
Dark Coloured Aluminium in Favourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 36mm EPDM washers		Not recommended	
Plain Aluminium & lighter colours in Unfavourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30mm EPDM washers		Not recommended	
Dark Coloured Aluminium in Unfavourable Installations (Refer NZMRM C.O.P. Section 4.1.6)	Fix using oversize holes with screws and approved load spreading profile Ali washers, and 30mm EPDM washers.	Not recommended		

For sheet lengths in excess of the above a step joint or other special provision for expansion is required. When using load spreading profile washers or 25mm Aluminium embossed washers for roofing fix ridging, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.

Oversize holes should be 3mm greater diameter than the screw or as per the Primary Fixing Chart for stainless steel screws. For further

information on the fixing of Free Span refer to E2/AS1 of the NZ Building Code and NZ Metal Roof and Wall Cladding Code of Practice, www.metalroofing.org.nz. These publications along with the foregoing technical data should form the basis of the design and installation of metal roofing and cladding

Also refer to our suite of detail drawings, and to NZ Steel Ltd and Pacific Coilcoaters literature.

ADHERENCE TO BUILDING CODE STANDARDS

When employed in alignment with Freeman Roofing's installation and maintenance advice, Freeman Roofing Corrugate will aid in fulfilling the subsequent stipulations of the New Zealand building code.

B1 STRUCTURE:

B1.3.1, B1.3.2, B1.3.3 (b, c, f, g, h, j), B1.3.4

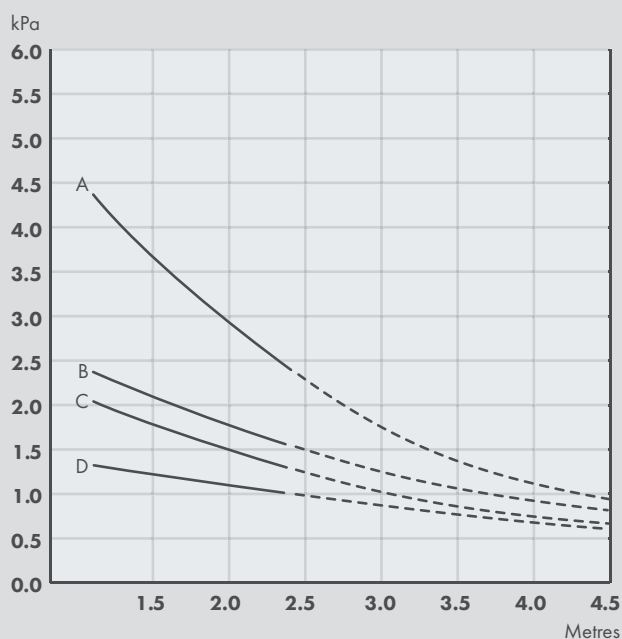
The span tables align with AS/NZS 1170.2:2002 standards. They are established using a maximum building height of ten meters and a 500-year design return period for wind load assessment under the strength limit state.

WIND & CONCENTRATED LOAD SPAN DESIGN GRAPH (APPLICABLE TO ROOF AND WALL CLADDING)

Roofing - Steel Based Material

.40 Steel G550 High Strength

Key	————	0.40mm BMT Steel
	-----	Trafficable ¹
	————	Wind load only ²



- Intermediate span in metres.
 - End spans to be a maximum of 2/3 of this span.
 - A, B, C and D represent alternative primary fixing methods
1. The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile.
Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

