Superdek® Design Guide

Roofing and Walling

Stratco Superdek® Economical & Efficient Roofing & Walling

Form And Function

Endowed with strength, Stratco Superdek® is a high tensile roof and wall sheeting that is widely chosen by both professional builders and people improving their homes. Its 28mm rib height allows for long spans and delivers outstanding water carrying ability. Installers recommend Superdek because its pierce fixed installation is fast and easy. Its lightweight, rigid design allows purlins to be widely spaced, making Superdek a very economical and efficient material to use.

Superdek has a trapezoidal profile with an anti-capillary rib on the under-lap, which provides weather tightness and the ability to perform well at low roof pitches. This design feature makes Superdek the prime roofing and walling choice for many medium sized commercial projects. Superdek is also ideal for fencing, where its bold rib shape provides an attractive appearance.

Custom Made For Your Project

Superdek sheets longer than 1.2 metres are rolled to the specific length you require, provided satisfactory transport and handling facilities can be arranged. If lengths longer than ten metres are required, consult your nearest Stratco for advice on handling and transport.

To give your roof a professional finish, painted self-drilling screws are available. Stratco offer a complete range of flashings and accessories for use with Superdek, and can provide professional advice on specific flashings.

Design Considerations

The minimum roof pitch for Superdek is two degrees (1 in 30). The 762mm coverage of Superdek provides easy handling and installation. Superdek roofing is subject to thermal expansion, particularly on darker colours. The maximum length before an expansion joint is required is 24 metres for lighter colours, and 16 metres for darker colours.

Compliance

The 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 wind pressures in accordance with AS4055-2006 for domestic applications and AS/NZS 1170.2:2002 for all other applications. Capacity tables are in limit state format.

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.

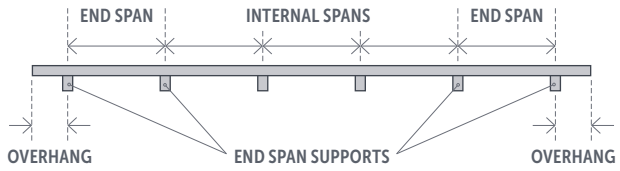
Roofing calculations are based on Cpe=-0.9 and Cpi=0.2, walling is based on Cpe=-0.65 and Cpi=0.2. A local pressure factor, Kl=2.0 has been used for all roofing spans for both strength and serviceability limit states. Roof spans take into consideration loads incidental to maintenance.

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 above.

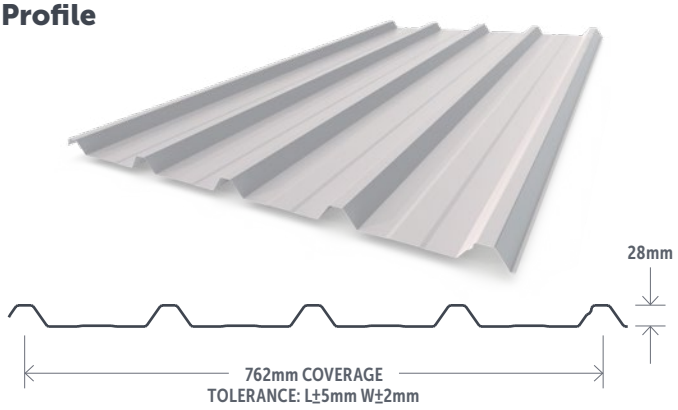
Span Definitions



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.

Profile



Material Specifications

Table 1.0

Material Properties	Finish	0.35 BMT	0.42 BMT	0.48 BMT
Total Coated Thickness (TCT) mm	Zinc/Al	0.40	0.47	0.53
	Colour	0.43	0.50	0.56
Mass (kg/linear metre)	Zinc/Al	2.74	3.26	3.70
	Colour	2.79	3.32	3.76
Mass (kg/square metre)	Zinc/Al	3.60	4.28	4.86
	Colour	3.67	4.35	4.93
Yield (square metre/tonne)	Zinc/Al	277.9	233.8	205.9
	Colour	272.3	229.8	202.8
Tensile Strength (MPa)	Zinc/Al & Colour	G550	G550	G550
Width Coverage (mm)	Zinc/Al & Colour	762	762	762
Sheet Tolerances (mm)	Length & Width	±5 ±2	±5 ±2	±5 ±2
Minimum Roof Pitch	Zinc/Al & Colour	n/a	2°	2°

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 2.0 below.

