



## Technical



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## SolarSpan® Specifications

SolarSpan® is a long-spanning commercial and residential insulated roof panel system that combines roofing, EPS-FR insulation and a pre-painted ceiling in one durable, functional and attractive roof panel. This all-in-one roofing solution is manufactured using Australian-made COLORBOND® steel for durability and is installed in a variety of applications including educational facilities, multi-residential housing and retail facilities and is tested for use in cyclonic regions.

Core	EPS-FR (Expanded Polystyrene with fire retardant)
Width (cover mm)	1000
Thickness (mm)	50, 75, 100, 125, 150, 175, 200
Length	Up to 24m (check for availability)
External Material	0.42mm G550 COLORBOND® steel
External Finishes	High-Rib Trapezoidal Profile
Exterior Colour Options	Classic Cream™, Surfemist®, Paperbark®, Shale Grey™, Dune®, Pale Eucalypt®, Manor Red®**, Basalt®^, Woodland Grey®^**
Internal Material	0.6mm G300 COLORBOND® steel
Internal Finishes	Plain, VJ
Interior Colour Options	Classic Cream™, Surfemist®
Pitch	2 degree minimum, refer Bondor®
Paint System	AS/NZS 2728 & AS 1397
Accreditations	Codemark Certificate Number CM40145

Panel Properties							
Panel Thickness (mm)	50	75	100	125	150	175	200
Typical Mass (kg/m²)	10.6	10.9	11.3	11.6	12.0	12.3	12.7
SL Grade Declared λ (W/m.K) at 23°C	0.042	0.042	0.042	0.042	0.042	0.042	0.042
SL Grade Declared R-value (m²K/W) at 23°C	1.20	1.80	2.40	3.00	3.60	4.25	4.85
SL Grade Total R-value (m²K/W) at 15°C (Winter)	1.40	2.03	2.65	3.27	3.90	4.52	5.15
SL Grade Total R-value (m²K/W) at 30°C (Summer)	1.38	1.98	2.57	3.17	3.76	4.35	4.95
Note: The Declared R-value is at 23°C in accordance with AS/NZS 4859.1:2018 & AS/NZS 4859.2:2018.							

\* Conditions may apply.

\*\* Limited availability.

^ Darker colours warranted for use in limited regions. Check with your local SolarSpan® dealer for more information.



## InsulRoof® Specifications

InsulRoof® is a long-spanning insulated roof panel that features a corrugated roof profile and a pre-finished steel ceiling lining encased in Bondor's new proprietary dual layered insulating core technology comprising of EPS-FR and PUR.

This all-in-one roofing solution is manufactured using Australian-made BlueScope® COLORBOND® steel for durability and is ideal for a variety of applications including housing, multi-residential, commercial and industrial roofing applications where a corrugated roof profile is desired.

SupaCore® is a proprietary and world-first insulating core technology developed by Bondor® to deliver dual layers of high performance insulation and bonding strength.

Core	EPS-FR (Expanded Polystyrene with fire retardant) PUR (Polyurethane Foam)
Width (cover mm)	1000
Thickness (mm)	50, 75, 100, 125, 150, 200
Length	Up to 12m (check for availability)
External Material	0.42mm G550 COLORBOND® steel
External Finishes	Corrugated
Exterior Colour Options	Classic Cream™, Surfemist®, Paperbark®, Shale Grey™, Dune®, Pale Eucalypt®, Manor Red®**, Basalt®^, Woodland Grey®^**, Zincalume™
Internal Material	0.6mm G300 COLORBOND® steel
Internal Finishes	Plain, VJ
Interior Colour Options	Classic Cream™, Surfemist®
Pitch	5 degree minimum
Paint System	AS/NZS 2728 & AS 1397
Accreditations	Codemark Certificate Number CM40235

Panel Properties						
Panel Thickness (mm)	50	75	100	125	150	200
Typical Mass (kg/m²)	11.6	11.9	12.3	12.6	13.0	13.7
SL Grade Declared λ (W/m.K) at 23°C	0.042	0.042	0.042	0.042	0.042	0.042
SL Grade Declared R-value (m²K/W) at 23°C	1.40	2.00	2.60	3.20	3.80	5.05
SL Grade Total R-value (m²K/W) at 15°C (Winter)	1.61	2.23	2.85	3.48	4.10	5.35
SL Grade Total R-value (m²K/W) at 30°C (Summer)	1.58	2.17	2.77	3.36	3.96	5.14
Note: The Declared R-value is at 23°C in accordance with AS/NZS 4859.1:2018 & AS/NZS 4859.2:2018.						

## Overview

The SolarSpan® & InsulRoof® Patio Design & Install Guide and stamped local Building certification material has been provided for generic SolarSpan® & InsulRoof® patio structures only which is based on the structural capacity determined through physical testing in accordance with the relevant Australian Standards. Other products will perform differently due to differences in steel and core material selection, manufacturing methods and testing.

## Introduction

This document is to be used in accordance with current Australian building standards. Please note, it is the licensed builder's responsibility to ensure structural adequacy of any existing structures are determined before attaching a SolarSpan® or InsulRoof® structure.

Please note for accurate capacity calculation, the formulas throughout this document must be completed and resulting values transposed to the Summary Table of Engineering Calculations.

Below is an example of the formula calculation boxes you will find on most sections.

## Example Only

STEP 4.1: Beam Load Width								
A (patio roof span to beam) B (patio roof overhang) Load Width on beam = (0.5 x A) + B (mm)								
0.5	x	A (mm)	Equals	(0.5xA) (mm)	Plus	B (mm) Enter at Step 4	Equals	Load Width on beam (mm) Enter at Step 4.1
0.5	x	2000	=	1000	+	250	=	1250

Summary of patio information selected				
Step	Step	Page	Figure from Formula	Unit of Measurement
4.1	Load Width on beam	12	1250	mm

## Engineering Calculations

Summary of patio information selected						
Step	Step	Page	Options	Enter Value		
<b>1</b>	Wind Classification Determination (N1, N2, N3, N4, C1, C2, C3)	6	<input type="checkbox"/> N1 <input type="checkbox"/> C1 <input type="checkbox"/> N2 <input type="checkbox"/> C2 <input type="checkbox"/> N3 <input type="checkbox"/> C3 <input type="checkbox"/> N4		-	
<b>2</b>	Product & Panel Thickness	7/8	<input type="checkbox"/> SolarSpan® <input type="checkbox"/> InsulRoof®		-	
<b>3</b>	Case Type & Max Span	9/10	<input type="checkbox"/> Case A <input type="checkbox"/> Case B <input type="checkbox"/> Case C <input type="checkbox"/> Case D <input type="checkbox"/> Case E		mm	
<b>4</b> Beam Loading	<b>4.1</b>	Load Width on Beam	11		mm	
	<b>4.2</b>	Uplift Load on Beam	12		kN/m	
<b>5</b> Beam Selection	<b>5.1</b>	Beam Type	13		-	
	<b>5.2</b>	Beam Size	13		-	
	<b>5.3</b>	Single or Multi-span	13		-	
	<b>5.4</b>	Distance between Posts	13		mm	
	<b>5.5</b>	Load Capacity	13		kN/m	
<b>6.1</b> Post Uplift	<b>6.1.4</b>	Max Uplift on Post	14		kN	
<b>6.2</b>	<b>6.2.1</b>	Post to Beam Connection Type	15/17	<input type="checkbox"/> (A) R.H.S. Post to R.H.S. Beam Joint <input type="checkbox"/> (B) Timber Post to Beam Joint <input type="checkbox"/> (C) Notched Post to Roll Formed Beam Joint <input type="checkbox"/> (D) Proprietary Systems <input type="checkbox"/> (F) Aluminium Post to Aluminium Beam Connection <input type="checkbox"/> (G) Aluminium Post to Twin Aluminium Beams Connection		-
	<b>6.2.2</b>	Bolt Size & Allowable Uplift on Post	15		-	
<b>6.3</b>	Post to Ground Connection Type	18/19	<input type="checkbox"/> In Ground Footing <input type="checkbox"/> Footing with Slab Over <input type="checkbox"/> On Slab Footing		-	
<b>7</b>	Patio to House Connection Type	20/23	<input type="checkbox"/> For Metal Fascias (7.1) <input type="checkbox"/> For Timber Fascias (7.2) <input type="checkbox"/> Offset Post (7.3) <input type="checkbox"/> Removed Fascia (7.4) <input type="checkbox"/> Brick/Masonry Wall (7.5) <input type="checkbox"/> Rafter Bracket for Fly-Over - Roof Extenda (7.6)		-	
<b>8</b>	Gable Structures	26			kN/m	

Site Address			
Street	Suburb	Post Code	State

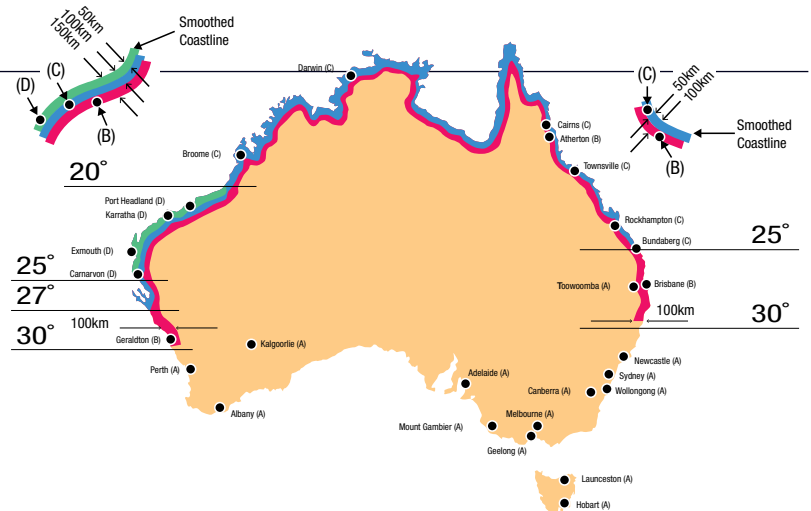
## 1.0 Wind Classification

This section is a simplification of AS 4055:2012 for the selection of a design Wind Classification for residential structures (NCC class 1 or 10) up to 8.5m tall.

Refer to AS 4055:2012 for more information.

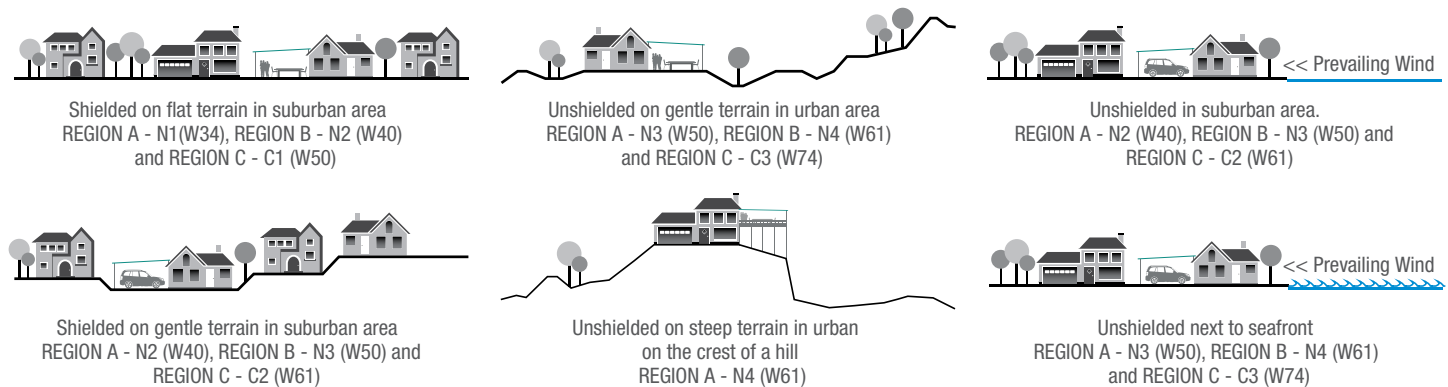
Refer to AS/NZS 1170.2:2012 for other application.

Region A Region B Region C Region D



## 1.1 Wind Region

### Location Classification



Wind Classification							
Wind Region	Terrain	Terrain Type					
		Flat		Gentle		Steep	
		Shielded	Not Shielded	Shielded	Not Shielded	Shielded	Not Shielded
A	Suburban	N1	N1	N1	N2	N2	N2
	Rural	N1	N2	N2	N3	N2	N3
	Coastal	N2	N2	N2	N3	N3	N3
B	Suburban	N2	N3	N2	N3	N3	N4
	Rural	N2	N3	N3	N4	N3	N4
	Coastal	N3	N4	N3	N4	N4	N4
C	Suburban	C1	C2	C1	C3	C3	-
	Rural	C1	C2	C2	-	-	-
	Coastal	C2	C3	C2	-	-	-
D	Suburban	C2	C3	C2	-	-	-
	Rural	C3	-	C3	-	-	-
	Coastal	C3	-	-	-	-	-

Note: Suburban - Average spacing of surrounding houses or buildings 30m or less. Rural - Average spacing of surrounding houses or buildings greater than 30m. Coastal - Within 500mm of the ocean or large body of water larger than 10km in any direction. Flat - less than 1:20 surrounding slopes. Gentle - Between 1:20 and 1:1 surrounding slopes. Steel - Between 1:10 and 1:7.5 surrounding slopes.

### STEP 1: Wind condition at site (N2, etc)

Find location. Determine Region.

City	Suburb	Wind Region	Terrain Type	Shielding	Wind Classification Enter at Step 1

## 2.0a SolarSpan® Panel Overview

### Roofing Layer

- Superior low pitch of 2° minimum
- Available in thermally efficient and modern colours
- Australian made and proven **Colorbond** steel

solarspan®



**Colorbond**®

CODEMARK™ BAL40

### Ceiling Layer

- Plain ceiling underside pre-finished in Surfist® or Classic Cream™\*
- Two ceiling finish options in Plain or VJ
- Low maintenance and durable **Colorbond** steel

### Insulation Layer

- Outstanding thermal performance with CorePlus® EPS-FR Insulation
- Choose from 50 (R1.40), 75 (R2.03), 100 (R2.65), 125 (R3.27), 150 (R3.90), 175 (R4.52) & 200mm (R5.15) core thicknesses
- Service cabling ducts for ceiling lights and fans

### Roof Colour Range

SolarSpan's colour range has been rigorously tested and hand picked with the support of BlueScope® Steel to offer roofing colours with the best thermal performance, made tough for Australian conditions.



### Ceiling Finishes

SolarSpan's ceiling layer is made from proven BlueScope COLORBOND® steel, available pre-finished in Surfist® (offwhite) or Classic Cream\*. Select from two popular ceiling underside finishes in either Plain or VJ that complement the home and offer stylish design options for your outdoor area.



#### Plain - Contemporary Look

The 'Plain' ceiling finish is a popular smooth ceiling surface option that embodies contemporary design, suitable for the modern home.

#### VJ - Heritage Look

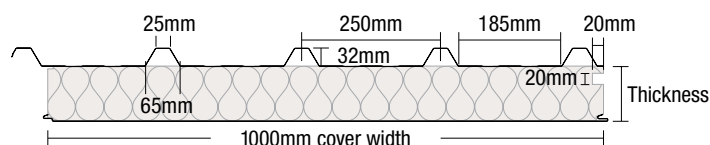
'VJ' delivers a ceiling look with distinct lines that emulate the look and feel of a heritage style home.

\* Conditions may apply.

\*\* Limited availability.

^ Darker colours warranted for use in limited regions. Check with your local SolarSpan® dealer for more information.

### Dimensions



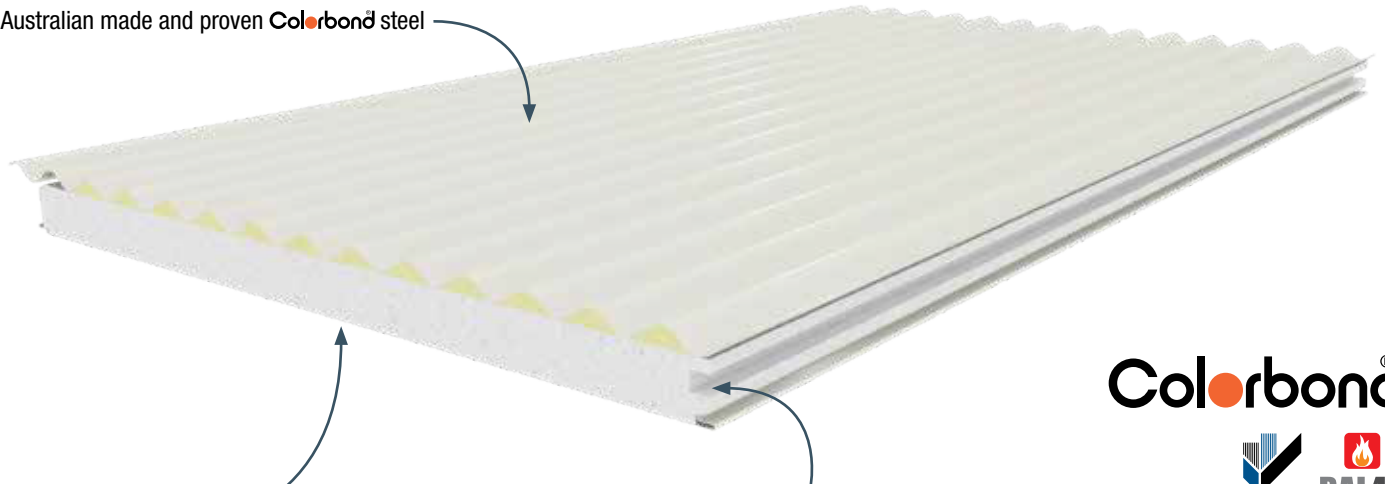


## 2.0b InsulRoof® Panel Overview

### Roofing Layer

- Superior low pitch of 5° minimum
- Available in thermally efficient and modern colours
- Australian made and proven Colorbond steel

insulroof



Colorbond®  
CODEMARK® BAL40

### Ceiling Layer

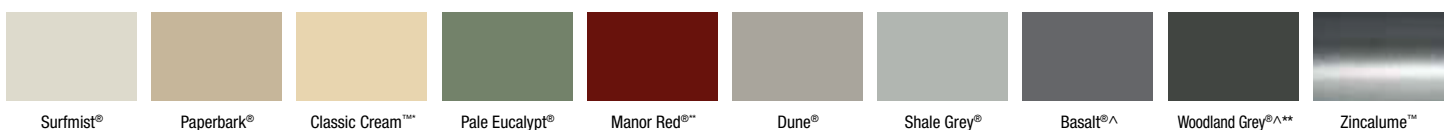
- Plain ceiling underside pre-finished in Surfemist® or Classic Cream™
- Two ceiling finish options in Plain or VJ
- Low maintenance and durable Colorbond steel

### Insulation Layer

- SupaCore® dual insulation with CorePlus® EPS-FR for superior thermal performance
- Choose from 50 (R1.61), 75 (R2.23), 100 (R2.85), 125 (R3.48), 150 (R4.10) & 200mm (R5.35) core thicknesses
- Service cabling ducts for ceiling lights and fans

### Roof Colour Range

InsulRoof's colour range has been rigorously tested and hand picked with the support of BlueScope® Steel to offer roofing colours with the best thermal performance, made tough for Australian conditions.



### Ceiling Finishes

InsulRoofs ceiling layer is made from proven BlueScope COLORBOND® steel, available pre-finished in Surfemist® (offwhite) or Classic Cream. Select from two popular ceiling underside finishes in either Plain or Elegance\* that complement the home and offer stylish design options for your outdoor area.