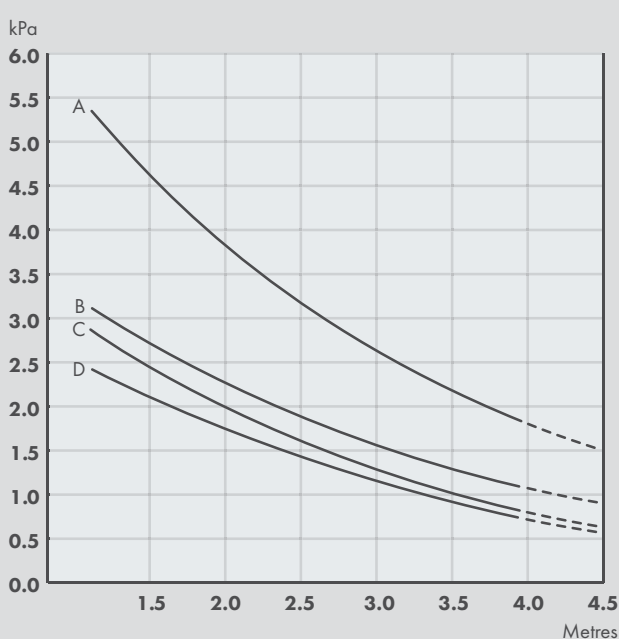
Maximum Spans	0.40mm BMT
Intermediate	2.4 metres
End	1.6 metres
Type 2B "Restricted Access" Classification	

2. The broken line represents untrafficable roof areas and is wind loading only and has a Type 3 Classification.
In areas of heavy roof traffic, snow loadings or containing items such as air conditioning units purlin spacing should be reduced accordingly.

For Type A "Unrestricted Access" Classification, refer to Purlin Spacing Limitations and Recommendations. Classification types are from the NZ Metal Roof and Wall Cladding Code of Practice.

.55 Steel G550 High Strength

Key	————	0.55mm BMT Steel
	-----	Trafficable ¹
	————	Wind load only ²



- Intermediate span in metres.
 - End spans to be a maximum of 2/3 of this span.
 - A, B, C and D represent alternative primary fixing methods
1. The solid line represents where walking is permitted within 300 mm of the purlin line or in the pan of the profile.
Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

Maximum Spans	0.55mm BMT
Intermediate	4.0 metres
End	2.7 metres
Type 2B "Restricted Access" Classification	

2. The broken line represents untrafficable roof areas and is wind loading only and has a Type 3 Classification.
In areas of heavy roof traffic, snow loadings or containing items such as air conditioning units purlin spacing should be reduced accordingly.

Testing confirms that .70mm Aluminium has similar results to .40mm Colorsteel® and that .90mm Aluminium has similar results to .55mm Colorsteel® and is adjusted for practical application. Aluminium requires load spreading profile washers and EPDM's at all time.

ADHERENCE TO BUILDING CODE STANDARDS CONT.

B2 DURABILITY:

B2.3.1 (b)

Durability in accordance with Table 20 E2/AS1

Product	Rain Washed Roofs	Walls and Unwashed Areas
Colorsteel Endura / Colorcote Zinacore	B, C, D	B, C
Colorsteel Maxx / Colorcote Magnaflow	B, C, D, E	B, C, D
Colorsteel Altimate / Colorcote Alumiguard	B, C, D, E	B, C, D, E

Key

E2/AS1 references atmospheric zones B,C,D,E.
Determined, by wind-driven sea-spray.
B: Low / C: Medium / D: High / E: Severe marine, such as breaking surf beaches.

C FIRE:

C3.5, C3.6, C3.7

Freeman Roofing products made from Colorsteel® are rated as group 1-S materials when tested in accordance with ISO 5660:2002 part 2. For more information, please refer to: Colorsteel product technical statements v2022.1 <https://www.colorsteel.co.nz/resources/downloads-and-brochures/>

E1 – SURFACE WATER:

E1.3.2

Freeman Roofing Corrugate carrying capacity.

Minimum Pitch 8°, rainfall intensity 150 mm/hr

Maximum Run	122m	
Catchment area of spreader	61.11 m ²	20m run, 4 holes in spreader
Catchment behind penetration	30.55 m ²	20m run, discharging each side of penetration

E2 EXTERNAL MOISTURE:

E2.3.1, E2.3.2, E2.3.7

Freeman Roofing Free Span will match a wide range of details for most applications. Standard design details for Freeman Roofing Free Span can be found on our website.

<https://www.freemanroofing.co.nz/roofing-styles/free-span/>

Other options can conform to the trapezoidal roofing solutions outlined in E2/AS1.