Table 2.0 - Wind Load Conversion

Wind Classification (Domestic)	Region & Category (Commercial/Industrial)
N1 (W28)	Reg A, Cat 3
N2 (W33)	Reg A, Cat 2.5 & Reg B, Cat 3
N3 (W41)	Reg A, Cat 2 & Reg B, Cat 2.5
N4 (W50)	Reg B, Cat 2

Spans

Table 3.0 - Maximum Recommended Spans (mm)

Span Type	Roofing (BMT)		Walling (BMT)		
	0.42mm	0.48mm	0.35mm	0.42mm	0.48mm
Single Span	1150	1700	1700	2350	2800
End Span	1350	1900	2200	2850	3200
Internal Span	1900	2600	2500	3000	3300
Un-stiffened Overhang	200	250	150	200	250
Stiffened Overhang	300	350	300	300	350

Roofing: *Spans are limited based on typical maintenance foot traffic.* ***Walling:*** *Spans are based on N1 (W28) wind loading.*

Table 4.0 - Domestic Carport / Verandah Spans (mm)

Wind Classification	Base Metal Thickness	
	0.42mm	0.48mm
N1 (W28)	2400	2700
N2 (W33)	2400	2700
N3 (W41)	1900	2100
N4 (W50)	1500	1700

Table 5.0 - Spans (mm) - Determined By Wind Speeds For Non Cyclonic Areas

BMT	Application	Span Type	Wind Classification			
			N1 (W28)	N2 (W33)	N3 (W41)	N4 (W50)
0.35mm	Walling	Single	1700	1700	1600	1450
		End	2200	2200	2000	1550
		Internal	2500	2500	2250	1700
0.42mm	Roofing	Single	1150	1150	1150	1150
		End	1350	1350	1350	1350
		Internal	1900	1900	1900	1500
	Walling	Single	2350	2100	1850	1700
		End	2850	2550	2250	1700
		Internal	3000	3000	2600	1950
0.48mm	Roofing	Single	1700	1700	1700	1500
		End	1900	1900	1900	1500
		Internal	2600	2600	2350	1800
	Walling	Single	2800	2400	2000	1950
		End	3200	2950	2550	2050
		Internal	3300	3300	2900	2250

Table 6.0 - Wind Capacities (kPa)

BMT	Span Type	Limit State	Span (mm)									
			900	1200	1500	1800	2100	2400	2700	3000	3300	3600
0.35mm	Single	Serviceability	2.19	1.68	1.36	1.06	0.76	0.45	-	-	-	-
		Strength	6.64	4.83	3.06	2.61	2.14	1.67	-	-	-	-
	End	Serviceability	2.45	2.08	1.86	1.64	1.30	0.95	0.61	0.27	-	-
		Strength	6.50	5.00	3.75	2.50	2.17	1.83	1.50	1.17	-	-
	Internal	Serviceability	3.68	2.68	2.10	1.53	1.33	1.14	0.94	0.75	-	-
		Strength	6.67	5.33	4.21	3.08	2.69	2.29	1.90	1.50	-	-
0.42mm	Single	Serviceability	3.72	2.64	1.73	1.33	0.94	0.55	0.39	0.23	-	-
		Strength	7.18	5.42	4.17	3.53	2.89	2.25	1.88	1.50	-	-
	End	Serviceability	4.59	3.64	2.68	1.73	1.41	1.09	0.77	0.45	-	-
		Strength	6.23	5.04	4.10	3.17	2.81	2.46	2.10	1.75	-	-
	Internal	Serviceability	5.61	4.33	3.15	1.98	1.67	1.36	1.18	1.00	-	-
		Strength	7.15	5.58	4.58	3.58	3.19	2.79	2.40	2.00	-	-
0.48mm	Single	Serviceability	-	3.55	2.73	1.91	1.09	0.95	0.80	0.65	0.51	0.36
		Strength	-	6.61	5.79	4.98	4.17	3.58	3.00	2.42	1.83	1.25
	End	Serviceability	-	4.36	3.43	2.50	1.57	1.35	1.13	0.91	0.69	0.47
		Strength	-	5.21	4.57	3.93	3.29	2.97	2.64	2.32	1.99	1.67
	Internal	Serviceability	-	4.64	3.79	2.94	2.09	1.61	1.40	1.18	0.97	0.75
		Strength	-	5.92	5.21	4.50	3.79	3.08	2.77	2.46	2.15	1.83

