Maximus™ 33 Design Guide

Roofing and Walling

Stratco Maximus™ 33 Design Guide: Roofing & Walling

Form And Function

Maximus 33 exceeds all other corrugated profiles with its high-volume corrugations allowing for superior roof drainage. Providing a sense of scale, the broad corrugations allow large surface area roofs to sit comfortably into a residential area without looking too busy or imposing.

The 0.48mm BMT allows for increased spanning capability and offers a robust surface for maintenance and foot traffic plus excellent impact resistance.

Available in ZINCALUME® steel, COLORBOND® steel and Traditional Galvanised Z600, the Maximus 33 profile is extremely versatile for roofing and wall cladding.

With the stronger Maximus 33 profile, Stratco offers not only market leading technology and product quality, but now has an extended corrugated roofing product range, offering maximum character, style and a long-lasting appearance to all Residential and Commercial applications.

Design Considerations

Maximus 33 has a 737mm cover in 0.48mm BMT material (South Australia) and a 614mm cover in 0.48mm BMT material (Queensland). The minimum recommended pitch is 2 degrees.

Maximus 33 roofing is subject to thermal expansion. The maximum length before an expansion joint is needed is 24m for light colours (SA of 0.60 and below) and 16m for dark colours (SA of 0.61 and greater).

For pan fixed wall cladding the maximum length recommended is 15m regardless of colour choice.

Water Carrying Capacity

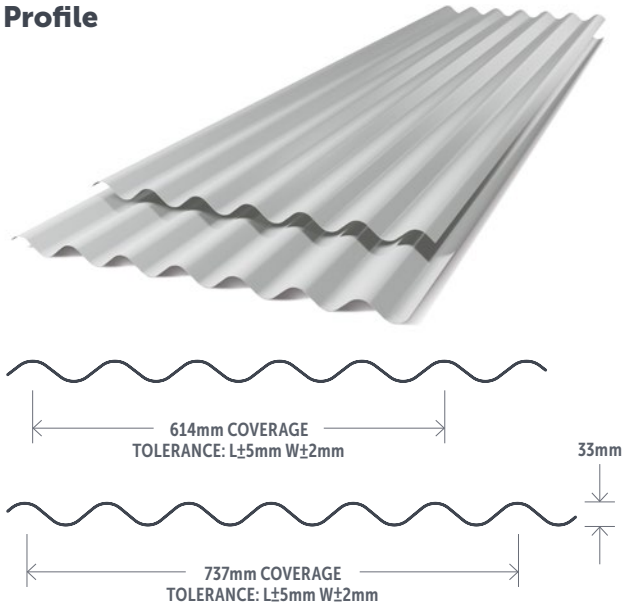
Table 1.0 - Maximum Roof Run for Drainage (m)

Maximus 33

Roof Slope	Peak Rainfall Intensity (mm/hr)					
	150	200	250	300	350	400
2°	54	41	33	27	23	20
3°	67	50	40	33	29	25
5°	86	65	52	43	37	32
10°	122	92	73	61	52	46
15°	151	113	91	75	65	57

Note: The peak rainfall intensities shown represent a 100 year average recurrence interval (ARI) for a five minute rainfall duration. If roof penetrations exist, the actual roof run will typically be larger than the distance from ridge to eaves due to penetration/s interfering with the runoff. Contact Stratco if further advice is required.

