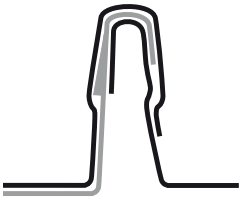
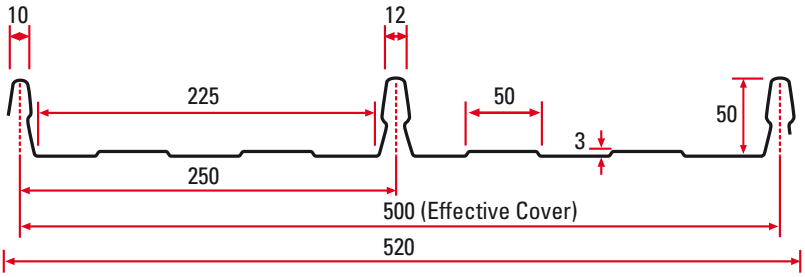
PROFILE TECHNICAL SUMMARY

(All dimensions are nominal and in mm)

Multidek lap



Multidek
Dimensioned Drawing of Multidek



Minimum Pitch

The minimum roof pitch for Multidek is 3 degrees (approx 1:20). Any variation from the above should be referred to Roofing Industries

It is recommended when a combination of sheets provide a run of in excess of 40 meters and up to 60 meters the roof pitch should be increased by 1 degree or 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.

Multidek hidden fixing clip

Branches: • Whangarei • Auckland • Pukekohe (Franklin Metal Folding & Roofing Ltd) • Hamilton • Taupo • Palmerston North • Wellington • Christchurch

- Manufactured custom cut to length subject to transport and site limitations.
- As sheet lengths increase higher transportation costs may be applicable.
- Sheet lengths in excess of 28 metres require specialised transportation.Refer to Roofing Industries.
- Maximum recommended sheet lengths for **Aluminium** is 18 metres for dark coloured and 24 metres for plain and light coloured.

Information Table

Substrate Material	Steel		Aluminium
Thickness	**.48mm BMT**	**.55mm BMT**	**.90mm BMT**
Aprox weight per lineal metre for Zincalume based material (kg/lm)	2.94	3.35	1.85
Purlin Spacings -General	Refer to separate section.		Refer to separate section.
Unsupported Overhang (mm)[1]	150	250	200
Drape Curved Roof -min Radius (m)	70	70	70
Purlin Spacings for Curved Roofs -Intermediate (mm)	1200	1450	0.900
-End (mm)	950	1100	0.600
Precurved Roof -min Radius (mm)	N/A[2]	N/A[2]	N/A[2]
-Recommended Minimum Radius (mm)	N/A[2]	N/A[2]	N/A[2]

[1] Not suitable for roof access without additional support) [2] N/A - Not available

This technical data sheet is for steel and aluminium based substrates. Multidek can also be manufactured in other metals such as Copper or Titanium Zinc. Refer to Roofing Industries.

Specification

Refer to our Full Specification on Masterspec, our website, and our Selection Guide.

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 centered 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 in 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. For Multidek or similar profile E2/AS1 states that the manufacturers recommendation can be used for fixing patterns and spans, as the acceptable solution is based on a different pan width.

Further where a building or products are 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 Roofing Industries 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, these limitations may be exceeded providing the design wind loading criteria is met. However this should be done with caution.

The designer should always take into account in areas of heavy roof traffic, snow loadings, or where the roofing supports all the above 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 .55 mm BMT steel or .90 BMT Aluminium is used as it has more resilience to damage particularly by other trades.

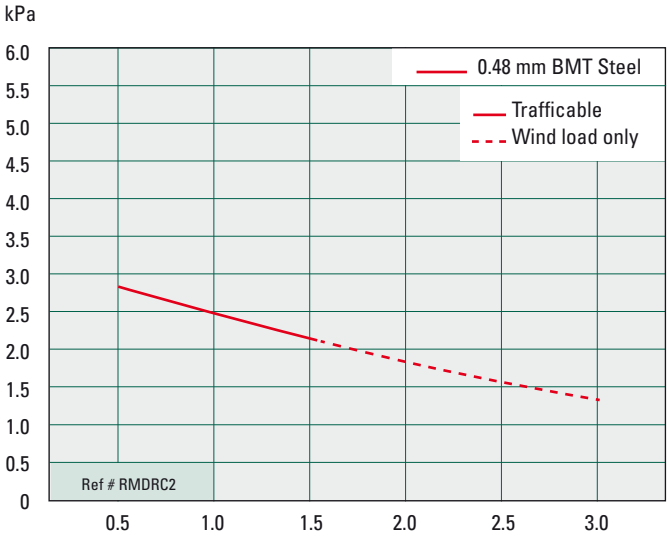
Underlay as per the project specifications should be used.