#### Plain - Contemporary Look

The 'Plain' ceiling finish is a popular smooth ceiling surface option that embodies contemporary design, suitable for the modern home.

#### VJ - Heritage Look

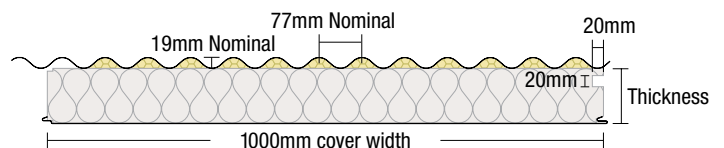
'VJ' delivers a ceiling look with distinct lines that emulate the look and feel of a heritage style home.

\* Conditions may apply.

\*\* Limited availability.

^ Darker colours warranted for use in limited regions. Check with your local SolarSpan® dealer for more information.

### Dimensions





## 3.0a SolarSpan® Maximum Span



Select the SolarSpan® panel thickness from the Span Table below for the Wind Classification at the site (refer to building inspector if required) and the number of side enclosed under the roof (Case A to E).

Case A 3 Open Sides	Case B 2 Open Sides	Case C 1 Open Side	Case D Fully Enclosed	Case E Free Standing
				

### SolarSpan® Span Table - Domestic Patios Single Spans (mm)

Wind Category	Panel Thickness (mm)	Case A 3 Open Sides		Case B 2 Open Sides		Case C 1 Open Side		Case D Fully Enclosed		Case E Free Standing	
		A	B	A	B	A	B	A	B	A	B
		Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang
N1	50	5600	1400	5550	1400	5000	1250	5250	1300	5600	1400
	75	7100	1800	6500	1650	5850	1450	6150	1550	7100	1800
	100	8000	2000	7350	1850	6650	1650	6950	1750	8000	2000
	125	8750	2200	8150	2050	7350	1850	7700	1950	8700	2200
	150	9500	2400	8850	2200	7950	2000	8400	2100	9500	2400
N2	200	10750	2700	10150	2550	9100	2300	9600	2400	10750	2700
	50	5600	1400	4600	1150	4150	1050	4350	1100	5600	1400
	75	6850	1700	5400	1350	4900	1250	5150	1300	7100	1800
	100	7700	1950	6100	1550	5550	1400	5800	1450	8000	2000
	125	8300	2100	6750	1700	6100	1550	6400	1600	8700	2200
N3	150	9100	2300	7350	1850	6650	1650	6950	1750	9500	2400
	200	10100	2550	8400	2100	7600	1900	7950	2000	10500	2650
	50	4850	1200	3600	900	3300	850	3450	850	5100	1300
	75	5700	1450	4250	1050	3850	950	4050	1000	6000	1500
	100	6400	1600	4800	1200	4350	1100	4550	1150	6750	1700
N4	125	7050	1750	5300	1350	4800	1200	5050	1250	7400	1850
	150	7650	1900	5750	1450	5200	1300	5450	1350	8000	2000
	200	8650	2150	6550	1650	5950	1500	6250	1550	9100	2300
	50	3900	1000	2950	750	2700	700	2800	700	4100	1050
	75	4550	1150	3450	850	3150	800	3300	850	4800	1200
C1	100	5150	1300	3900	1000	3550	900	3700	950	5450	1350
	125	5700	1450	4300	1100	3900	1000	4100	1050	6000	1500
	150	6200	1550	4650	1150	4250	1050	4450	1100	6500	1650
	200	7050	1750	5300	1350	4850	1200	5050	1250	7450	1850
	50	4900	900	3600	900	3300	800	2600	600	4900	900
C2	75	5900	1200	4600	1100	3900	900	3100	700	5900	1200
	100	6900	1300	5000	1200	4500	1000	3700	900	6900	1300
	125	7700	1400	5600	1300	5100	1100	4100	1000	7700	1400
	150	8800	1400	6600	1400	5900	1400	6200	1400	8800	1400
	50	4000	800	2900	600	2700	600	2000	450	4000	800
C3	75	4800	1000	3500	700	3100	700	2000	500	4800	1000
	100	5600	1100	4100	800	3700	800	2700	600	5600	1100
	125	6300	1200	4600	900	4200	900	3000	700	6300	1200
	150	7100	1400	5300	1300	4800	1200	5100	1200	7100	1400
	50	3300	800	2400	600	2000	450	N/A	N/A	3300	800
	75	4000	1000	2500	600	2100	500	N/A	N/A	4000	1000
	100	4600	1100	3300	800	2800	600	1900	450	4600	1100
	125	5200	1200	3700	900	3100	700	2000	500	5200	1200
	150	5700	1400	4300	1000	3900	900	4100	1000	5700	1400

#### Note:

1. Applies to SolarSpan® patio covers attached to highset and lowset houses only.
2. Overhangs must not exceed immediate backspan by 25%.
3. For free-standing awnings it is acceptable to use 'Case A - 3 Open Sides', given that it is not blocked under.
4. The design for supporting members of free-standing awnings, including beams, posts and footings, need to be checked separately for strength, serviceability and stability.
5. Dead loads of up to 15kg/m<sup>2</sup> are allowed.
6. When using SolarSpan Naturelite skylight with minimum 2 full SolarSpan panels in between, spans to be reduced by 10%.
7. When using SolarSpan Naturelite skylight with minimum 1 full SolarSpan panels in between, spans to be reduced by 25%.
8. No foot-traffic on SolarSpan® Naturelite® skylight.
9. SolarSpan® Naturelite® skylight only acceptable in Non-Cyclonic regions. SolarSpan® Naturelite® skylight not to be used in Cyclonic regions.

#### STEP 3: SolarSpan® Max Roof Span

##### Determine Max Roof Span

Product	Panel Thickness	Case Type	Wind Classification	Max Span (mm) Enter at Step 3

## 3.0b InsulRoof® Maximum Span



Select the InsulRoof® panel thickness from the Span Table below for the Wind Classification at the site (refer to building inspector if required) and the number of side enclosed under the roof (Case A to E).



### InsulRoof® Span Table - Domestic Patios Single Spans (mm)

Wind Category	Panel Thickness (mm)	Case A 3 Open Sides		Case B 2 Open Sides		Case C 1 Open Side		Case D Fully Enclosed		Case E Free Standing	
		A	B	A	B	A	B	A	B	A	B
		Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang	Max. Span	Max. Overhang
N1	50	6000	1500	5850	1450	5250	1300	5500	1400	6000	1500
	75	7150	1800	6950	1750	6250	1550	6550	1650	7150	1800
	100	8150	2050	7950	2000	7150	1800	7500	1900	8150	2050
	125	9000	2250	8800	2200	7900	2000	8350	2100	9000	2250
	150	9850	2450	9650	2400	8650	2150	9100	2300	9850	2450
N2	50	5600	1400	4850	1200	4350	1100	4550	1150	5600	1400
	75	7100	1800	5750	1450	5200	1300	5350	1350	7100	1800
	100	7700	1950	6600	1650	5950	1500	5690	1400	7700	1950
	125	8300	2100	7300	1850	6600	1650	6400	1600	8500	2150
	150	9100	2300	7950	2000	7200	1800	6900	1750	9100	2300
N3	50	5000	1250	3800	950	3450	850	3600	900	5350	1350
	75	6000	1500	4500	1150	4100	1050	4300	1100	6400	1600
	100	6800	1700	5150	1300	4650	1150	4900	1250	7300	1850
	125	7550	1900	5700	1450	5150	1300	5400	1350	8100	2050
	150	8250	2050	6200	1550	5650	1400	5900	1500	8850	2200
N4	50	4000	1000	3050	750	2800	700	2900	750	4300	1100
	75	4800	1200	3650	900	3300	850	3450	850	5100	1300
	100	5450	1350	4150	1050	3800	950	3950	1000	5850	1450
	125	6050	1500	4600	1150	4200	1050	4400	1100	6450	1600
	150	6600	1650	5050	1250	4550	1150	4800	1200	7050	1750
C1	50	4250	1050	3650	900	3300	850	3000	750	4450	1100
	75	5050	1250	4350	1100	3950	1000	3600	900	5300	1350
	100	5700	1450	4950	1250	4500	1150	4100	1050	6000	1500
	125	6350	1600	5500	1400	5000	1250	4550	1150	6650	1650
	150	6900	1750	6000	1500	5450	1350	4950	1250	7250	1800
C2	50	3550	900	2950	750	2700	700	2450	600	3750	950
	75	4250	1050	3550	900	3200	800	2900	750	4450	1100
	100	4800	1200	4000	1000	3650	900	3350	850	5050	1250
	125	5300	1350	4450	1100	4050	1000	3700	950	5600	1400
	150	5800	1450	4850	1200	4400	1100	4000	1000	6100	1550
C3	50	2950	750	2400	600	2200	550	2000	500	3150	800
	75	3550	900	2900	750	2650	650	2400	600	3750	950
	100	4000	1000	3300	850	3000	750	2750	700	4250	1050
	125	4450	1100	3650	900	3300	850	3000	750	4700	1200
	150	4850	1200	3950	1000	3600	900	3300	850	5100	1300

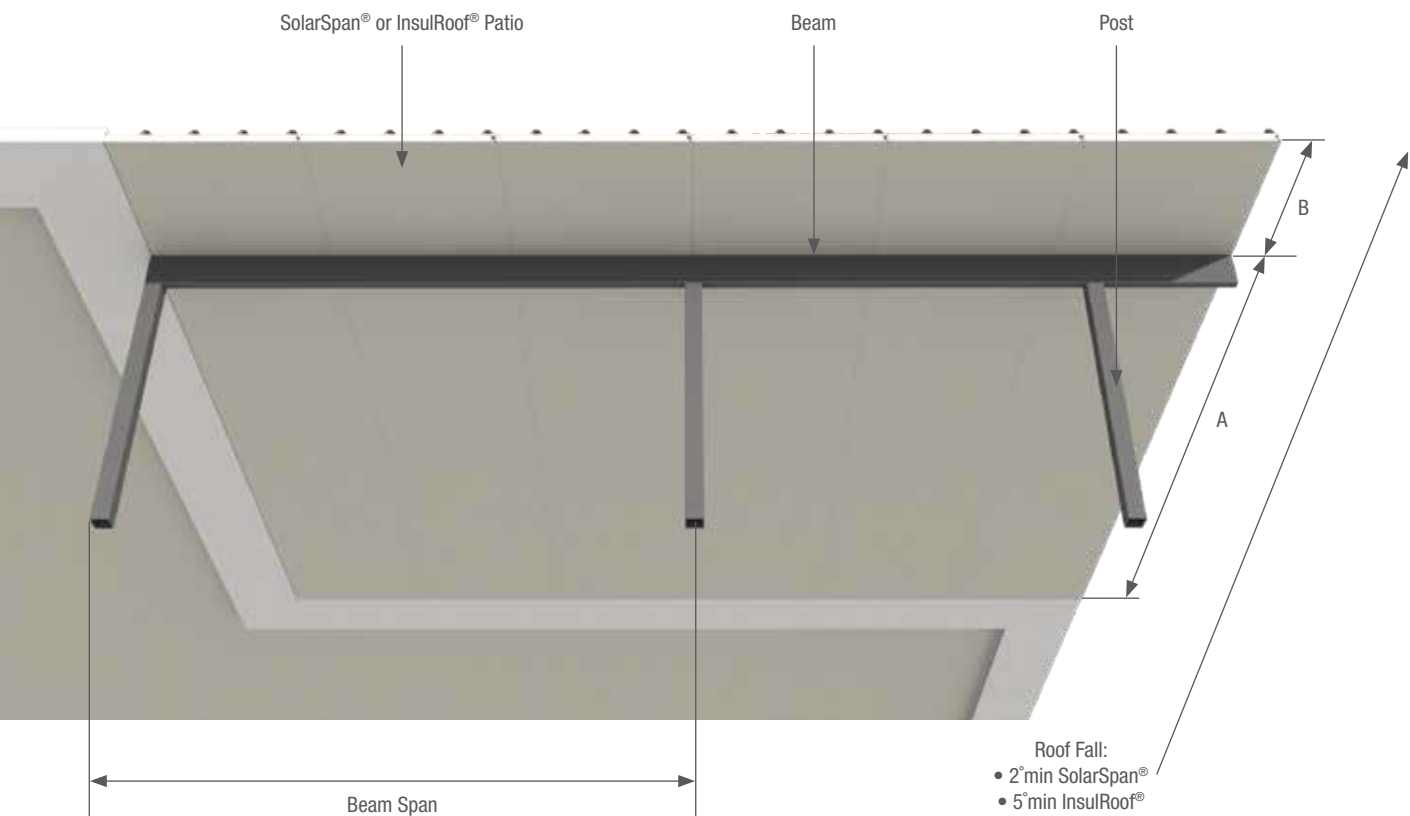
**Note:**

1. Applies to InsulRoof patio covers attached to highset and lowset houses only.
2. Overhangs must not exceed immediate backspan by 25%.
3. Case A shall have a minimum panel span of 1.5 times that of the panel height from floor height (e.g. 2m height = 3m minimum span).
4. For free-standing awnings it is acceptable to use 'Case A - 3 Open Sides', given that it is not blocked under.
5. The design for supporting members of free-standing awnings, including beams, posts and footings, need to be checked separately for strength, serviceability and stability.
6. Dead loads of up to 15kg/m<sup>2</sup> are allowed.

STEP 3: InsulRoof ® Max Roof Span				
Determine Max Roof Span				
Product	Panel Thickness	Case Type	Wind Classification	Max Span (mm) Enter at Step 3

# 4.0 Beam Loading

## 4.1 Determine Load Width on Beam



STEP 4.1: Beam Load Width								
A (patio roof span to beam) B (patio roof overhang) Load Width on beam = (0.5 x A) + B (mm)								
0.5	x	A (mm)	Equals	(0.5xA) (mm)	Plus	B (mm) Enter at Step 4	Equals	Load Width on beam (mm) Enter at Step 4.1
0.5	x		=		+		=	

## 4.2 Uplift Load on Beam Table

Use the Load Width from (4.1) to select the Uplift Load on Beam (kN/m) from the table below for the particular Wind Classification and enclosure case (A, B, C, D & E). Enter at Step 4.2.

Wind Category	Load Width (mm)	Uplift Load on Beam (kN/m)				
		Case A 3 Open Sides	Case B 2 Open Sides	Case C 1 Open Side	Case D Fully Enclosed	Case E Free Standing
N1/N2 (W33N)	1500	0.84	1.44	1.73	1.58	0.84
	2100	1.17	2.02	2.42	2.22	1.17
	2700	1.50	2.59	3.11	2.85	1.50
	3300	1.84	3.17	3.80	3.48	1.84
	3900	2.17	3.74	4.49	4.12	2.17
	4500	2.51	4.32	5.18	4.75	2.51
	5100	2.84	4.90	5.88	5.39	2.84
	5700	3.17	5.47	6.57	6.02	3.17
	6300	3.51	6.05	7.26	6.65	3.51
	6900	3.84	6.62	7.95	7.29	3.84
	7500	4.18	7.20	8.64	7.92	4.18
	8100	4.51	7.78	9.33	8.55	4.51
	8700	4.84	8.35	10.02	9.19	4.84
	9000	5.01	8.64	10.37	9.50	5.01
	9600	5.35	9.22	11.06	10.14	5.35
N3 (W41N)	1500	1.31	2.25	2.70	2.48	1.31
	2100	1.83	3.15	3.78	3.47	1.83
	2700	2.35	4.05	4.86	4.46	2.35
	3300	2.87	4.95	5.94	5.45	2.87
	3900	3.39	5.85	7.02	6.44	3.39
	4500	3.92	6.75	8.10	7.43	3.92
	5100	4.44	7.65	9.18	8.42	4.44
	5700	4.96	8.55	10.26	9.41	4.96
	6300	5.48	9.45	11.34	10.40	5.48
	6900	6.00	10.35	12.42	11.39	6.00
	7500	6.53	11.25	13.50	12.38	6.53
	8100	7.05	12.15	14.58	13.37	7.05
	8700	7.57	13.05	15.66	14.36	7.57
	9000	7.83	13.50	16.20	14.85	7.83
	9600	8.35	14.40	17.28	15.84	8.35
N4 (W50N)	1500	1.94	3.35	4.02	3.68	1.94
	2100	2.72	4.69	5.63	5.16	2.72
	2700	3.50	6.03	7.23	6.63	3.50
	3300	4.27	7.37	8.84	8.10	4.27
	3900	5.05	8.71	10.45	9.58	5.05
	4500	5.83	10.05	12.06	11.05	5.83
	5100	6.60	11.39	13.66	12.52	6.60
	5700	7.38	12.73	15.27	14.00	7.38
	6300	8.16	14.07	16.88	15.47	8.16
	6900	8.93	15.40	18.49	16.95	8.93
	7500	9.71	16.74	20.09	18.42	9.71
	8100	10.49	18.08	21.70	19.89	10.49
	8700	11.27	19.42	23.31	21.37	11.27
	9000	11.65	20.09	24.11	22.10	11.65
	9600	12.43	21.43	25.72	23.58	12.43
C1 (W41C)	1500	1.31	2.25	2.70	2.70	1.31
	2100	1.83	3.15	3.78	3.78	1.83
	2700	2.35	4.05	4.86	4.86	2.35
	3300	2.87	4.92	5.94	5.84	2.87
	3900	3.39	5.85	7.02	7.02	3.39
	4500	3.92	6.75	8.10	8.10	3.92
	5100	4.44	7.65	9.18	9.18	4.44
	5700	4.96	8.55	10.26	10.26	4.96
	6300	5.48	9.45	11.34	11.34	5.48
	6900	6.00	10.35	12.42	12.42	6.00
	7500	6.53	11.25	13.50	13.50	6.53
	8100	7.05	12.15	14.58	14.58	7.05
	8700	7.57	13.05	15.66	15.66	7.57
	9000	7.83	13.50	16.20	16.20	7.83
	9600	8.35	14.40	17.28	17.28	8.35
C2 (W50C)	1500	1.94	3.35	4.02	4.02	1.94
	2100	2.72	4.69	5.63	5.63	2.72
	2700	3.50	6.03	7.23	7.23	3.50
	3300	4.27	7.37	8.84	8.84	4.27
	3900	5.05	8.71	10.45	10.45	5.05
	4500	5.83	10.05	12.06	12.06	5.83
	5100	6.60	11.39	13.66	13.66	6.60
	5700	7.38	12.73	15.27	15.27	7.38
	6300	8.16	14.07	16.88	16.88	8.16
	6900	8.93	15.40	18.49	18.49	8.93
	7500	9.71	16.74	20.09	20.09	9.71
	8100	10.49	18.08	21.70	21.70	10.49
	8700	11.27	19.42	23.31	23.31	11.27
	9000	11.65	20.09	24.11	24.11	11.65
	9600	12.43	21.43	25.72	25.72	12.43
C3 (W60C)	1500	2.86	4.93	5.91	5.91	2.86
	2100	4.00	6.90	8.28	8.28	4.00
	2700	5.15	8.87	10.65	10.65	5.15
	3300	6.29	10.84	13.01	13.01	6.29
	3900	7.43	12.81	15.38	15.38	7.43
	4500	8.58	14.79	17.74	17.74	8.58
	5100	9.72	16.76	20.11	20.11	9.72
	5700	10.86	18.73	22.47	22.47	10.86
	6300	12.01	20.70	24.84	24.84	12.01
	6900	13.15	22.67	27.20	27.20	13.15
	7500	14.29	24.64	29.57	29.57	14.29
	8100	15.44	26.61	31.94	31.94	15.44
	8700	16.58	28.58	34.30	34.30	16.58
	9000	17.15	29.57	35.48	35.48	17.15
	9600	18.29	31.54	37.85	37.85	18.29

- Notes:
- Linear interpolation is permitted between Load Width values in the table.
  - In cyclonic regions, it is assumed that doors/windows will blow in and therefore fully enclosed is designed as 1 open side as this is a worse case than fully enclosed.