The values in all of the above tables are for use with steel supports with a minimum thickness of 0.75mm, G550.

Water Carrying Capacity

Table 7.0 - Maximum Roof Run For Drainage (m)

Peak Rainfall Intensity

Roof Slope	150 mm/hr	180 mm/hr	200 mm/hr	250 mm/hr	300 mm/hr	350 mm/hr	400 mm/hr	450 mm/hr
2°	130	108	97	78	65	55	48	43
3°	151	126	113	90	75	64	56	50
5°	185	154	139	111	92	79	69	61
7.5°	221	184	166	132	110	94	83	73
10°	251	209	188	151	125	107	94	83
15°	304	253	228	182	152	130	114	101

The peak rainfall intensities shown represent a 100 year average recurrence interval (ARI) for a five minute rainfall duration. If roof penetrations exist, the total roof run will generally be greater than the distance from ridge to eaves at the location the penetration interferes with the runoff. Contact Stratco if further advice is required.

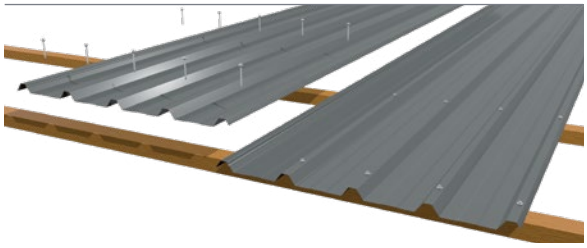
Fixing Recommendations

Superdek sheets should be laid into the prevailing wind and sit neatly on the preceding roof sheet, as shown in the laying procedure below. They should be fixed at the recommended support spacings. Avoid 'stretching' the width of the sheet when installing, as this could allow wind and rain to enter. Due to its higher rib height, flashing turn downs into the pan of Superdek should always be notched around the rib to provide maximum weather tightness. Pan fixing is only suitable for walling, carport and verandah applications or where weather tight roofing is not essential.

When spans exceed 900mm for roofing or 1200mm for walling, it is recommended the side laps are fixed at mid-span to ensure a weatherproof seal and to secure the overlap, especially when the roof is walked on occasionally. Use either 8 x 12mm self drill stitching screws or 3.2mm sealed blind rivets. On roofing, at the end of the sheets, the pans should be turned up at crest of the roof and down into the gutter using a turn up/down tool.

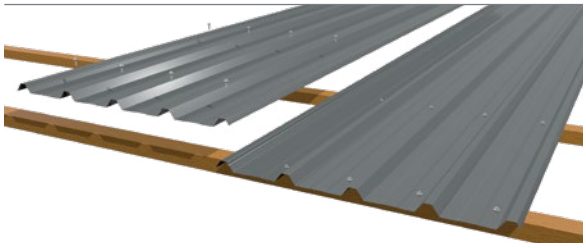
Roofing Laying Procedure

PREVAILING WIND LAYING DIRECTION



Walling Laying Procedure

PREVAILING WIND LAYING DIRECTION



Fastener Size Selection

Roofing - Crest Fixing Only

One fixing required per crest
All screws must have a neoprene washer for a weather tight seal