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 such cases self supporting paper should be used, including when support is required.

WIND LOAD SPAN DESIGN GRAPH

Roofing and wall cladding - Steel Based Material

.48 Steel G550 High Strength



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

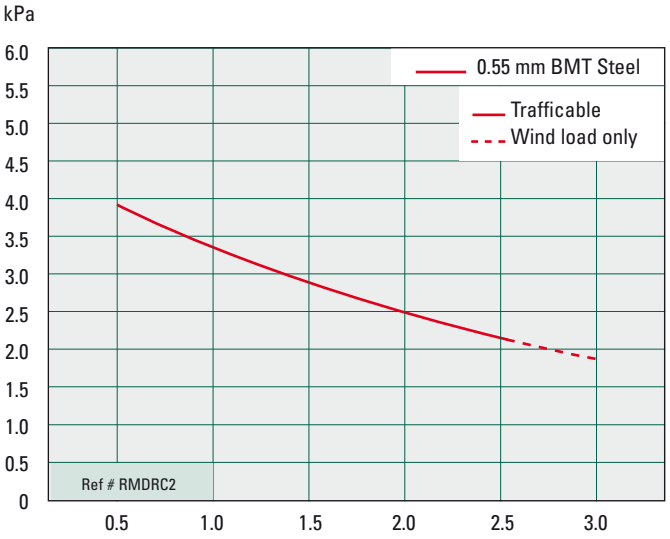
[1]) The solid line represents where walking is permitted within 300mm of the purlin line or in the pan of the profile. Therefore for a normal roof, providing wind load requirements are met, purlin spans are limited to:

Maximum Spans	0.48 mm BMT
Intermediate	1.6 metres
End	1.1 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 or containing items such as air conditioning units purlin spacing should be reduced accordingly.

.55 Steel G550 High Strength.



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

[1]) The solid line represents where walking is permitted within 300mm 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	0.55 mm BMT
Intermediate	2.5 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 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.
Testing confirms that .90mm Aluminium has similar results to .48mm Steel and is adjusted for practical application.

PURLIN/GIRT SPACING LIMITATIONS AND RECOMMENDATIONS

Manufacturers recommendation in accordance with NZ Metal Roof and Wall Cladding Code of Practice

		Steel Based Material .48mm BMT		Steel Based Material .55mm BMT	Aluminium H36 .90mm BMT
Restricted Access Roof (Type 2B) (Where walking is permitted within 300mm of the purlin line or in the pan of the profile	Intermediate End	1.600 1.100	For wind design loads for steel based materials refer to graphs or Summary Chart.	2.500 1.600	1.300 (2.05kPa)* 0.900 (2.4kPa)*
Unrestricted Access Roof (Type 2A) (Where walking is permitted anywhere on the roof cladding)	Intermediate End	1.200 0.800		1.800 1.200	0.900 (2.35kPa)* 0.600 (2.5kPa)*
Non Accessible Roof and Wall Cladding (Type 3)	Intermediate End	1.600 1.100		2.500 1.600	1.500 (2.05kPa)* 1.000 (2.4kPa)*

*Wind design load for Aluminium using Primary Fixing Method. 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 ROOF AND WALL CLADDING SPANS IN STEEL