STEP 4.2: Uplift Load on Beam Table				
Select the correct Uplift Load based on the relevant criteria				
Wind Classification	Load Width (mm)	Case	Equals	Enter at Step 4.2
			=	

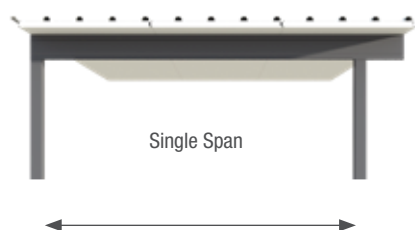
## 5.0 Beam Selection

### Lookup Beam Load Capacities Table (kN/m)

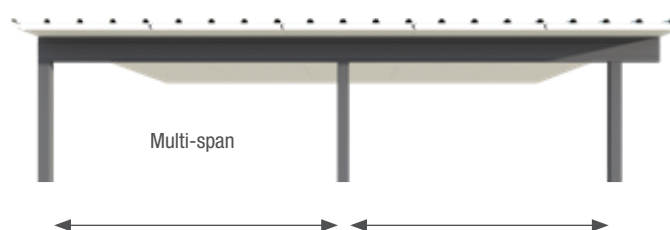
Select the beam from the Beam Load Capacities Table below for the Uplift Load on Beam (kN/m).

Load Capacities of Beams (kN/m) - Ultimate Limit State																	
Beam Details		Step 5: Maximum Beam Span mm (distance between Posts)															
Step 5: Beam Type	Beam Size	1800		2400		3000		3600		4200		4800		5400		6000	
		Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span	Single Span	Multi-span
Shademaster	RF 125	10.0	10.0	7.5	7.5	4.8	4.8	3.2	3.3	2.0	2.3	1.3	1.8	0.8	1.5	0.6	1.1
	RF 175	10.0	10.0	10.0	10.0	9.0	9.0	6.3	6.3	4.5	4.5	3.5	3.5	2.8	2.8	2.0	2.3
	RF 200	14.7	14.7	14.7	14.7	14.7	14.7	9.7	9.7	6.9	6.9	5.1	5.1	3.9	3.9	3.0	3.0
BON ALBEAM	100x50x3x2	7.4	7.4	4.1	4.1	2.6	2.6	1.8	1.8	1.3	1.3	1.0	1.0	-	-	-	-
	165x50x3x2.5	16.9	16.9	9.4	9.4	6.0	6.0	4.1	4.1	3.0	3.0	2.3	2.3	1.8	1.8	1.5	1.5
	225x50x3x3	30.1	30.1	17.1	17.1	10.9	10.9	7.5	7.5	5.5	5.5	4.2	4.2	3.3	3.3	2.7	2.7
RHS	76x38x2.5	7.9	7.9	4.3	4.3	2.6	2.7	1.5	1.8	0.9	1.3	0.6	1.0	0.4	0.8	-	-
	75x50x3	13.2	13.2	7.4	7.4	4.3	4.6	2.5	3.1	1.5	2.3	1.0	1.7	0.7	1.3	5.0	1.0
	100x50x3	20.7	20.7	11.6	11.6	7.4	7.4	5.1	5.1	3.2	3.8	2.1	2.9	1.5	2.3	1.1	1.8
	125x75x3	36.7	36.7	20.6	20.6	13.2	13.2	9.2	9.2	6.7	6.7	4.9	5.1	3.5	4.0	2.5	3.3
	150x50x3	39.9	39.9	22.4	22.4	14.3	14.3	9.9	9.9	7.3	7.3	5.6	5.6	4.3	4.4	3.1	3.5
	150x100x4	114.3	113.3	64.3	64.3	41.1	41.1	28.5	28.5	18.0	21.0	12.0	16.0	8.4	12.7	6.1	10.2
Timber	140x45 F7	15.0	13.0	6.6	7.3	3.4	4.7	1.9	3.2	1.2	2.2	0.8	1.5	-	1.0	-	-
	190x45 F7	27.3	23.7	15.3	13.3	8.5	8.5	4.9	5.9	3.1	4.3	2.0	3.3	1.4	2.6	1.0	1.9
	150x50 F14	19.1	16.6	10.7	9.3	6.9	6.0	4.1	4.1	2.5	3.0	1.7	2.3	1.2	1.8	0.8	1.5
	200x50 F14	34.0	29.6	19.1	16.6	12.2	10.6	8.5	7.4	6.1	5.4	4.1	4.1	2.8	3.2	2.1	2.6
	150x75 F14	28.7	25.0	16.1	14.0	10.3	9.0	6.1	6.2	3.8	4.5	2.6	3.5	1.8	2.7	1.3	2.2
	200x75 F14	51.1	44.4	28.7	25	18.4	16.0	12.7	11.1	9.2	8.1	6.1	6.2	4.3	4.9	3.1	4
Purlins	C15015	14.5	15.9	8.1	8.2	4.0	5.4	2.2	3.7	1.3	2.7	0.8	2.0	0.5	1.4	-	1.0
	C15019	15.7	26.4	8.8	15.8	5.6	7.6	3.0	5.3	1.7	3.7	1.1	2.6	0.7	1.9	0.5	1.4
	C20015	20.2	15.1	11.3	10.3	7.2	6.1	4.1	4.6	2.4	3.6	1.5	2.8	1.0	2.2	0.7	1.8
	C20019	29.3	28.0	16.5	18.6	10.5	10.6	5.7	7.8	3.5	5.7	2.2	4.3	1.1	3.4	1.0	2.5
Lysaght Firmlok	F10011	7.8	6.3	4.7	4.7	2.9	3.0	1.6	2.1	1.0	1.5	-	1.1	-	-	-	-
	F15015	11.4	9.1	8.5	6.8	6.8	5.4	5.0	4.5	3.7	3.7	2.5	2.8	1.8	2.2	1.3	1.8
	F20020	18.2	14.5	13.6	10.9	10.9	8.7	9.1	7.2	7.3	6.2	5.6	5.4	4.4	4.4	3.5	3.6
Metroll A.Beam	150x65	4.6	11.6	2.3	5.7	1.4	3.4	0.8	1.8	0.5	1.2	0.4	0.9	0.2	0.5	0.2	0.4
Groove Tube	150x50x1.6	13.5	13.5	8.4	10.4	5.4	6.7	3.5	4.7	2.2	3.4	1.5	2.6	1.0	2.1	0.8	1.7

Notes: Overhang = Span/4 max



Distance between Posts



Maximum distance between Posts

STEP 5B: Beam Type Selected from Table

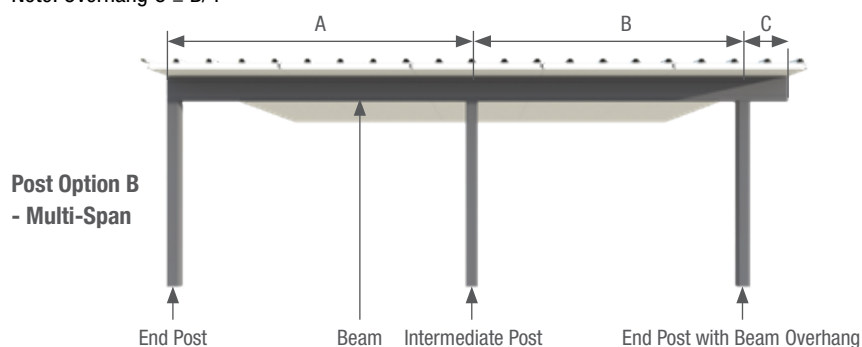
Beam Type Enter at Step 5.1	Beam Size Enter at Step 5.2	Single or Multi-span Enter at Step 5.3	Distance between Posts (mm) Enter at Step 5.4	Load Capacity (kN/m) Enter at Step 5.5

## 6.0 Posts and Footings

### 6.1 Post Uplift

Select Load Width on each Post, refer to diagram.

Note: Overhang  $C \leq B/4$



STEP 6.1B: Max Spacing between Posts

Load Width on End Post =  $0.5 \times A$  (m)

0.5	x	A (m)	Equals	Load Width on End Post (m) Enter at 6.1.4
0.5	x		=	

Load Width on Intermediate Post (for Multi-Span only) =  $0.5 \times (A+B)$  (m)

A (m)	Plus	B (m)	Equals	(A+B)	x	0.5	Equals	Load Width on Intermediate Post (m) Enter at 6.1.2
	+		=		x	0.5	=	

Load Width on End Post with Beam Overhang =  $(0.5 \times B) + C$  (m)

0.5	x	B (m)	Equals	(0.5xB)	Plus	C (m)	Equals	Load Width on End Post with Beam Overhang (m) Enter at 6.1.3
0.5	x		=		+		=	

Maximum Uplift on Post (kN) = Maximum Post Load Width (m) x Uplift Load on Beam (kN/m) from Step 4.2

Maximum	of	6.1.1 Load Width on End Post (m)	or	6.1.2 Load Width on Intermediate Post (m)	or	6.1.3 Load Width on End Post with Beam Overhang (m)	Equals	Maximum Post Load Width	x	Value from Step 4.2	Equals	Maximum Uplift on Post (kN) Enter at Step 6.1.4
MAX	(		,		,	)	=		x			

## 6.2 Post to Beam Connection

For each Post, use the Uplift on Post (kN) to select the Post to Beam Connection.

BOLT SIZE TABLE						
Beam Material	Grade	Maximum Uplift on Post (kN)				
		Min. Thickness (mm)	1-M12/4.6	2-M12/4.6	2-M16/4.6	2-M20/4.6
Timber	JD4/J3	45	7.8	15.6	20.9	-
Steel (Hollow Section)	G350	2	14.0	28.0	38.0	48.0
Cold-Formed Steel (Typical)	G450	0.6	3.9	7.8	9.3	11.7
Cold-Formed Steel (Firmlok)	G550	1	7.8	15.6	20.7	21.6
		2	15.5	31.0	42.0	52.0

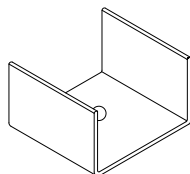
Note: Assumed edge distance for all steel and aluminium as 2x bolt diameter (centre of hole to edge of beam). Timber has bigger edge distance requirements.

## Aluminium Post & Post Connector

For the connection of posts to concrete floors/footings, timber floors/decks and beams.

BOLT SIZE TABLE						
Post Material	Grade	Maximum Uplift on Post (kN)				
		Min. Thickness (mm)	1-M12/4.6	2-M12/4.6	2-M16/4.6	2-M20/4.6
BON ALPOST150	6063-T6	3	18.0	36.0	50.0	62.0
BON ALPOST90A	6063-T6	2	12.0	24.0	33.0	42.0
BON ALPOST90B	6063-T5	2	7.5	15.0	20.0	25.0

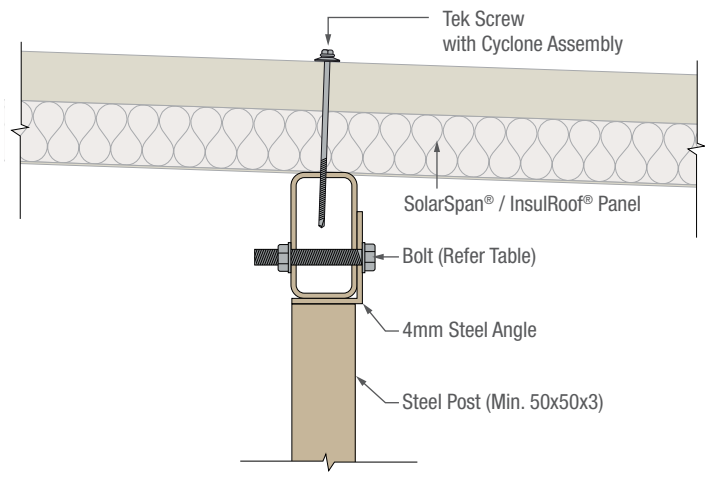
Steel Post Connector  
3mm Galvanised Steel  
90 & 150mm Max. 4.5kN



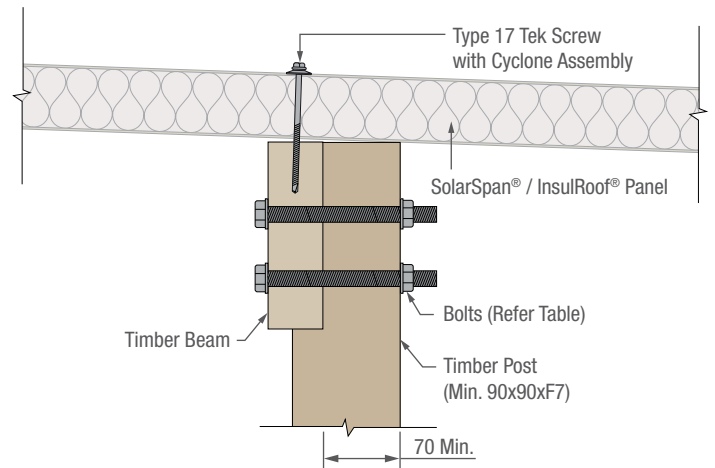
STEP 6.2: Post to Beam Connection Bolt Size				
Connection Type Enter at 6.2.1	Material	Grade	Thickness	Bolt Size Enter at 6.2.2



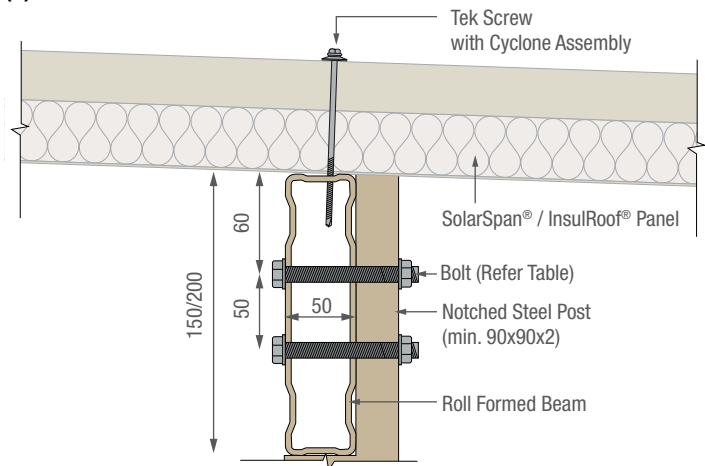
**(A) R.H.S. Post to R.H.S. Beam Joint**



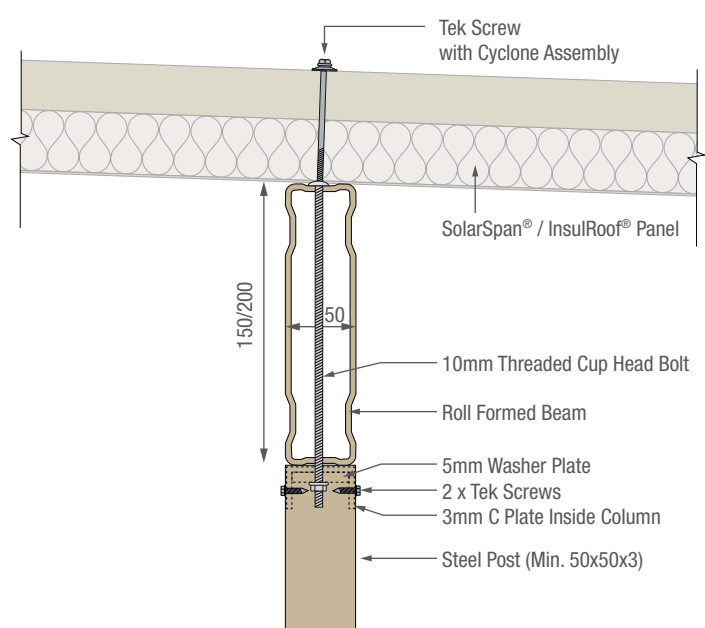
**(B) Timber Post to Beam Joint**



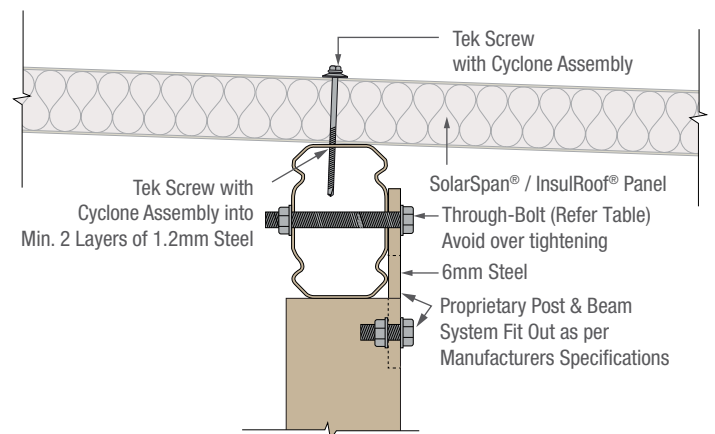
**(C) Notched Post to Roll Formed Beam Joint**



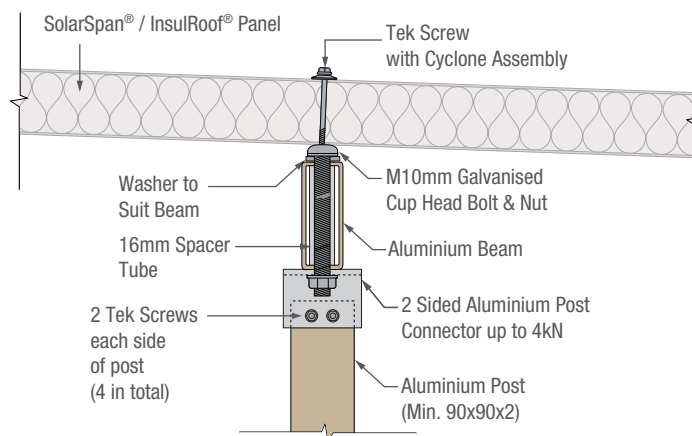
**(E) Post to Roll Formed Beam Joint Concealed Fix**



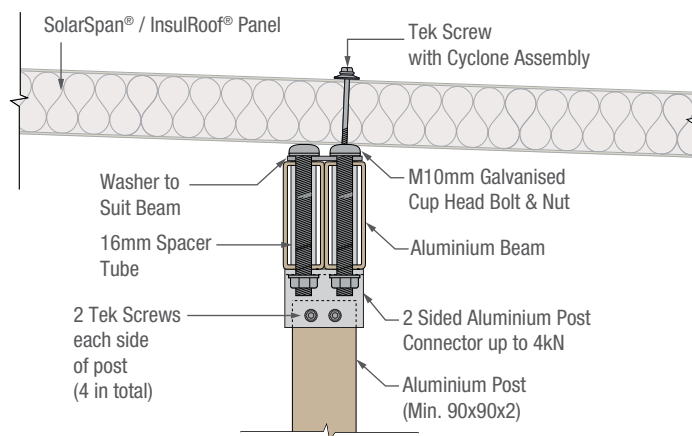
**(D) Proprietary Systems**



## (F) Aluminium Post to Aluminium Beam Connection



## (G) Aluminium Post to Twin Aluminium Beams Connection

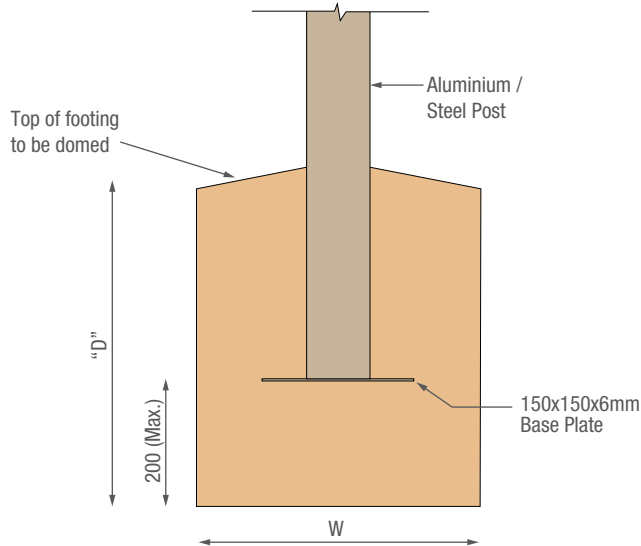


## 6.3 Post to Ground Connection

Use the Uplift on Post from 6.1 (kN) to select the Post to Ground connection and the footing. The hold down capacity of the footing must exceed the uplift on the Post.