Profile



Material Specifications

Table 2.0

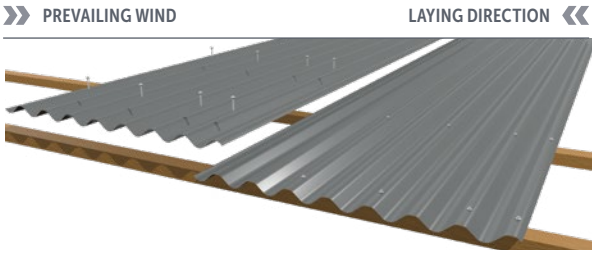
Material Properties	Finish	0.48mm	0.48mm
Width Coverage (mm)	ZINCALUME® steel COLORBOND® steel Galvanised Z600	737mm	614mm
Minimum AM Coating Mass (g/m^2)	ZINCALUME® steel	AM125	AM125
	COLORBOND® steel	AM100	AM100
	Galvanised Z600	Z600	Z600
Mass (kg/linear metre)	ZINCALUME® steel	3.86	3.66
	COLORBOND® steel	3.89	3.69
	Galvanised Z600	4.39	–
Mass (kg/m^2)	ZINCALUME® steel	5.24	5.97
	COLORBOND® steel	5.28	6.01
	Galvanised Z600	5.95	–
Yield (m^2/tonne)	ZINCALUME® steel	191	168
	COLORBOND® steel	189	166
	Galvanised Z600	168	–
Tensile Strength (MPa)	ZINCALUME® steel COLORBOND® steel Galvanised Z600	550	550
Sheet Tolerances (mm)	Length & Width	±5 ±2	±5 ±2
Minimum Roof Pitch	ZINCALUME® steel COLORBOND® steel Galvanised Z600	2°	2°

Fixing Recommendations

Maximus sheets should be laid into the prevailing wind and sit neatly on the preceding roof sheet with a side lap as shown in the fastener positions detail below. They should be fixed within the recommended support spacings. Avoid 'stretching' the width of the sheet when installing, as this could allow wind and rain to enter. Side lap fixing is recommended to maintain a weather proof seal and to secure the overlap especially when the roof is walked on occasionally.

This is best done with either 8 x 12mm self drilling stitching screws or a 3.2mm blind rivet (rivets should be sealed to prevent water penetration). It is recommended side lap fasteners are secured at maximum 900mm centres for roofing and 1200mm centres for walling. On roofing, at the high end of the sheets, the valleys of each corrugation should be turned up at crest using a turn up tool.

Roofing Laying Procedure



Fastener Positions

Walling - 0.48mm BMT - 614mm Cover

Single, End & Internal Spans
3 screws/sheet/support

Walling - 0.48mm BMT - 737mm Cover

Single, End & Internal Spans
3 screws/sheet/support

Roofing - 0.48mm BMT - 614mm Cover

Single, End & Internal Spans
3 screws/sheet/support

Roofing - 0.48mm BMT - 737mm Cover

Single, End & Internal Spans
3 screws/sheet/support

Note: End and internal spans are applicable for cladding spanning over three or more continuous spans.
Note: For double spans, reduce strength limit state wind capacity or sheet span by 20% from that published for end span application.

Fastener Size Selection

Walling - Pan Fixing

All screws must have a neoprene washer for a weather tight seal

Fixing To Steel

M6 x 25mm
TS self drilling screw

Fixing To Timber

M6 x 25mm
TS self drilling screw

Roofing - Crest Fixing

All screws must have a neoprene washer for a weather tight seal

Fixing To Steel

M6 x 50mm
TS self drilling screw

Fixing To Timber

M6 x 50mm
TS self drilling screw

If fixing over an insulation blanket the next standard screw length to that indicated may be required with minimum 25mm timber embedment to be maintained.

Spans

Spans are determined by wind speeds for non-cyclonic areas. For domestic applications, the pressures and spans are based on an eaves height not exceeding 6m, a roof pitch no greater than 35° and a total roof height of maximum 8.5m. For commercial and industrial applications, span tables are based on a maximum overall height of ten metres and a 500 year design return period.

Roofing calculations are based on Cpe=-0.9 and Cpi=0.2, walling is based on Cpe=-0.65 and Cpi=0.2. A local pressure factor, Kl=2.0 has been used for all roofing spans for both strength and serviceability limit states. Roof spans take into consideration loads incidental to maintenance.

All pressures have been determined assuming wind loading in any direction but which is not affected by topography. The following shielding factors, Ms, have been used for each of the terrain categories: Category 3 = 0.85, Category 2.5 = 0.95, and Category 2 = 1.

Domestic carport and verandah spans only apply to structures not enclosed by peripheral walls. Spans are based on Cpn=-0.9 and Kl=1.5 applied over the entire span, and are suitable for all span types. Loads on supporting purlins may limit these spans.

Stratco can provide additional engineering advice if any design parameters vary from those shown.

Testing Systems

Stratco have developed purpose built testing equipment for the testing of cladding systems sufficient to ensure the structural adequacy of the product it produces.