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

.48mm BMT Steel

		WIND DESIGN LOADINGS - kPa's			
Purlin Spacing (mtrs)		**Fixing Method A**			**Foot Traffic**
Intermediate	End	Intermediate	End	End Periphery	
0.5	0.35	2.8	3.0	2.8	Unrestricted
0.75	0.5	2.6	2.8	2.6	
1.0	0.67	2.5	2.7	2.5	
1.2	0.8	2.35	2.55	2.35	
1.25	0.84	2.3	2.5	2.3	Restricted Access Walk within 300mm of Purlins or in pan of roof
1.5	1.0	2.1	2.45	2.1	
1.6	1.1	2.05	2.4	2.05	
1.75	1.17	1.95	2.35	1.95	Non Accessible
2.0	1.33	1.8	2.25	1.8	
2.25	1.5	1.7	2.1	1.7	
2.5	1.67	1.55	2.0	1.55	
2.75	1.83	1.4	1.9	1.4	
3.0	2.0	1.3	1.8	1.3	

.55mm BMT Steel

		WIND DESIGN LOADINGS - kPa's			
Purlin Spacing (mtrs)		**Fixing Method A**			**Foot Traffic**
Intermediate	End	Intermediate	End	End Periphery	
0.5	0.35	3.85	4.0	3.85	Unrestricted
0.75	0.5	3.6	3.9	3.6	
1.0	0.67	3.3	3.7	3.3	
1.25	0.84	3.1	3.5	3.1	
1.5	1.0	2.85	3.3	2.85	
1.75	1.17	2.7	3.2	2.7	
1.8	1.2	2.65	3.15	2.65	
2.0	1.33	2.5	3.1	2.5	Restricted Access Walk within 300mm of Purlins or in pan of roof
2.25	1.5	2.3	2.8	2.3	
2.5	1.67	2.1	2.7	2.1	
2.75	1.83	2.05	2.6	2.05	Non Accessible
3.0	2.0	1.85	2.5	1.85	

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.

PRIMARY FIXING CHART (normally 1 Multidek clip per purlin per sheet)*

Roofing

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	Steel Purlins or girts 4.5-12mm
Steel Based Material	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary)	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary)
Aluminium Based Material	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment

Wall Cladding

	Wood Purlins	Steel Purlins or girts up to 1.5mm	Steel Purlins or girts 1.5-4.5mm	Steel Purlins or girts 4.5-12mm
Steel Based Material Direct fixed	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary)	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary)
Steel Based Material 20mm Cavity	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip (pre-drill if necessary)	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip (pre-drill if necessary)
Aluminium Based Material Direct Fixed	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x16 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment
Aluminium Based Material 20mm Cavity	Zincalume Multidek Clips with two 10-12x45 Class 3 wafer head Timberteks with square drive per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip. Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment	Zincalume Multidek Clips with two 10-16x30 Class 3 wafer head Steelteks per clip (pre-drill if necessary). Paint clips with an approved primer and top coat system and provide an isolation barrier to the fixing screws in a corrosive environment

Notes: 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 sheet lengths exceed 12 metres for Zincalume and light coloured and 8 metres for dark coloured steel based material and 8 metres for Aluminium based material, fix ridging, roof flashings etc. using a 25mm Aluminium embossed washer and appropriate screw.
*Double clipping to both end purlins in a drape curved situation is recommended.

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 Alutites
- 12-11x25 Class 4 Type 17 Woodteks (Steel based material only)

ROOF EXPANSION PROVISIONS

Multidek slides on the Multidek Clip and this provides longitudinal expansion. Lateral expansion is taken up within the profile itself.

Steel Based Material

Zincalume and lighter colours are subject to less expansion than dark colours so the former are recommended when sheeting lengths exceed 24 metres. Multidek can be manufactured to lengths within the availability of transport limitation, generally up to 30 metres, but can be manufactured longer subject to the availability of specialised transport. On site manufacture is also a possibility for larger projects.

For steel based sheets in excess of 30 metres sheet lengths refer to Roofing Industries.

Aluminium

Plain aluminium and light colours are subject to less expansion than dark colours, so the former are recommended when sheeting length exceeds 18 metres.

Maximum recommended sheet lengths for for plain and light coloured Aluminium is 24 metres.

Ridging and Flashings

When sheet lengths exceed 12 metres for Zincalume and light coloured steel and 8 metres for dark coloured steel based material and 8 metres for Aluminium based material, fix ridges, roof flashings etc. using a 25mm Aluminium embossed washer.

For further information on the fixing of Multidek refer to E2/AS1 of the NZ Building Code and NZ Metal Roof and Wall Cladding Code of Practice, www.metalroofing.co.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.