### In Ground Footing

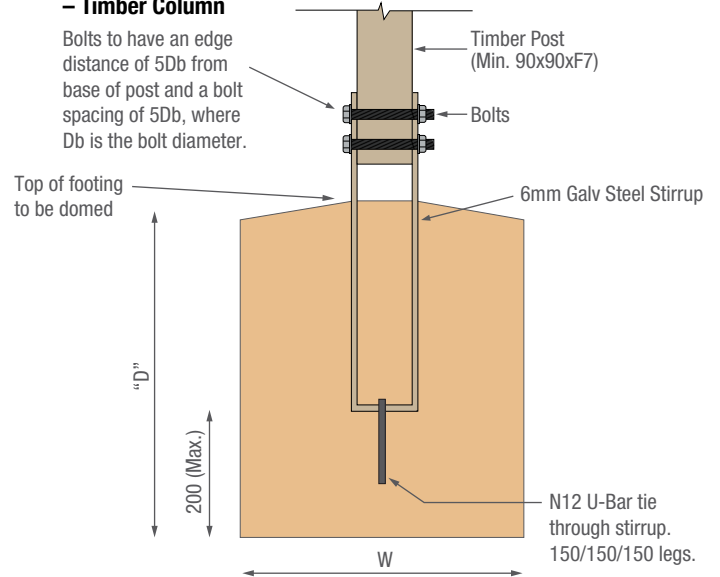
#### – Aluminium / Steel Column



### In Ground Footing

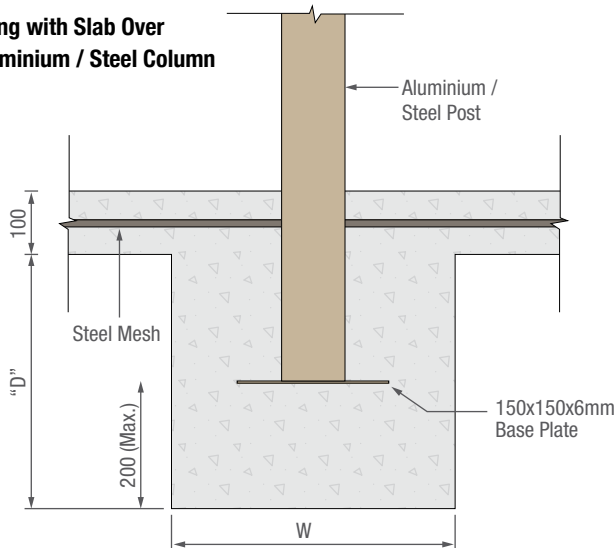
#### – Timber Column

Bolts to have an edge distance of 5Db from base of post and a bolt spacing of 5Db, where Db is the bolt diameter.



### Footing with Slab Over

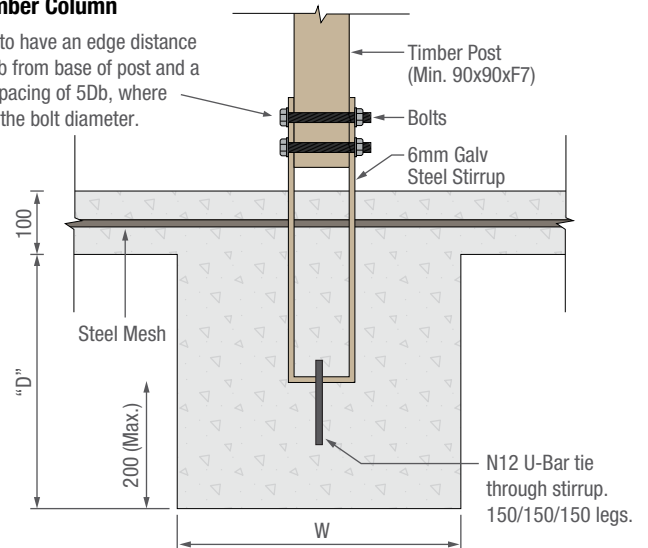
#### – Aluminium / Steel Column



### Footing with Slab Over

#### – Timber Column

Bolts to have an edge distance of 5Db from base of post and a bolt spacing of 5Db, where Db is the bolt diameter.



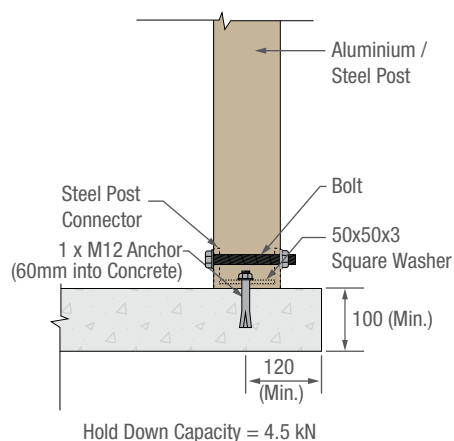
STEP 6.3: Post to Slab Connection

Connection Type Enter at 6.3

## 6.3 Post to Ground Connection (cont'd)

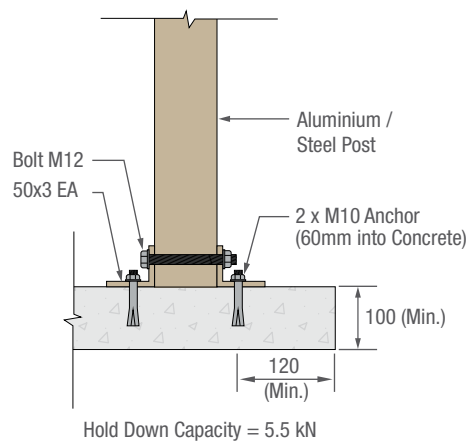
### On Slab Footing

#### – Aluminium / Steel Column on Slab



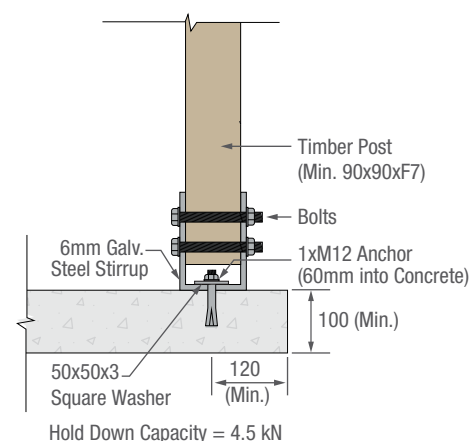
### On Slab Footing

#### – Aluminium / Steel Column on Slab



### On Slab Footing

#### – Timber Column on Slab



#### Notes:

Hold down capacity applies to piers with an undercut into cohesive clay soils. Use post footings for sandy sites.

For footings with depth (D) greater than 500, reinforce the footing with 4/N12 vertical rods tied with R6 spiral, 300 helical pitch.

Concrete slab must be a minimum of 100mm thick, 20Mpa concrete reinforced with SL72 mesh and must extend for the full area covered by the SolarSpan®/InsulRoof®.

IN GROUND FOOTING (CLAY SOIL) W = 450mm DIA.		
Hold Down Capacity (kN)	Footing Depth (mm)	Bolts
1.6	500	2-M12/4.6s
4.3	750	2-M12/4.6s
7.1	1000	2-M12/4.6s
9.8	1250	2-M12/4.6s
12.5	1500	2-M12/4.6s
15.3	1750	2-M16/4.6s
18.0	2000	2-M16/4.6s

FOOTING WITH SLAB OVER (CLAY SOIL) W = 450mm DIA.		
Hold Down Capacity (kN)	Footing Depth (mm)	Bolts
10.4	500	2-M12/4.6s
13.1	750	2-M12/4.6s
15.9	1000	2-M16/4.6s
18.6	1250	2-M16/4.6s
21.3	1500	2-M20/4.6s
24.1	1750	2-M20/4.6s
26.2	2000	2-M20/4.6s

POST FOOTINGS (SANDY SITES)							
Hold Down Capacity (kN)	Width "W" & Depth "D" (mm)						
	500	550	600	650	700	750	800
5	700 x 700 (W) x 500 (D)	650 x 650 (W) x 550 (D)	650 x 650 (W) x 600 (D)	600 x 600 (W) x 650 (D)	600 x 600 (W) x 700 (D)	600 x 600 (W) x 750 (D)	550 x 550 (W) x 800 (D)
10	1000 x 1000 (W) x 500 (D)	950 x 950 (W) x 550 (D)	900 x 900 (W) x 600 (D)	850 x 850 (W) x 650 (D)	850 x 850 (W) x 700 (D)	800 x 800 (W) x 750 (D)	800 x 800 (W) x 800 (D)
15	1200 x 1200 (W) x 500 (D)	1150 x 1150 (W) x 550 (D)	1100 x 1100 (W) x 600 (D)	1050 x 1050 (W) x 650 (D)	1000 x 1000 (W) x 700 (D)	1000 x 1000 (W) x 750 (D)	950 x 950 (W) x 800 (D)
20	1400 x 1400 (W) x 500 (D)	1300 x 1300 (W) x 550 (D)	1250 x 1250 (W) x 600 (D)	1200 x 1200 (W) x 650 (D)	1200 x 1200 (W) x 700 (D)	1150 x 1150 (W) x 750 (D)	1100 x 1100 (W) x 800 (D)
25	1550 x 1550 (W) x 500 (D)	1500 x 1500 (W) x 550 (D)	1400 x 1400 (W) x 600 (D)	1350 x 1350 (W) x 650 (D)	1300 x 1300 (W) x 700 (D)	1250 x 1250 (W) x 750 (D)	1250 x 1250 (W) x 800 (D)
30	1700 x 1700 (W) x 500 (D)	1600 x 1600 (W) x 550 (D)	1550 x 1550 (W) x 600 (D)	1500 x 1500 (W) x 650 (D)	1450 x 1450 (W) x 700 (D)	1400 x 1400 (W) x 750 (D)	1350 x 1350 (W) x 800 (D)

Note: Reinforcement for pad footings: N12-200 CRS, top & bottom, each way, U-Bars, 35mm cover.

#### STEP 6.3: Post to Slab Connection

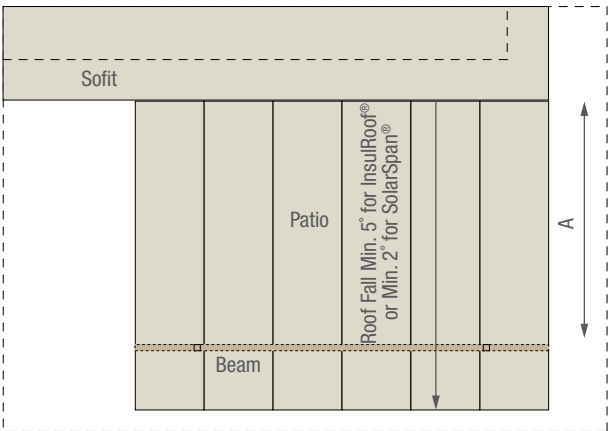
Connection Type Enter at 6.3

# 7.0 Patio to House Connection

Select the type of patio to house connection based on the Uplift Force (kN/m).

Notes:

- 1. Refer to Section 4.2 Uplift Load on Beam Table. For Load Width 0.5A, select the uplift (kN/m) from the table. This value is the Uplift Load on the house.
- 2. Select a suitable house connection for the required kN/m uplift.
- 3. The uplift capacity of the house fascia connections apply to the SolarSpan® & InsulRoof® Receiver Channel connection only. The Load Capacity and suitability of the members and connections below the rafter are to be assessed and strengthened if required.
- 4. It is the responsibility of the builders and engineers to determine the capacity of the existing structures.



## 7.1 For Metal Fascias

UPLIFT CAPACITY OF RECEIVER CHANNEL TO RAFTER CONNECTION (kN/m)		
Rafter Connection Spacing (mm)	Unstrengthened Rafter	Strengthened Rafter
600	3	6
900	2	4
1200	1.5	3

Rafter Strengthening

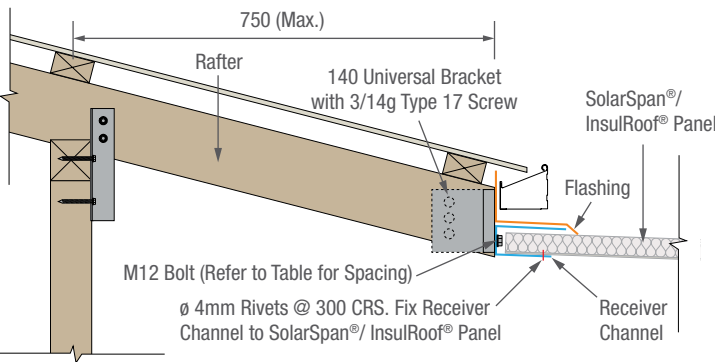
Fix timber stiffener 90x35 F8 x 1500 long to rafter with 75 long x No.14 Type 17 batten screws at 300 CRS (not shown here).

## 7.2 For Timber Fascias

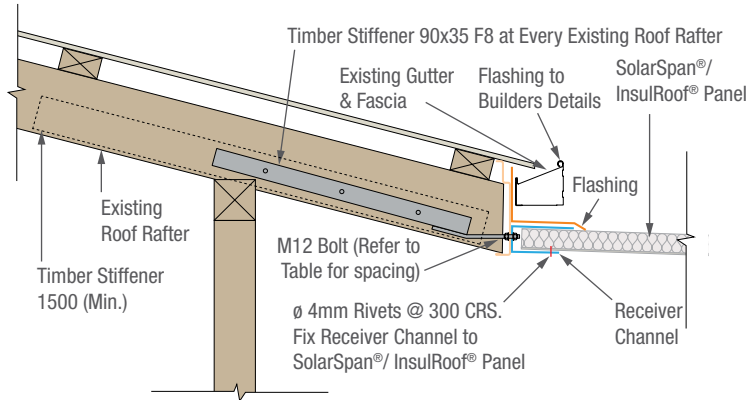
Notes:

- 1. Refer to AS 1684 - Timber Framing Code for attaching pergola or carport to house.
- 2. Connect Receiver Channel as per carport/pergola as shown in that publication.
- 3. Alternatively, connect as for Metal Fascias above.

### Unstrengthened Rafter with Universal Bracket

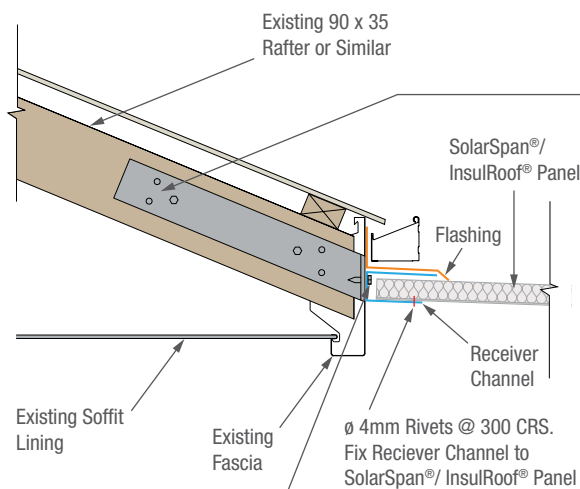


### Strengthened Rafter with Stiffener



STEP 7: Patio to House Connection
Connection Type Enter at 7

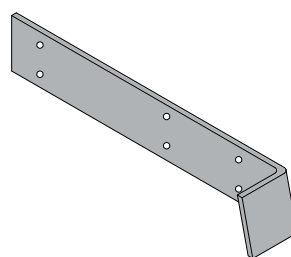
## Strengthened Rafter with Rafter Brackets



40 x 5mm FMS Bracket  
Fix With 4/14 x 50 Type 17 Tek Screws or  
2/M10 Bolts to Rafter at 1200 Max. CRS  
**MAX. LOAD 4.0kN**

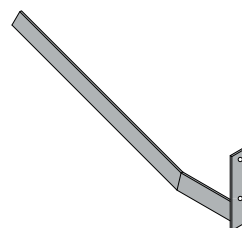
Aluminium Bracket  
For N1 Only. 125 x 50 x 3mm. Fixed to Rafters With  
2/14 x 50 Type 17 Tek Screws at 1200 Max CRS  
**MAX. LOAD 2.6kN**

1 x 35mm Series 500 Tek Screw to  
Metal Fascia Bracket. Alternative  
Fixing for Timber Fascia 1 x 75mm  
Type 17 Tek at Rafter Centres Max.



Internal Rafter Bracket  
(Left and Right)  
50 x 5mm Mild Steel  
**MAX. LOAD 4.0kN**

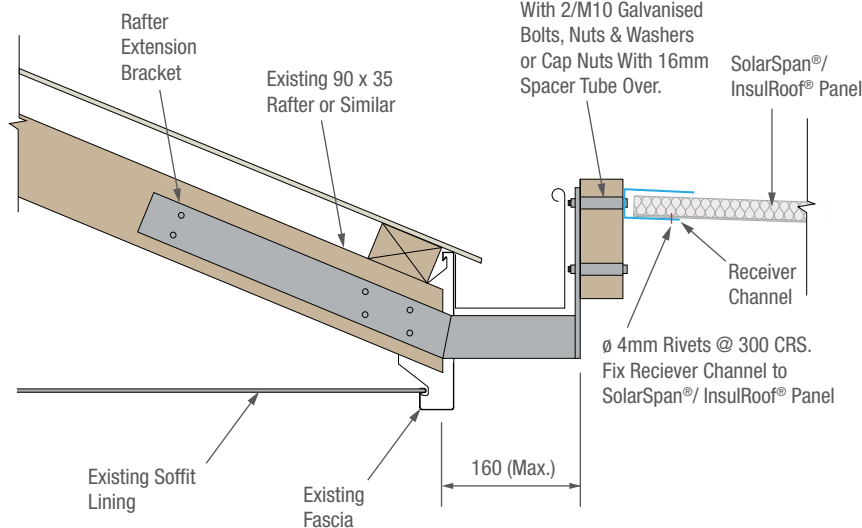
**NOTE: Brackets to be  
spaced at max. 1200 CRS.**



Rafter Extension Bracket  
65 x 8mm Mild Steel  
**MAX. LOAD 5.0kN**

**NOTE: Brackets to be  
spaced at max. 1200 CRS.**

## Strengthened Rafter with Rafter Extension Bracket



Fix Bracket to Beam  
With 2/M10 Galvanised  
Bolts, Nuts & Washers  
or Cap Nuts With 16mm  
Spacer Tube Over.