E3 INTERNAL MOISTURE:

E3.1

When utilised alongside a porous and permeable underlay that meets the standards of NZS 2295:2006, the utilisation of Freeman Roofing Free Span aids in satisfying the requirements of NZBC E3.3.1. Adequate ventilation provisions are necessary for ceiling spaces in sarked roofs, skillion roofs, barrel curved roofs, flat roofs, and roofs in moisture-prone environments.

F2 HAZARDOUS BUILDING MATERIALS:

F2.3.1

Freeman Roofing Free Span manufactured from Zinalume® Colorsteel® or pre-painted Aluminium such as Altimate® will meet the performance requirement of F 2.3.1.

G12 WATER SUPPLIES:

G12.3.2

Rainwater collected from roofs clad with steel and pre-painted steel products [including Colorsteel®], will comply with the provisions of NZBC G 1 2.3.1, provided the water is not contaminated from other sources (MRM Code of Practice 12.7).

TESTING & SUPPORTIVE EVIDENCE

Supporting evidence provided where requested will apply to the product supplied for the specific project.

Technical documentation and testing evidence pertaining to Colorsteel® and Altimate® can be found here: <https://www.colorsteel.co.nz/resources/downloads-and-brochures/>

Freeman Roofing Free Span wind capacity and span tables reflect testing undertaken by the New Zealand Metal Roofing Manufacturers Association. Documentation can be obtained by contacting Freeman Roofing.



INSTALLATION ADVICE

- Store Freeman Roofing Free Span sheets above ground level in a dry place. If they get wet, separate, wipe, and let them dry.
- Avoid using black lead pencils on aluminium/zinc or steel; they cause corrosion. Use non-black pencils, marker pens, or crayons.
- Cut pre-painted steel with shears, not friction blades or high-speed saws, which can damage the coating and create heat and swarf.
- Clear debris daily, as it's easier to prevent swarf damage.
- Install sheets with lapping, not stretching, to prevent weather penetration.
- Crest fix roofing with specified fasteners through every rib. Use load-spreading washers when needed; pan fixing is for walls.
- For wide spans, use self-drilling stitching screws for a weatherproof seal.
- Turn up/down pans on roofing and ends on wall cladding. Use foam seals when necessary.
- Install eaves flashings for low pitch or narrow soffits and in high-wind zones.
- Walk on roofing over purlins, wear flat rubber-soled shoes, and use crawl boards for carports/verandas.
- Use cavity battens under wall cladding, adjusting screw length as needed.
- Install flashings as specified for weather tightness.

MAINTENANCE

All roofing and cladding materials are affected by the combined influences of weather, dust, and various deposits. Therefore, the long-term performance and resilience of Freeman Roofing Corrugated roofing and wall cladding rely on proper upkeep. In the case of roofing, the natural action of rain will generally cleanse most gathered environmental particles from the upper surface.

On the other hand, wall cladding necessitates manual cleaning every 3 to 12 months (depending on the local surroundings and paint system) to prevent the accumulation of dirt, debris, or other substances that rain alone can't remove. Regions that lack sufficient rain cleaning (unwashed areas) demand more thorough manual cleaning. These areas encompass soffits, wall cladding beneath eaves, undersides of gutters, fascia's, protected sections of garage doors, unwashed

roof segments, and other zones at greater risk, such as around flues, beneath television aerials and solar panels, or in locales prone to mould, lichen, bird droppings, or debris.

Maintenance of roofing and cladding materials should be cleaned manually using either water and a sponge or a gentle nylon-bristled brush. Water blasting can be employed, but the pressure must not exceed 20MPa. Avoid using harsh or solvent-based cleaners like turps, petrol, or kerosene.

Additional information pertaining to New Zealand Steel's maintenance advice for its products can be found here: https://www.colorsteel.co.nz/assets/Brochures/Maintenance_Recommendations_Brochure_v4.pdf.

STATEMENT IN REGARD TO SECTION 26 OF THE BUILDING ACT

Freeman Roofing Corrugated roofing and wall cladding products are not subject to any warnings or bans under Section 26 of the Building Act.



freemanroofing.co.nz

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