Wind Load Conversion

For domestic applications use the appropriate wind classification for the area. To read the span tables for commercial and industrial applications, select the region and category for the area, then convert it to a wind classification using Table 3.0 below.

Compliance

Wind Capacity Tables are based on testing in accordance with AS1562.1-1992 and AS4040.0, 1 & 2-1992. Span tables have been developed by determining relevant wind pressures in accordance with AS4055 for domestic applications and AS/NZS 1170.2 for industrial/commercial applications. Capacity tables are in limit state format.

Maintenance Requirements

Refer to the Stratco 'Selection, Use and Maintenance' brochure for more detailed information about the correct use and maintenance of this product.

Span Definitions

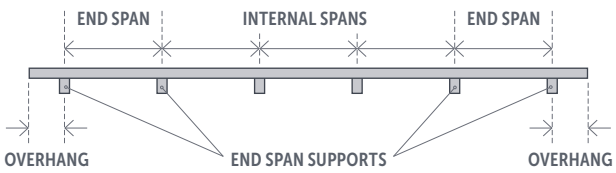


Table 3.0 - Wind Load Conversion

Wind Classification (Domestic)	Region & Category (Commercial/Industrial)
N1	Reg A, Cat 3
N2	Reg A, Cat 2.5 & Reg B, Cat 3
N3	Reg A, Cat 2 & Reg B, Cat 2.5
N4	Reg B, Cat 2

Spans

Table 4.0 - Maximum Recommended Spans (mm)

Span Type	Walling (BMT) 0.48mm	Roofing (BMT) 0.48mm
Single Span	2400	1300
End Span	2700	1600
Internal Span	2700	2500
Un-stiffened Overhang	400	250
Stiffened Overhang	400	450

Roofing: Spans are limited based on foot traffic incidental to maintenance.
Walling: Spans are based on N1 wind loading, refer to 'Spans' table for additional wind allocations.

Table 5.0 - Domestic Carport / Verandah Spans (mm)
Single, End & Internal Spans

Wind Classification	Base Metal Thickness 0.48mm
N1	2700
N2	2450
N3	2200
N4	2100

For carport and verandah applications, utilise crawl boards or ladders over roofing to avoid damage during installation and maintenance. Always ensure boards or ladders are stable and will not slide.

Table 6.0 - Spans (mm) - Determined By Wind Speeds For Non Cyclonic Areas

BMT	Application	Span Type	Wind Classification			
			N1	N2	N3	N4
0.48mm	Walling	Single	2400	2200	1900	1800
		End	2700	2650	2350	1800
		Internal	2700	2650	2350	1800
0.48mm	Roofing	Single	1300	1300	1300	1300
		End	1600	1600	1600	1600
		Internal	2500	2350	1800	1600

0.48mm BMT Maximus walling values are applicable for use with steel supports of minimum 0.75mm thickness, G550.
0.48mm BMT Maximus roofing values are applicable for use with steel supports of minimum 1.0mm thickness, G550.
Note: End and Internal spans are applicable for cladding spanning over three or more continuous spans.

Table 7.0 - Wind Capacities (kPa)

BMT	Span Type	Limit State	Span (mm)						
			900	1200	1500	1800	2100	2400	2700
0.48mm Walling	Single	Serviceability	2.80	2.27	1.80	1.40	1.06	0.78	-
		Strength	8.53	6.96	5.58	4.40	3.41	2.62	-
	End / Internal	Serviceability	2.30	2.04	1.81	1.59	1.39	1.21	1.05
		Strength	7.35	5.55	4.44	3.42	2.69	2.25	2.10
0.48mm Roofing	Single	Serviceability	-	2.39	1.97	1.59	1.24	0.93	0.65
		Strength	-	9.50	7.67	6.23	5.17	4.49	4.20
	End / Internal	Serviceability	-	2.35	1.97	1.66	1.41	1.22	1.10
		Strength	-	7.82	6.35	5.16	4.27	3.67	3.36

Values shown for walling applications use with steel supports of minimum 0.75mm thickness (G550).
0.48mm Maximus values are applicable for roofing applications and minimum 1.0mm supports (G550).
Note: End / Internal capacities are applicable for cladding spanning over three or more continuous spans.



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