Ø 4mm Rivets @ 300 CRS.  
Fix Receiver Channel to  
SolarSpan®/ InsulRoof® Panel

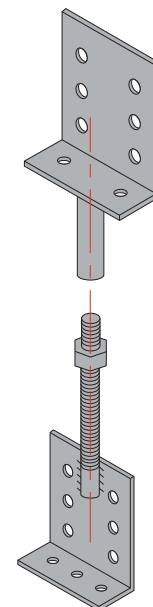
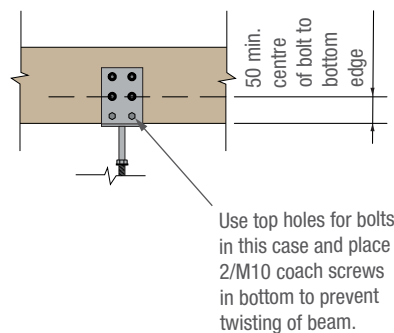
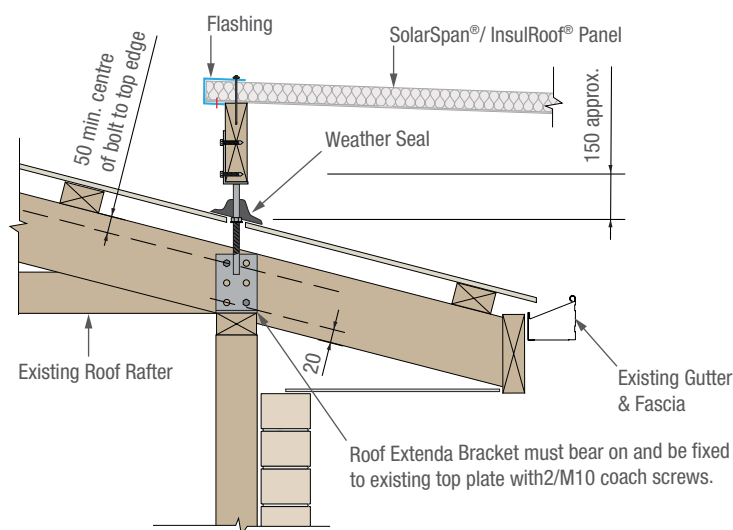
160 (Max.)





## 7.6 Rafter Bracket for Fly-Over - Roof Extenda

### Roof Extenda Bracket MkII & S-Series



MkII Roof Extenda Bracket

#### Note:

Prior to erecting a pergola or carport using the Roof Extenda Brackets check if a building approval from the Local Council or Shire is required as regulations vary from area to area.

Remove roofing tiles or lift roof sheets to achieve an opening to fit the Roof Extenda.

Bolt angle bracket with the threaded rod to the selected rafter with 2-M12 bolts. Provision has been made to bolt the angle section to the existing wall plate to eliminate any uplift.

Replace roof tiles or roof sheet cutting the hole to allow the threaded rod to penetrate the roof.

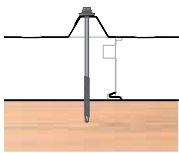
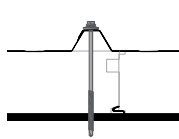
The Weather Seal is fitted to the top bracket, top bracket is then wound down to the desired height and the lock nut tightened.

Mark the position of the Weather Seal on the roofing.

Slide the Weather Seal up to apply clear neutral cure silicone to the area marked.

Press the Weather Seal into position and finish with a bead of silicone to the edges of the Weather Seal to complete the fitting.

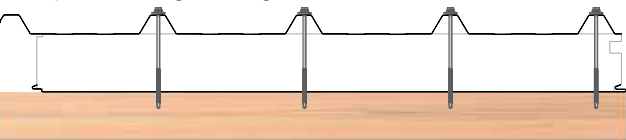
7.7 SolarSpan® Fastener Details

Minimum Screw Length for SolarSpan® Fixings to Beam - All Screws Class 4		
Panel Thickness (mm)	Timber Beam Type 17 14-10 with Cyclone Assembly. Timber joint to be joint group J3 or better. (Min Embedment 35mm)	Steel Beam Metal Tek 14-14 with Cyclone Assembly. (Min steel thickness 1.5mm)
		
50	125mm	125mm
75	150mm	150mm
100	175mm	175mm
125	200mm	205mm
150	240mm	230mm
200	300mm	300mm

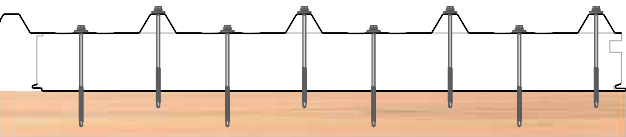
Fixing Recommendations

SolarSpan® roofing side laps should be laid away from the prevailing wind and sit neatly on the preceding roof sheet.

Non Cyclonic Fixing - Through Each Rib



Cyclonic Fixing - Through Each Rib and Pan

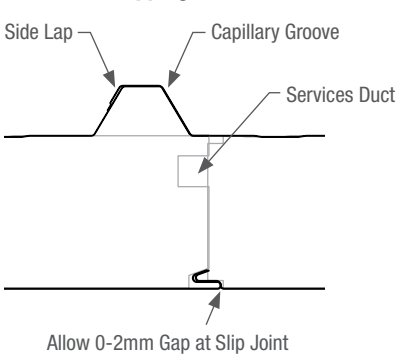


\* Fixing to go through adjacent panel's side lap.

Screw with Cyclone Assembly

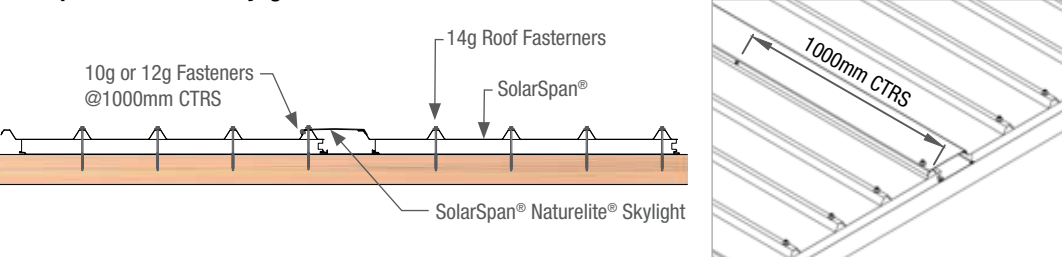


Lapping


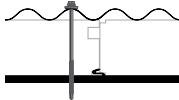


Number of Fixings Required	
Uplift Load on Beam	Fixing Required
up to 7.2 kN/m (up to 5.9 kN/m for Firmlok F10011)	a) One screw with cyclone assembly per panel rib
up to 14.4 kN/m	Screws as per (a) above, plus one screw with cyclone assembly per pan (between ribs)
up to 21.6 kN/m	Screws as per (a) above, plus two screw with cyclone assembly per pan (between ribs)

SolarSpan® Naturelite® Skylight



## 7.8 InsulRoof® Fastener Details

Minimum Screw Length for InsulRoof® Fixings to Beam - All Screws Class 4		
Panel Thickness (mm)	Timber Beam Type 17 14-10 with Cyclone Assembly. Timber joint to be joint group J3 or better. (Min Embedment 35mm)	Steel Beam Metal Tek 14-14 with Cyclone Assembly. (Min steel thickness 1.5mm)
		
50	100mm	125mm
75	125mm	125mm
100	175mm	150mm
125	200mm	175mm
150	240mm	205mm
200	300mm	300mm

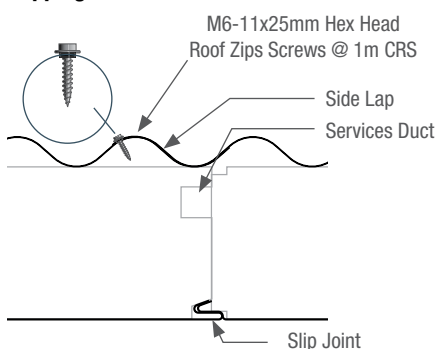
InsulRoof® Fixings Requirements																																											
Span (mm)	Wind Category:						N2					N3					N4					C1					C2					C3											
	Region:	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E												
2000		4					4					4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4										
3000												4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4		
4000												4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	7	7	4	
5000												4	4	4	4	4	4	4	4	4	4	7	7	4	4	4	4	4	4	4	4	4	7	4	4	7	7	7	4	4	4	4	
6000												4	4	4	4	4	4	4	4	4	7	7	4	4	4	4	4	4	4	4	4	7	7	4	4	7	7	7	4	4	4	4	
7000												4	4	4	7	4	4	7	7	7	4	4	4	4	7	4	4	4	7	7	7	4	4	4	7	7	13	4	4	7	7	13	4
8000												4	4	4	7	4	4	7	7	7	4	4	4	4	7	4	4	4	7	7	7	4	7	7	13	13	4	4	7	7	13	13	4
9000												4	4	7	7	4	4	7	7	13	4	4	4	7	7	4	4	7	7	13	4	7	7	13	4	7	13	13	13	7	7	7	7

Number of Fixings Required		
Note	Uplift Load on Beam	Fixing Required
4	up to 7.2 kN/m (up to 5.9 kN/m for Firmlok F10011)	4 fixings with cyclone assembly per panel (minimum every 3rd crest)
7	up to 14.4 kN/m	7 fixings with cyclone assembly per panel (minimum every 2nd crest)
13	up to 21.6 kN/m	13 fixings with cyclone assembly per panel (every crest)

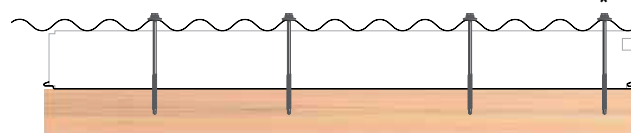
### Fixing Recommendations

The InsulRoof® side lap should be laid away from the prevailing wind and sit neatly on the preceding roof sheet. Use Bondor® recommended insulated roofing fasteners along with cyclone assembly fixed as specified. Fix side laps at approximately 1000mm centres using a M6-11x25mm Hex Head Roof Zips screw (available from Bondor®). Fascia gutter flashings should be fixed using sealed rivets in the valley.

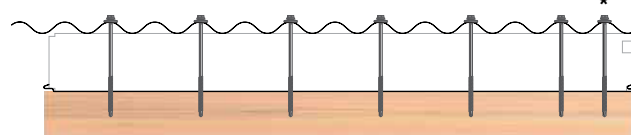
### Lapping



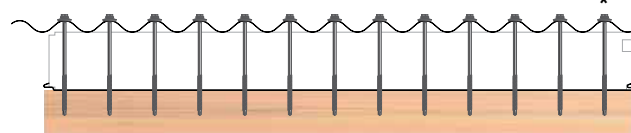
### 4 Fixings - Minimum Through Every 3rd Crest



### 7 Fixings - Minimum Through Every 2nd Crest

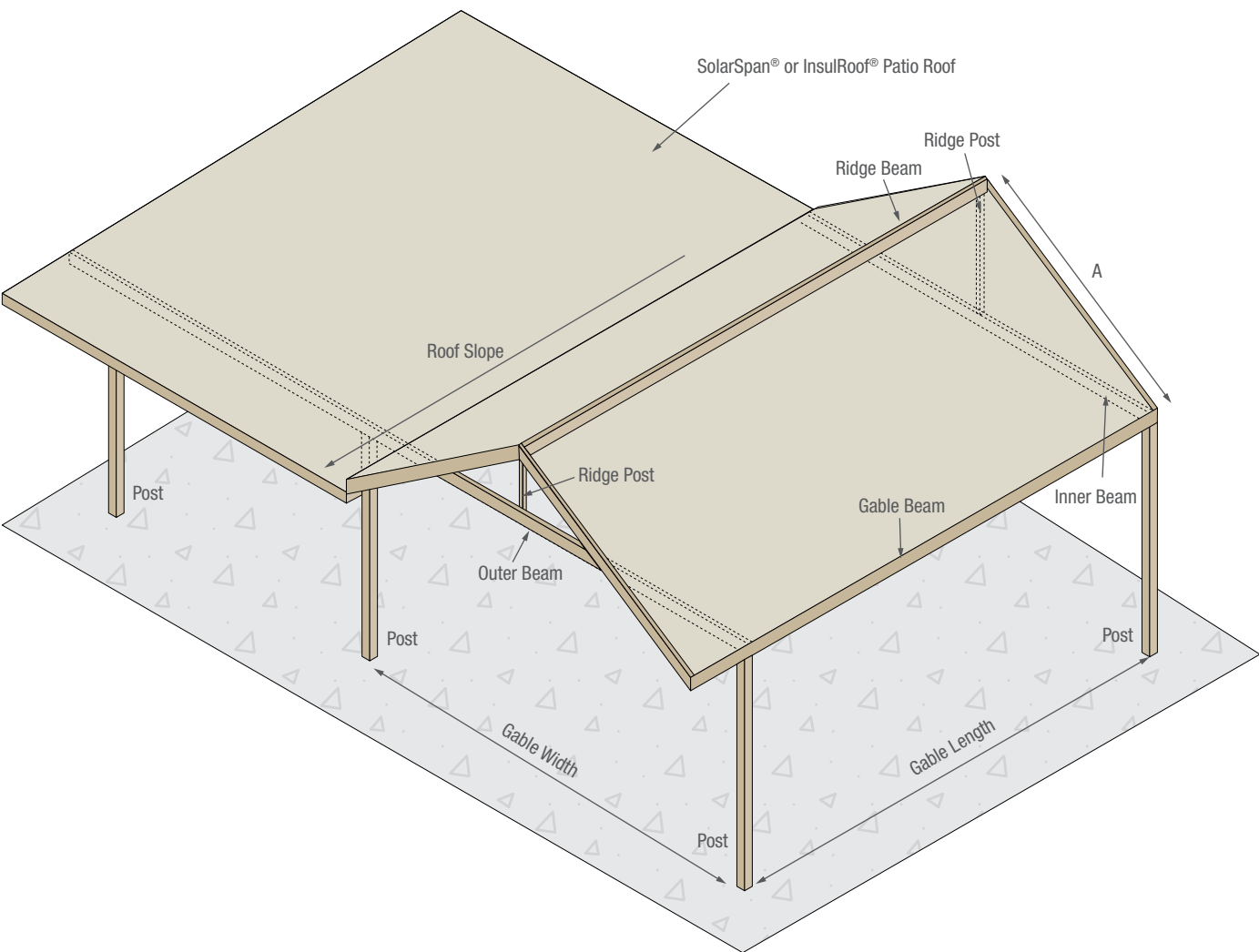


### 13 Fixings - Through Every Crest



\* Fixing to go through adjacent panel's side lap.

# 8.0 Gable Structures



## 8.1 Thickness and Fixings

Selected as for the rest of the patio (refer to Step 3).

## 8.2 Select Outer Beam

This will normally be the same beam as the outer beam in the low pitch part of the patio.

## 8.3 Select Gable Beams

Load Width on Gable = 0.5 A metres. Use the same procedure as set out on Step 4 & 5 to select a suitable beam size.

STEP 8: Gable Span Formula								
Load Width on Gable = 0.5 x A metres								
Load on ridge beam (kN/m) = 2 x load on gable beam (kN/m)								
0.5	x	A (m)	Equals	(0.5xA)	x	2	Equals	Load on ridge beam (kN/m) Enter at Step 8
0.5	x		=		x	2	=	

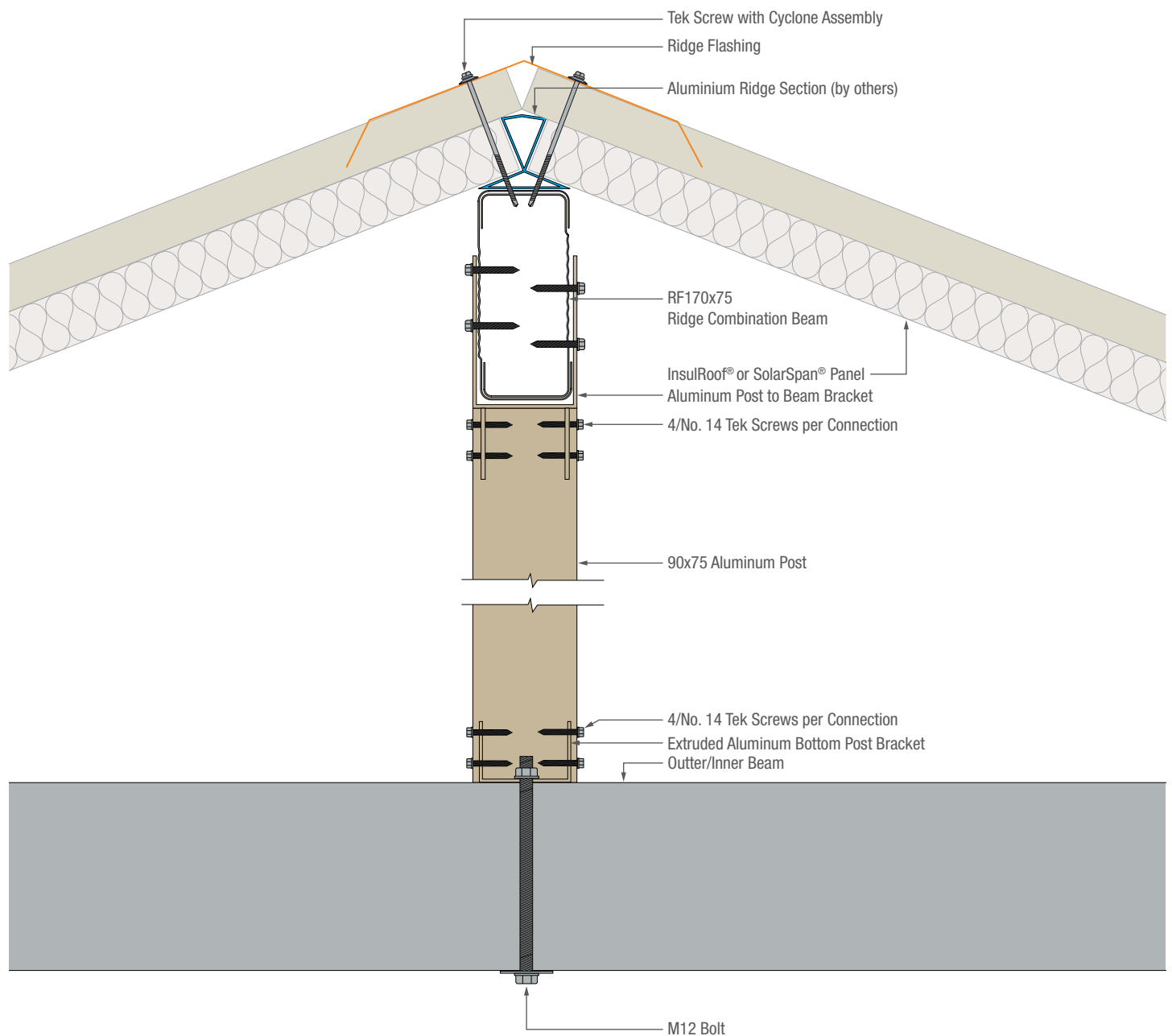
## 8.4 Check the Capacity of the Ridge Beam

### 8.4.1 Load on Ridge Beam

Load on ridge beam (kN/m) = 2 x load on gable beam (kN/m).