Fixing To Steel

12 x 45mm
Self drilling and tapping screw
or
M6 x 50mm
TS self drilling screw
(For 0.55mm thick battens use M6 x 50 TS self drilling screws)

Fixing To Timber

12 x 65mm
Type 17 hex head screw
or
M6 x 65mm
TS self drilling screw

Walling - Pan Fixing Only

One fixing required per pan
Fasten adjacent to overlapping rib

Fixing To Steel

10 x 16mm
Self drilling and tapping screw with neoprene washer

Fixing To Timber

10 x 25mm
Type 17 hex head screw with neoprene washer

The above fastener sizes are suitable for fixing over an insulation blanket up to 55mm thick, for thicknesses up to 100mm, the next standard screw length to that indicated is to be used.

Stratco Superdek®

Walking On Superdek

When walking on Superdek roofing, it is recommended you walk over the purlins to avoid any damage. Wear flat, rubber soled shoes and walk flat footed in the sheet pans only. For carport and verandah applications, use crawl boards to avoid damage during installation and maintenance.

Ordering

Sheets are available custom cut, allowing you to minimise waste, and enhance your design options. Superdek is available in un-painted Zinc/Al and in an attractive range of factory pre-painted colours. Subject to the delivery location, quantity and material availability, delivery is usually within 48 hours, or at an agreed time that suits your building schedule. Unless advised differently, a one tonne maximum is usually applied to larger packs. Arrangements for unloading the truck are the responsibility of the customer, and should be arranged before ordering. When unloading you must ensure the load is adequately spread using spreaders and slings to prevent damage. If packs are to be loaded directly above structural members, they must be of sufficient strength, such as over portal frames, or braced roof trusses.

Using Superdek

Superdek will have a long, useful life if used according to Stratco specifications. While roofing materials in outer urban and rural areas may have a life-span in excess of 30 years, this can reduce to only a few years in coastal and industrial environments.

Zinc/Al and pre-painted steel should not be used in very aggressive areas such as near swimming pools and spas. It is important that dirt, soil, compost, paving sand, or other materials which retain moisture are not placed against steel sheeting. Concrete should not be poured against Zinc/Al material. Check with Stratco before using in these severe environments.

Incompatible Metals

The best way of reducing corrosion is to keep incompatible metals apart. Zinc/Al and pre-painted steel cannot be used with lead, copper and monel. Galvanised steel and pure zinc material can be used with Zinc/Al, but you must avoid water run-off from Zinc/Al onto galvanised material. Fixings such as rivets and self-drilling screws must be compatible with the material they are fixing.

Handling And Cutting Of Superdek

For safety, wear gloves when handling Superdek. Ensure your hands or gloves are clean, especially when handling Zinc/Al which can mark. Use a coloured pencil for marking steel, as lead or black pencils contain graphite which promotes rusting. Superdek is best cut using tin snips, but for larger cuts it may be necessary to use a power saw with a steel cutting blade or a power nibbler. Avoid using abrasive discs as they can cause burred edges and coating damage. Where possible cut sheets on the ground, and always clean off any swarf and metal filings progressively during the installation. Dispose of off-cuts carefully.

Insulation And Sealants

The use of blanket insulation is recommended in domestic roofing to assist in temperature, condensation and sound control. Superdek can be used with an insulating blanket up to 55mm thick. Increased thicknesses require longer fasteners and greater care when installing.

When choosing a silicone sealant, ensure it is suitable for roofing and guttering use and of a non-acetic, amine free, neutral cure type. Sealants that smell of ammonia, vinegar or lemons are not usually suitable.

Maintenance Requirements

The performance of Superdek over time depends on its correct application and maintenance. Maintenance should be performed as often as is required to remove any dirt, salt and pollutants. Where used in severely corrosive environments, cleaning should be performed more often. It is important that screws have the same life expectancy as the cladding you have specified.

Packs of Superdek should always be kept dry and stored above ground level while on site. If the sheets have become wet, they should be separated, wiped and placed in the open to dry.

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

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