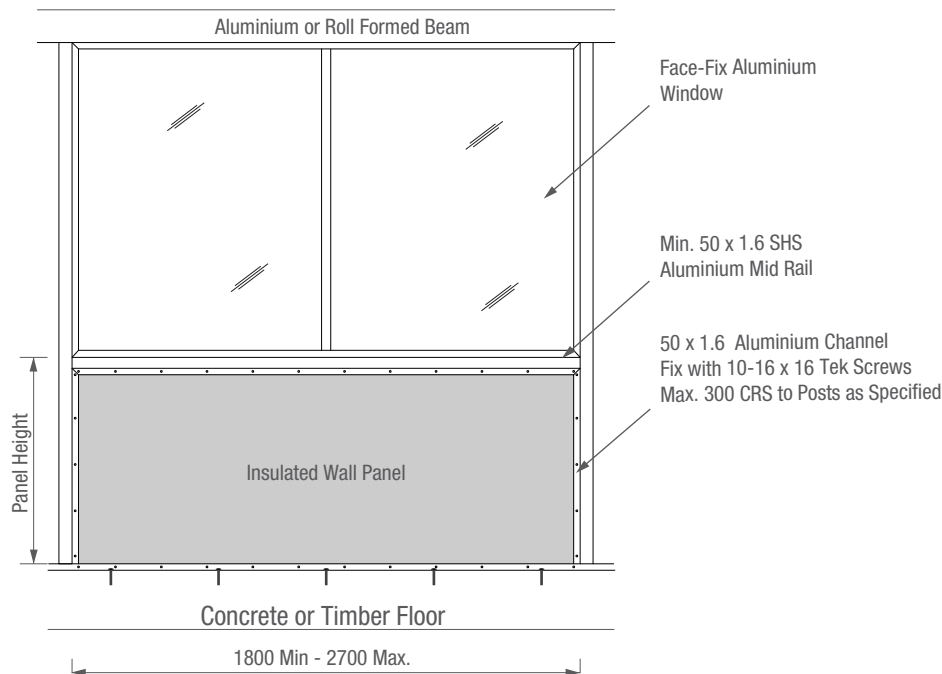
### 8.4.2 Check Capacity

Check that the capacity (kN/m) of the Ridge Beam has sufficient capacity for the particular conditions by referring to the selection table in Section 5.0.



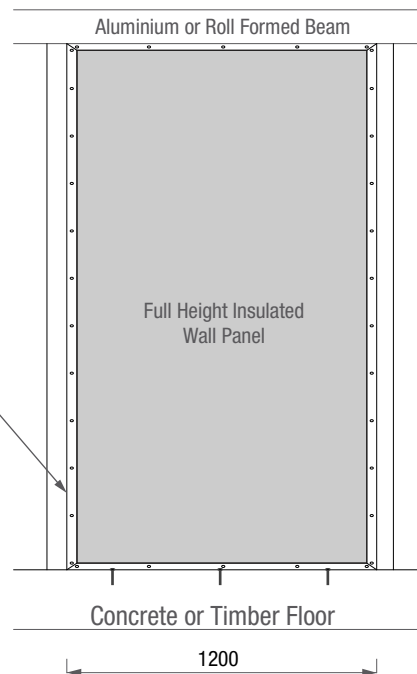
## 9.0 Enclosure Wall Panel

**OPTION 1**



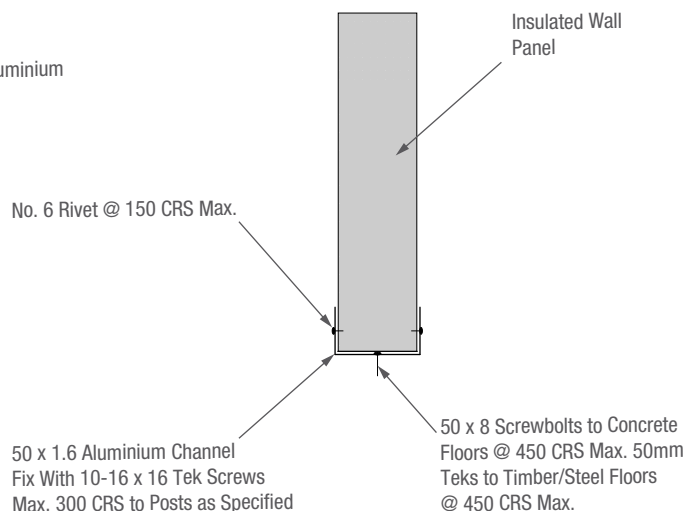
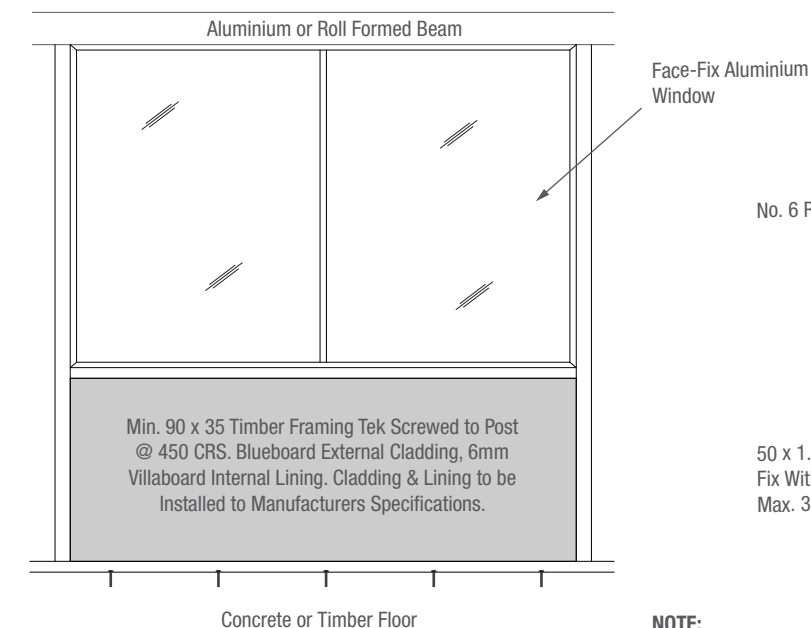
Wall Height	2400		2700		3000	
Panel Height	900	1200	900	1200	900	1200
Capacity per Post - kN	<b>1.8</b>	<b>2.3</b>	<b>1.5</b>	<b>1.8</b>	<b>1.2</b>	<b>1.5</b>
Min. Post Size - Steel	50 x 2.5 SHS		50 x 2.5 SHS		50 x 2.5 SHS	

**OPTION 2**



Wall Height	2400	2700	3000
Capacity - kN	2.7	2.4	2.2
Min. Post Size	50 x 1.6 Alum	60 x 2.0 Alum	60 x 2.0 Alum

**OPTION 3**



Wall Height	2400		2700		3000	
Panel Height	900	1200	900	1200	900	1200
Capacity per Post - kN	<b>1.5</b>	<b>1.9</b>	<b>1.2</b>	<b>1.5</b>	<b>1.0</b>	<b>1.2</b>
Min. Post Size - Alum.	90 x 2.0		90 x 2.0		90 x 2.0	

**NOTE:**

Max Wall Height for  
50 x 50 x 1.6 Aluminium Posts = 2400

Max Wall Height for  
60 x 60 x 2.0 Aluminium Posts = 3000

Flashing & Fixtures

Flashing Details

For residential housing and commercial applications, other detail drawings are available. Please contact Bondor® in your state to request a copy.

Suits 50mm			Suits 75-200mm			Suits 50-200mm
Fascia Gutter End Flashing	Side Barge Flashing	Top Barge Flashing	Fascia Gutter End Flashing	Side Barge Flashing	Top Barge Flashing	1.0mm Receiver Channel & 0.55mm Apron

UltraSlim Extra Bright 9W LED Downlight Kit

SolarSpan®/InsulRoof®’s low heat UltraSlim 9W LED Downlight has been custom designed for Bondor® insulated roof products and outdoor use in patios and pergola applications. Our 9W LED Downlight provides an energy efficient lighting solution with up to 50,000 hours of operational use and covered by a 3 year manufacturer’s return to base warranty.

KIT INCLUDES

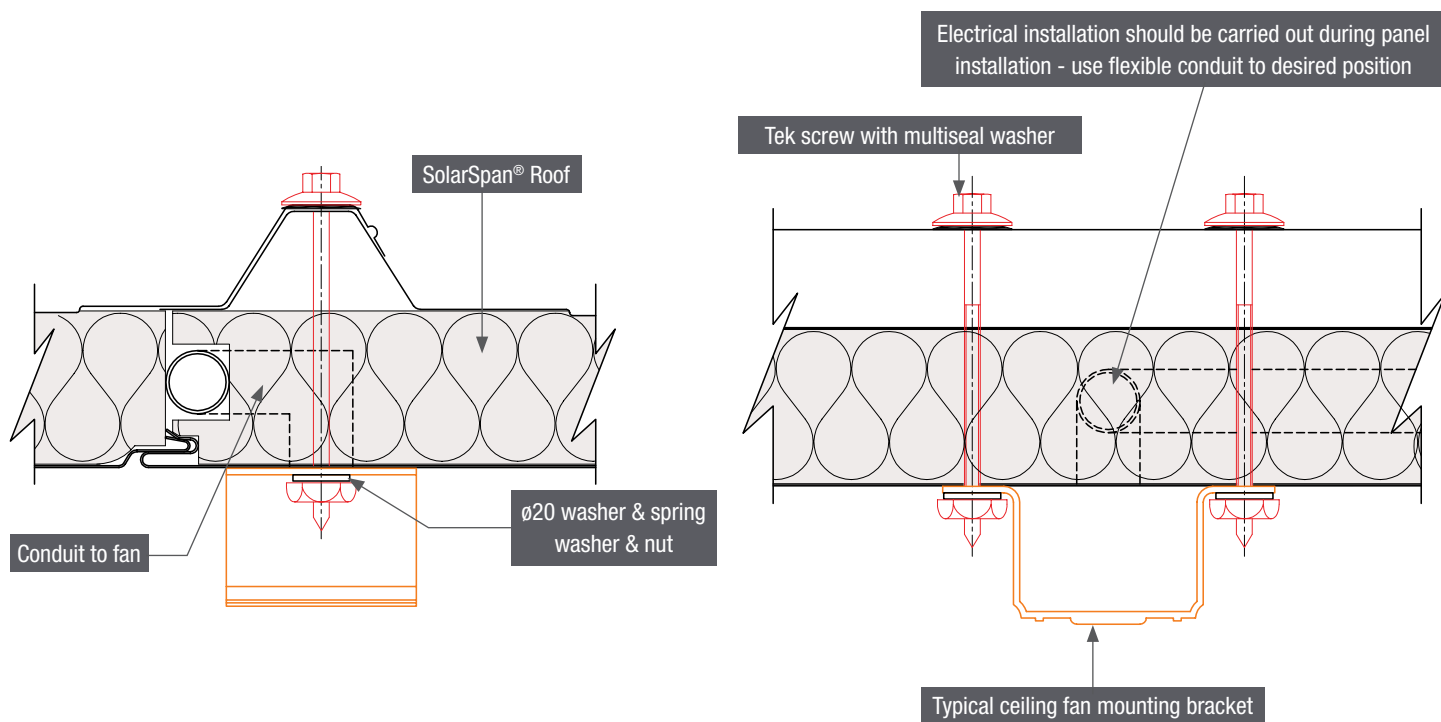
- 1 x UltraSlim Bright 9W Downlight
- 2 x Flush Trims (1 x White & 1 x Silver)
- 1 x 12m light extender lead
- AS Compliant for SolarSpan®/InsulRoof®





## Ceiling Fans Bracket Kit

Where lights or ceiling fans are required, electrical cabling should be pre-wired through the fascia, sheathed inside flexible conduit inside the service ducts on the female side of the panel. Locate fans and lights away from slip joint by drilling horizontally through the foam and then using the appropriate diameter metal-holesaw, drill through the underside of the steel sheet to required depth. Fans should be located centrally below a rib as through fixing is required for bracket.

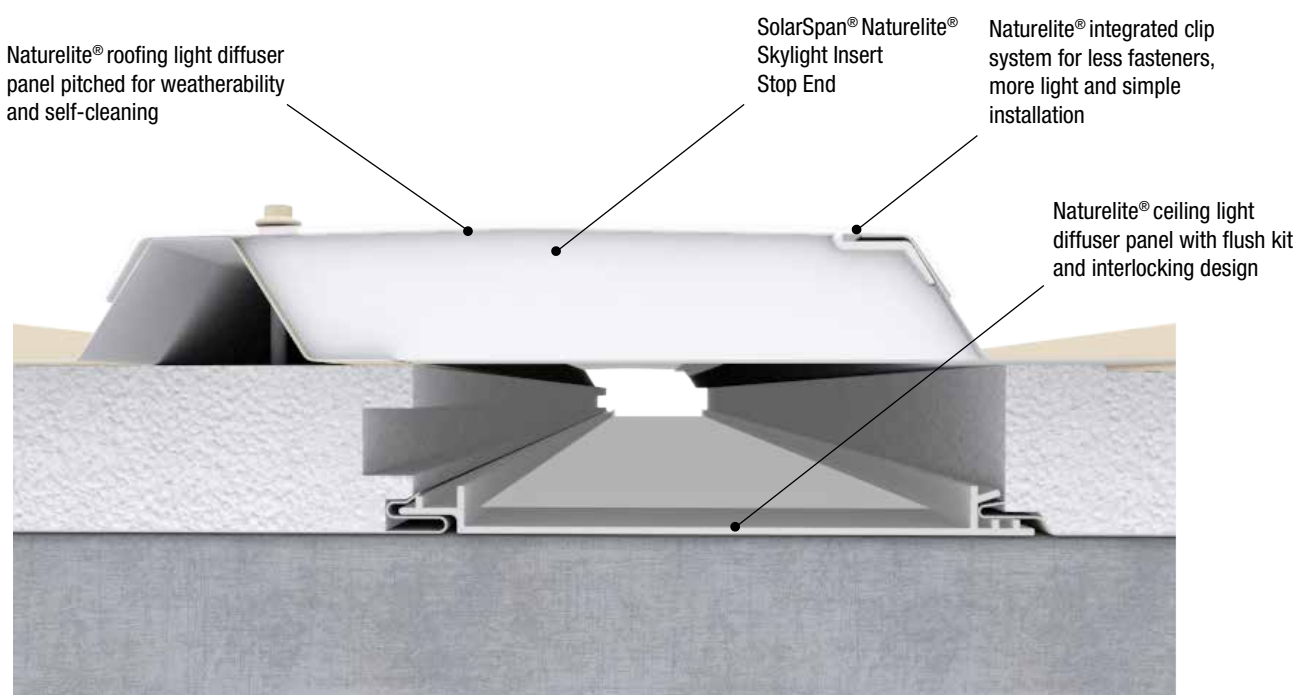


## SolarSpan® Naturelite® Skylight

Bondor®'s Naturelite® skylight system is designed for exclusive use with SolarSpan® insulated patio roofing to increase natural light into outdoor living areas. The Naturelite® skylight roof and ceiling panels are developed to the SolarSpan®'s roof and ceiling profile specification. Made from high impact and UV stabilized material, the skylight is proven for use with outdoor patio applications in Australia. Naturelite® skylights deliver a smart and modern lighting solution that is easy to install with brighter results.

### Components

Naturelite® roof panels capture and diffuse more sunlight due to its pitched roof design between SolarSpan® roof ribs and deliver a weather resistant, low maintenance and self-cleaning translucent roof panel that doesn't collect water or debris. Naturelite® diffuser ceiling panels slide into position flush with SolarSpan®'s smooth ceiling underside, interlocking easily without the need for fixings, brackets, metal channels or cover flashings.



### Design Notes

- SolarSpan steel roof panels are serviceable up to 140kg/m<sup>2</sup> of live load however, Naturelite® skylight panels are non-trafficable and stepping on or near skylight panels must be avoided.
- Naturelite® skylight panels should be used in open outdoor shade applications in non-cyclonic regions only. Skylights are not for house or commercial roofing purposes.
- Installation of Naturelite® skylights should be between at least one SolarSpan® panel on either side.
- SolarSpan® maximum spans may need to be reduced to compensate for the addition of a Naturelite® skylight. Refer span table notes.

### Panel Configuration Example

Two SolarSpan® panels on either side



One SolarSpan® panel on either side



## Packing & Delivery

### Packing for Shipment

SolarSpan® & InsulRoof® sheets are packed to a maximum pack height of 1.2m with the number of panels per pack dependant on panel thickness, length and overall pack weight. SolarSpan® & InsulRoof® panels are manufactured with a protective film applied to the ceiling skin. SolarSpan® & InsulRoof® panels can be marked externally on the insulated core with the panel number and/or length, on request.

### Delivery to Site

Panel packs should be secured using cargo straps spaced approximately every 2m with 600mm plastic cargo angles under the straps (refer to Figure 1a). Long 600mm angles must be placed on top and bottom of panel pack to protect from straps. Do not overtighten straps, no depression in panel should be seen, back off on strap tension, panel skin should be flat (refer to Figure 1b). Unloading remains the client's responsibility. For lifting panels greater than 8m in length, use of a spreader bar is recommended (refer to Figures 1c & d). Refer to Figures 1e & 1f for recommended steps to unload panels of less than and greater than 8m in length. Panels should always be kept dry and if placed on site, stored off the ground, slightly inclined, allowing adequate drainage and ventilation of the panel pack.

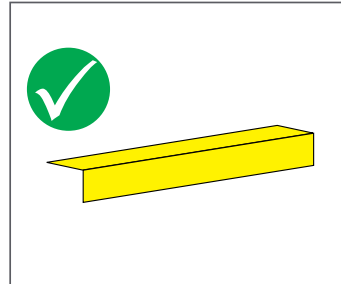


Figure 1a

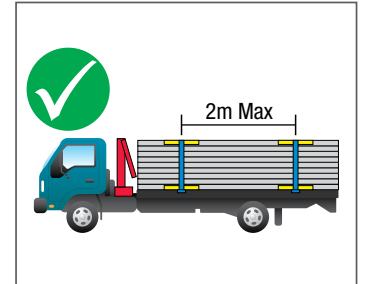


Figure 1b

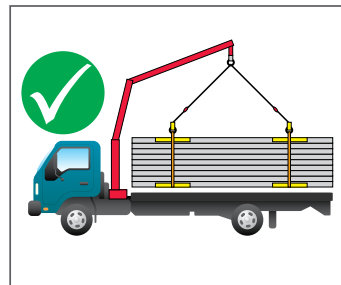


Figure 1c

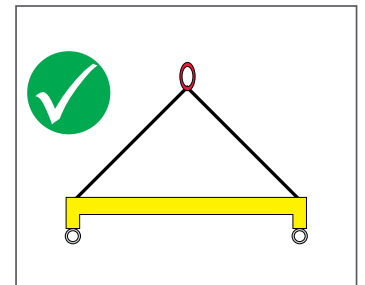


Figure 1d

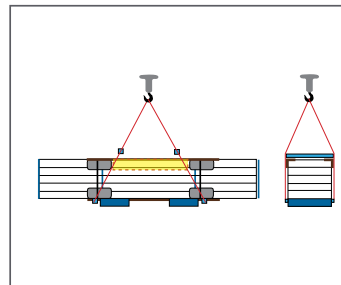


Figure 1e

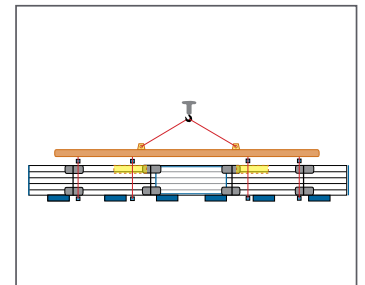


Figure 1f

## Installation

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### Required Tools & Equipment

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#### Personal Protective Equipment

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- Long sleeves & pants
- Cut resistance level 5 gloves
- Eye protection
- Hearing Protection
- Enclosed footwear

#### General Tools

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- Saw Horse Stools (Padded)
- Rivet gun
- Multi-purpose step ladders
- Socket set (metric) for post bolts
- RH & LH Hand Tin snips
- Spirit Level
- Chalk Line
- Roof Screw Gun with Hex Head Adapters 5/32" R 14g Tek Adaptor
- SolarSpan® Turn-Up/Down Tool (See Bondor®)
- Plastic Paint Scraper
- Measuring Tape
- Towels or blankets to cover patio beams
- Shears to remove overlap (first sheet only)

#### Components

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- Patio Structure
- SolarSpan®/InsulRoof® Roofing Panel
- Receiver Channel (for attached patios)
- Barge and Fascia Gutter Flashings
- 3.2mm diameter blind rivet (sealed)
- 14g class 4 metal/timber roof screws with Multiseal Cyclone Assembly
- Profile vermin protection and EPS-FR rib infill strip

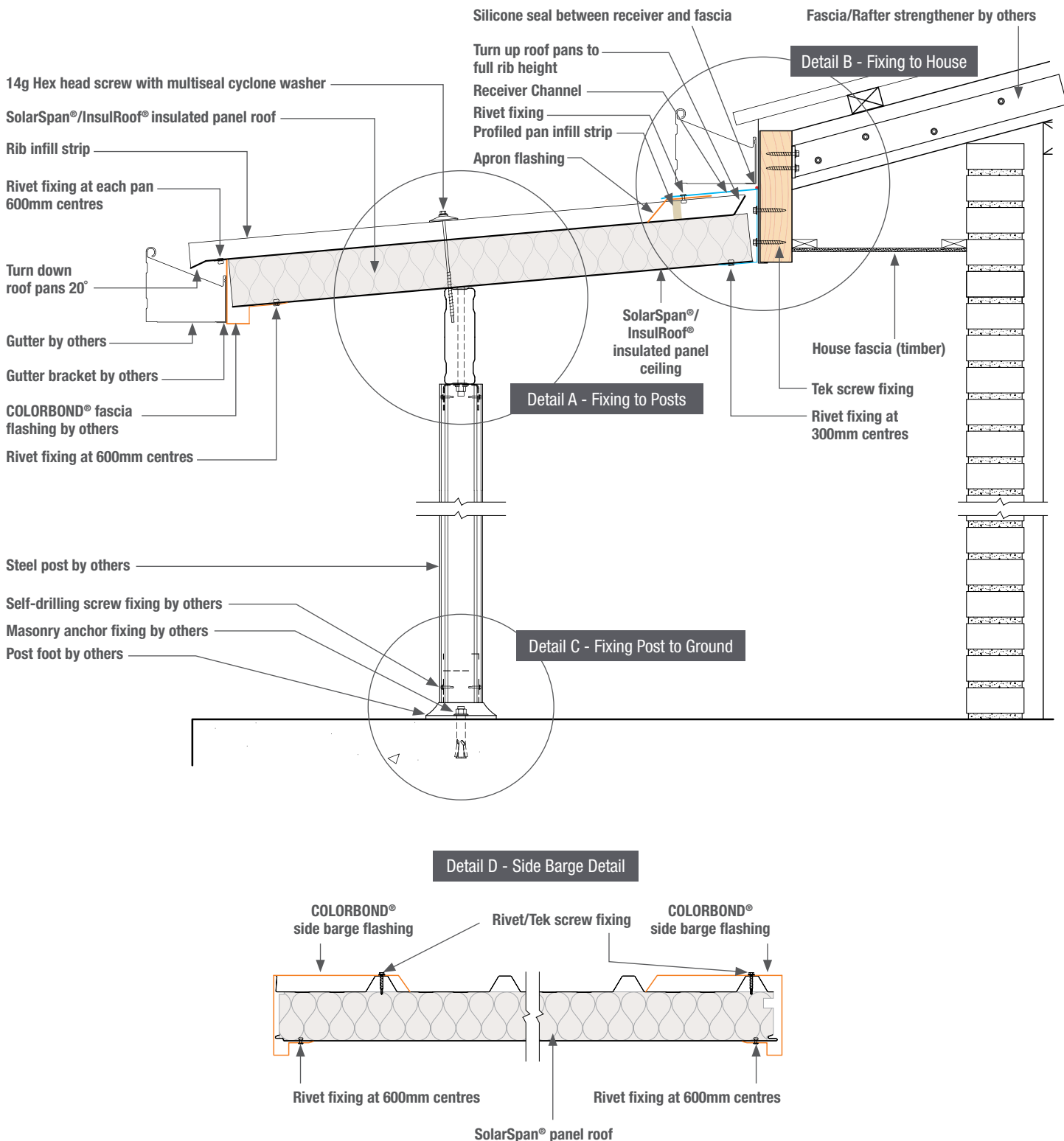
#### Clean Up

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- Broom for cleaning swarf from roof
- Blower/Vacuum

## Patio Construction Overview

The below overview is conceptual only.



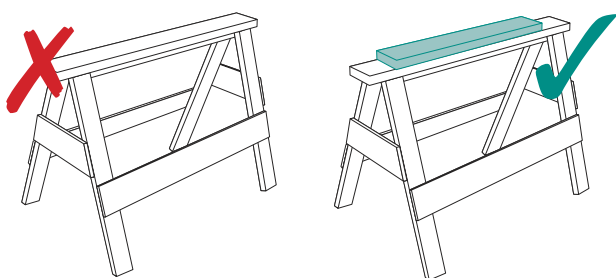
## Structure Preparation

Fix Receiver Channel to the house fascia using appropriate fasteners. Apply to the Receiver Channel a thick continuous bead of silicone to the top of the back face of the Receiver Channel for protection against water ingress retained behind the Receiver or to the patio floor below.

Install patio structure, including posts and beams to manufacturer's specifications, ensuring the frame is square, checking diagonals.

## SolarSpan®/InsulRoof® Installation Instructions

This example shows a typical installation to an existing house timber fascia. For other examples, visit [www.solarspan.com.au](http://www.solarspan.com.au). SolarSpan® is shown in the illustrations below but the instructions apply to InsulRoof® as well.

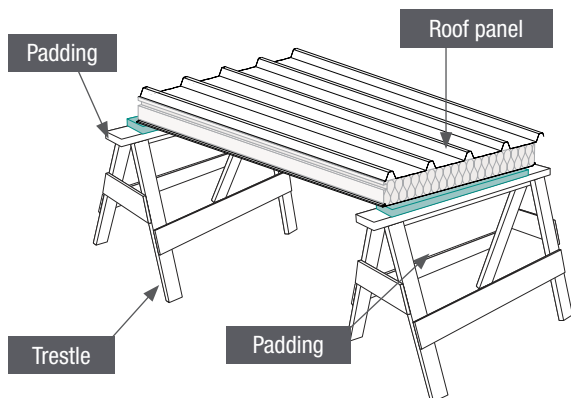


### Handy Tips

Prepare your carpenter's trestles (or similar work platform) by taping soft material or foam to the top of the trestles.

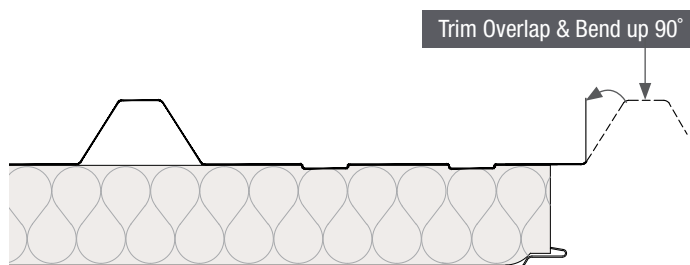
### Step 1: Panel Preparation

Place SolarSpan®/InsulRoof® panel roof side up on the trestles (avoid dragging the panel to eliminate damage).



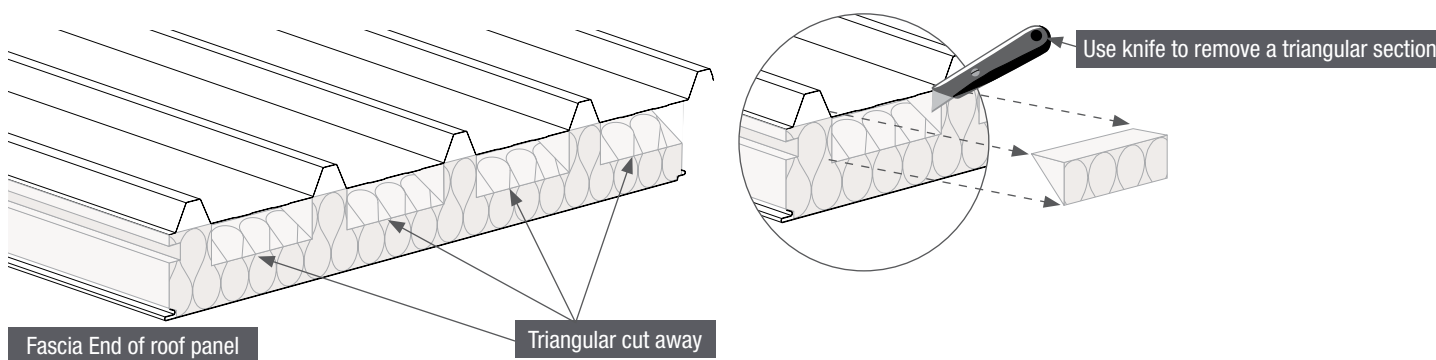
### Step 2: Trim Overlap & Bend 90°

FIRST PANEL ONLY. The first overlay rib on the first panel acts as waterproofing under the side barge/apron and should be trimmed using shears and bend up 90° as shown below.



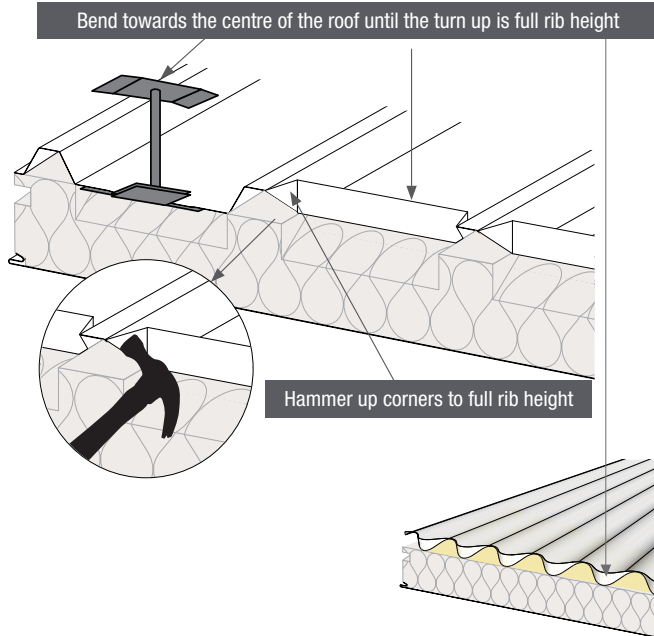
### Step 3: Remove Foam & House Fascia End

Cutaway foam below pans at the fascia (house) end to allow the pan turn up.



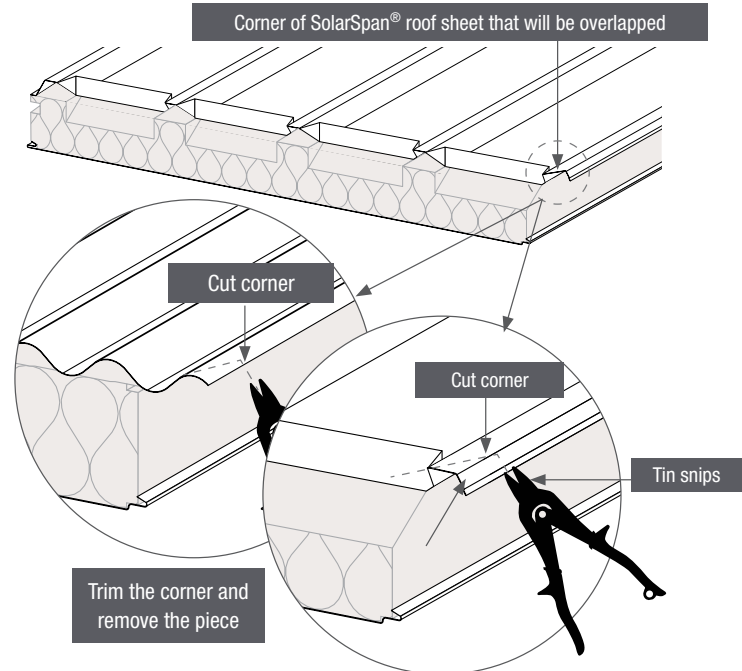
## Step 4: Turn Up Pans Fascia End

SolarSpan®/InsulRoof® roofs should always have the roof pans at the top or house end turned up to full rib height. It is important to ensure the pan is turned up to the full rib height for the complete width of the pan so no 'low' points exists. The Turn-up/Turn-down tool is available from your Bondor® distributor.



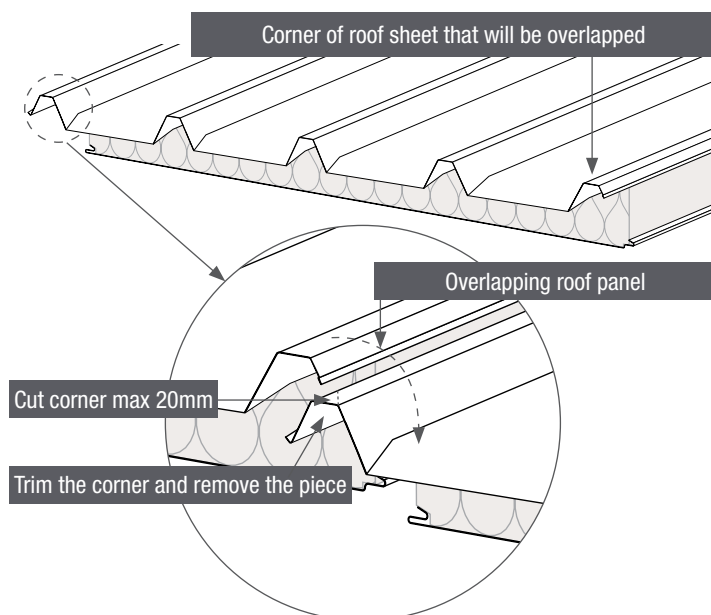
## Step 5: Trim House Fascia End Overlap

Trim the overlay rib to prevent fouling with the turned up pan of the adjacent panel.



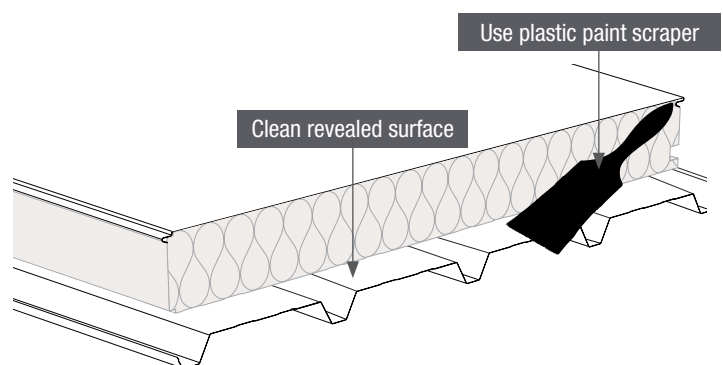
## Step 6: Trim Gutter End Underlap (for SolarSpan® only)

Trim the underlay rib of every SolarSpan® panel at the gutter end to prevent water drawback via capillary action.



## Step 7: Remove Gutter Cutback Foam

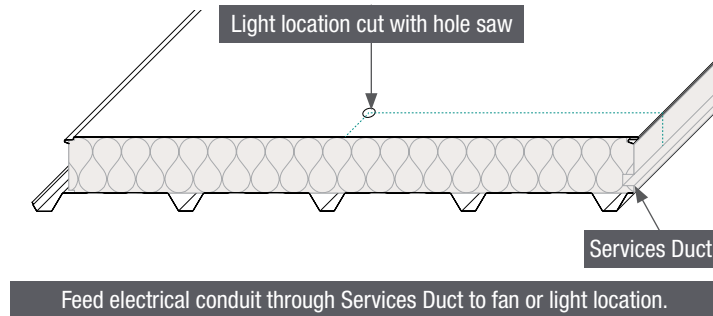
Turn the panel over roof side down on the trestles. Remove core material from the gutter cutback end of the panel with a plastic paint scraper to ensure that the fascia flashing can be installed correctly.





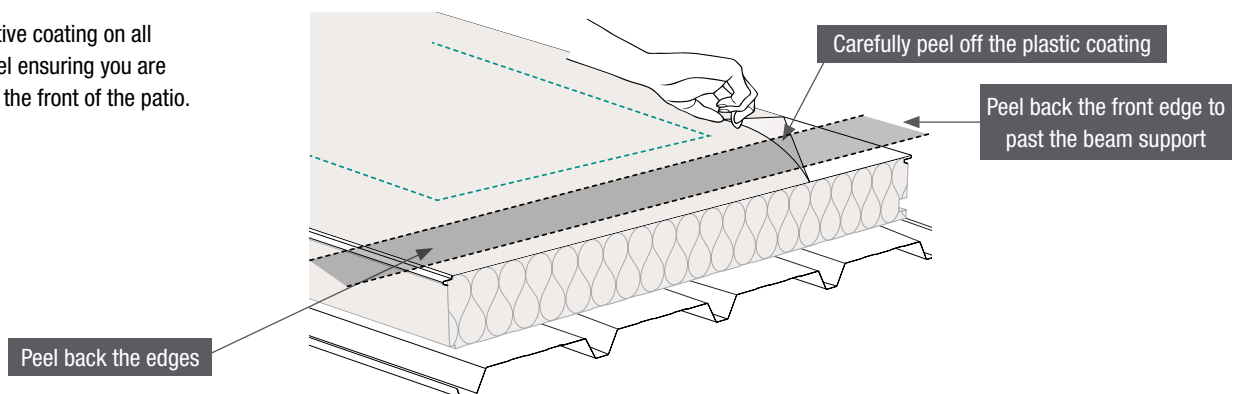
## Step 8: Electrical Preparation

Mark the location of each downlight/fan, cut appropriate size hole in the SolarSpan®/InsulRoof®. Feed electrical conduit through Services Duct to fan or light location. The ceiling core-strip protective film should be left on while any marking, drilling and cutting is carried out. Install the lighting/fan as per instructions. LED Downlights & fan bracket kits are available from your SolarSpan®/InsulRoof® installer or contact Bondor® for more information.



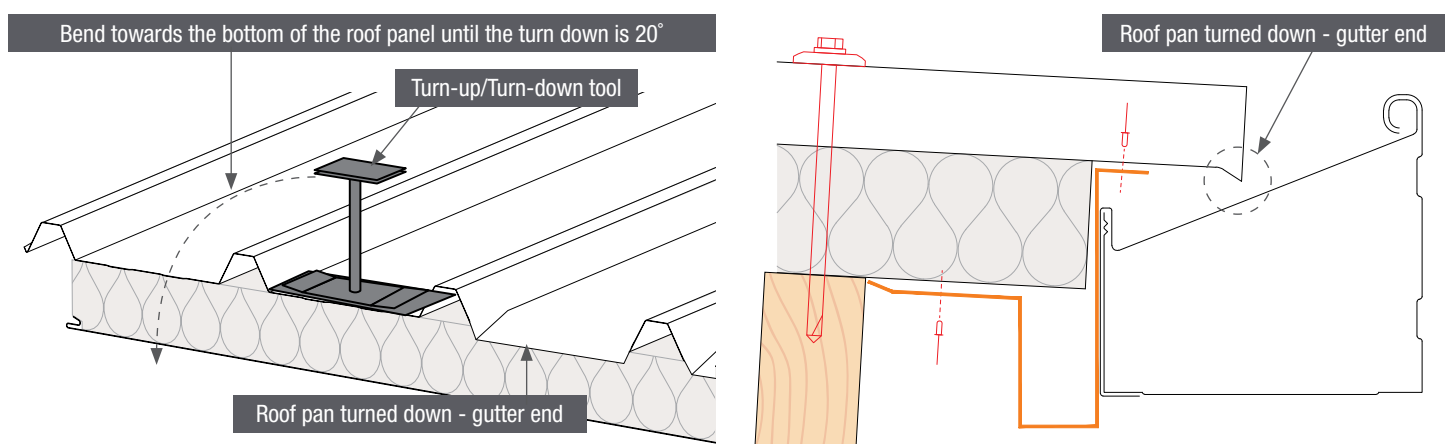
## Step 9: Peel Back Plastic

Peel back protective coating on all edges of the panel ensuring you are past the beam at the front of the patio.



## Step 10: Turn Down Pans Gutter End 20°

Turn the panel back over and use the special Turn-down tool to turn each pan of the panel approx 20° into the gutter. Turn downs should be done while safely on the ground before installing into place. Turn up/down tools are available from Bondor®.



## Step 11: Installing Panel

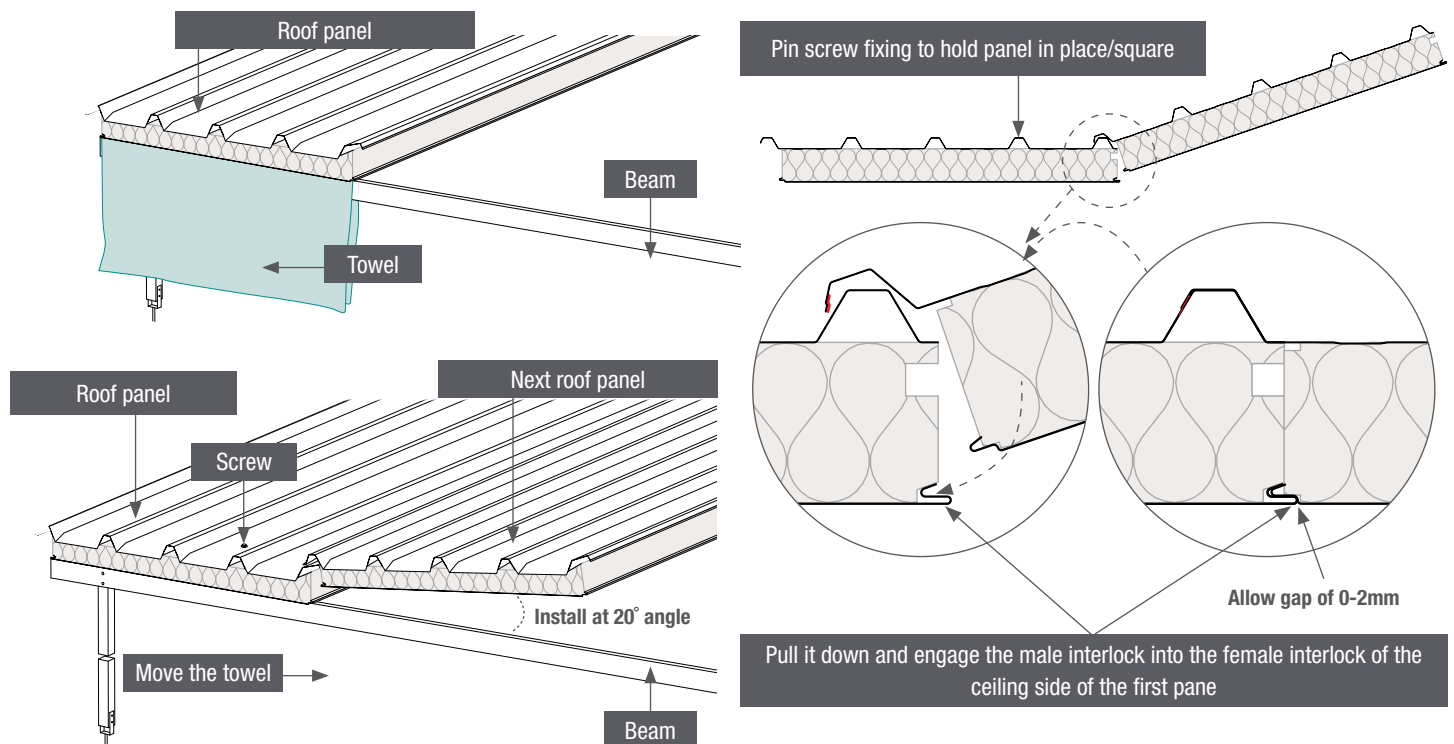
Place a towel or blanket over the beams that the first panel will be in contact with. Place the cutback end (gutter or low end) on to the covered beam and then push the panel back into the rear receiver channel.

Square off this first panel. Pin with a screw fixing in the top middle rib and with a rivet underneath receiver channel to hold it square and in place.

To install the second panel, place the overlay flap of the roof skin over the previously fitted panel and with the panel at approx 20° pull it down and engage the male interlock into the female interlock.

Slide this second panel towards the back receiver channel. To be sure you are successful, the ceiling join should be a neat 'V' join, with 0-2mm of the male interlock showing.

Screw fix to the beam and rivet bottom of the receiver channel ensuring your line is square.

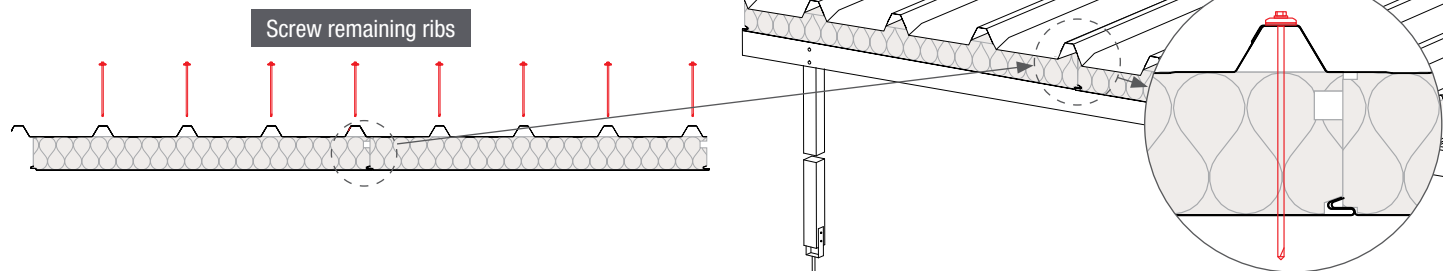


### Handy Tips

Refer to SolarSpan® Naturelite® Skylight Installation Instructions if installing the skylight.

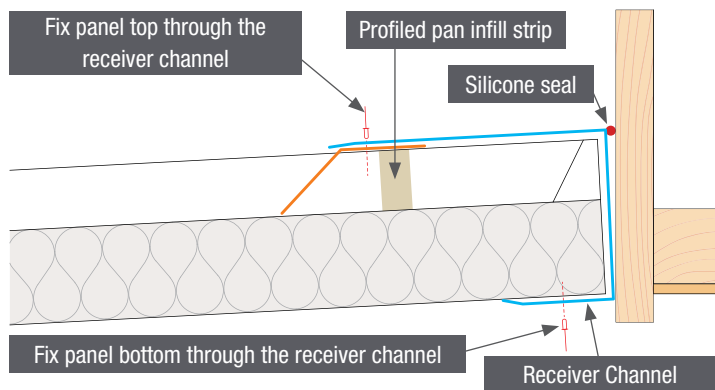
## Step 12: Screw Down Remaining Ribs

Screw down the remaining ribs per fixing recommendations.



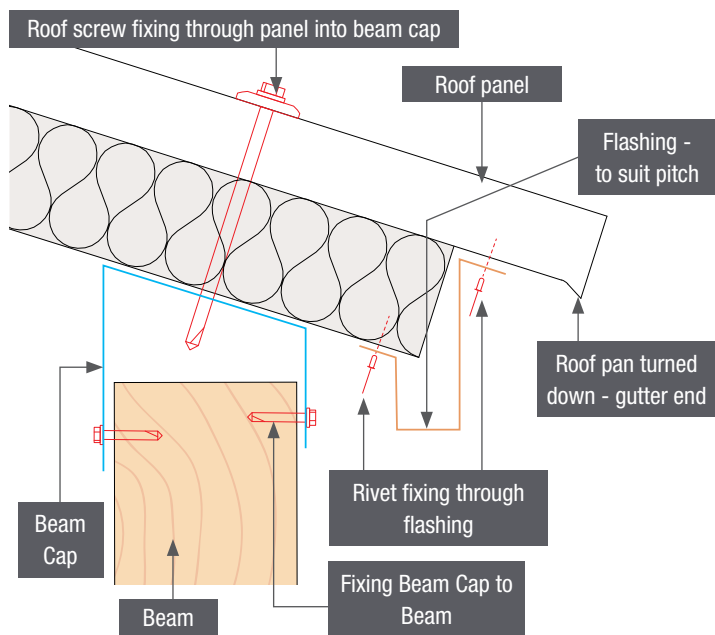
## Step 13: Fix to Receiver Channel

Fix receiver channel to the top (above ribs) and the bottom of the panel.



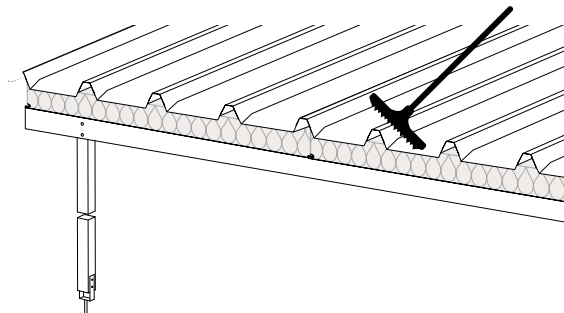
## Step 15: Steeper Pitches

For steeper pitches ( $> 7^\circ$ ), an angled beam cap that is designed specifically for the beam selected is recommended to provide a flat screwing surface beneath the panel. This will prevent screws from skewing off the perpendicular to the top skin and provide a more watertight finish on top.



## Step 14: Clean Down Roof

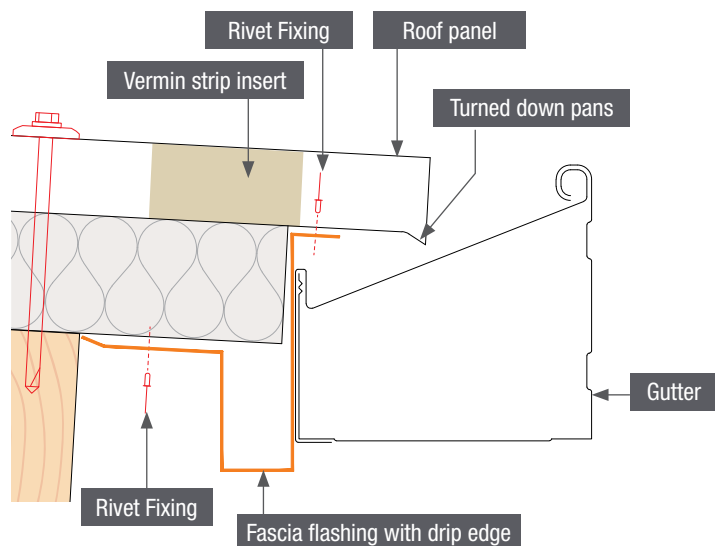
Once roof fixings are installed use a soft broom to sweep swarf and debris off the roof surface before installing flashings. Once flashings and gutter are installed clean the flashings and roof using the same method. Ensure gutters are clear from swarf and debris to prevent corrosion. A wet microfiber cloth can be used on COLORBOND® to clean down any marks.



## Step 16: Vermin, Gutters, Downpipes

After all panels are fitted, vermin strips are to be inserted into every sheet (for SolarSpan® only) rib, then install fascia flashings, gutter, downpipes and barge flashings.

Gutter and downpipe sizes should be selected in accordance with good plumbing practice to adequately service the requirements of the additional roof area, plus handle additional water for any gutters and downpipes that were removed from the existing house roof.



## Rough-in-Lighting and Other Electrical Services Instructions

**WARNING:** Always consult your licensed electrician for advice on details for cable installation. Ensure all services are clear of the top wall plate centre cavity where roof fixing screws will penetrate.

InsulRoof®/SolarSpan® panels have a services duct (at least 20mm x 20mm) on the female (under lap) joining edge which accommodates a standard size conduit for electrical cables for ceiling lights and fans.

### Step 1: Mark Entry

Mark the entry location of the feed wires on the InsulRoof®/SolarSpan® underside.

### Step 2: Mark Exit

Mark the exit location of the feed wires for fan/light fittings on the InsulRoof®/SolarSpan® underside.

### Step 3: Drill Underside

Drill through the underside metal skin at the marked locations and remove the excess polystyrene.

### Step 4: Form Hole

Drill and form a hole through the services duct to the exit and entry hole on the underside.

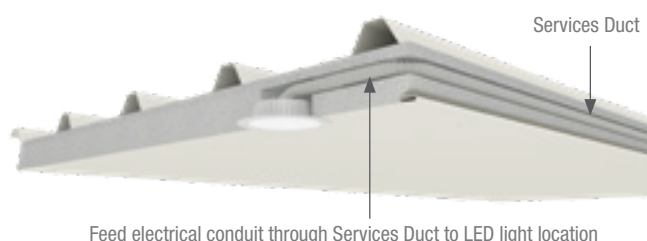
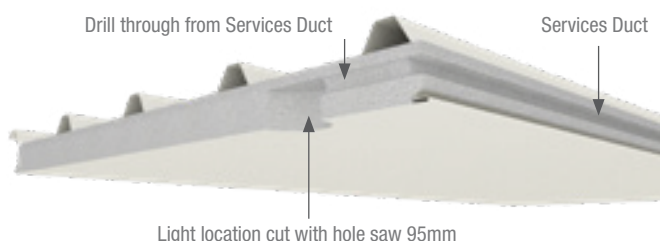
### Step 5: Feed Conduit

Lift the InsulRoof®/SolarSpan® panel into position. Feed the conduit up from the wall panel into the entry hole on the InsulRoof®/SolarSpan® panel, along the services duct and out the exit hole.

### Step 6: Screw Off

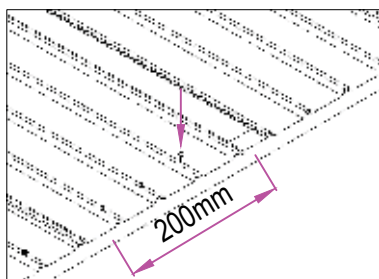
Complete the final screw off, fixing through the InsulRoof®/SolarSpan® panel ribs/crests into the top wall plates or support beams.

Handy Tips: Other options of electrical services are running above dropped ceilings or bulkheads or under slab.

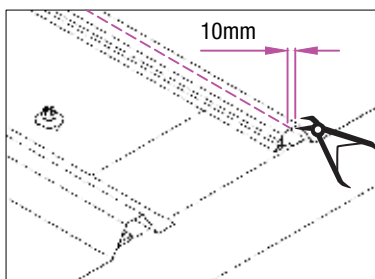


## SolarSpan® Naturelite® Skylight Installation Instructions

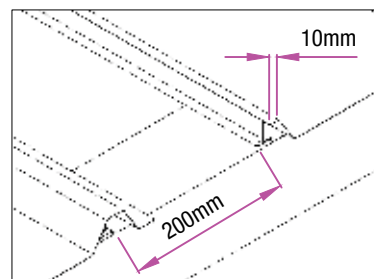
**Caution:** Metal roofing edges can be sharp; cut resistant gloves, appropriate clothes and shoes, safety glasses and other appropriate PPE should be worn at all time during the installation.



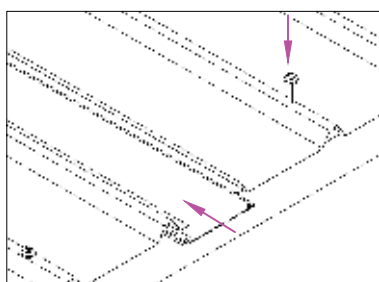
**Step 1:** Install and fix into position the SolarSpan® insulated roof panels in direction of the roof overlap, except for the panel before the Naturelite® skylight.



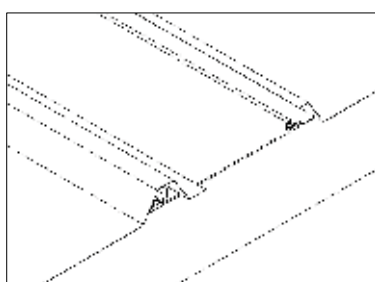
**Step 2:** Prepare the next SolarSpan® insulated roof panel by cutting all but 10mm off the roof overlap edge using metal nibblers.



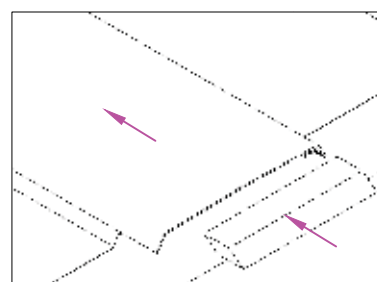
**Step 3:** Put the next adjoining roof panel in place with a gap of 200mm from the last SolarSpan® roof panel.



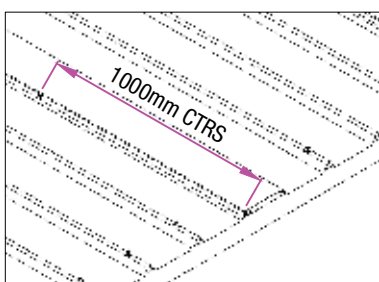
**Step 4:** Insert and slide the Naturelite® ceiling diffuser panel into position between the two SolarSpan® panels selected, adjusting the last roof panel as needed then tack down into position.



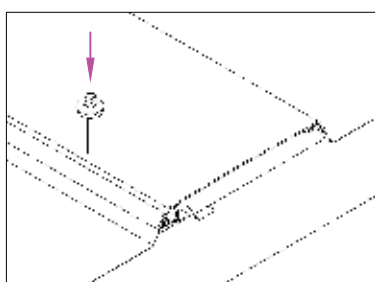
**Step 5:** Check the Naturelite® and SolarSpan® ceiling underside is flush and level. The ceiling sheet now forms a spacer for fitting the Naturelite® skylight roof panel.



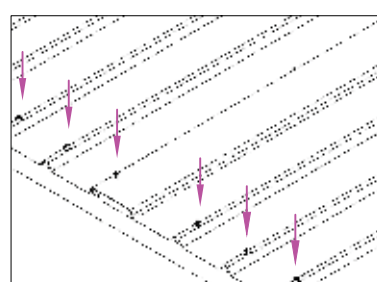
**Step 6:** Insert the leading edge of the Naturelite® skylight roof panel clip over the roof overlap and then slide into position. Note, any rough edges may obstruct sliding of panels. Ensure the non-clip side sits flush on top of the adjoining SolarSpan® roof rib. Then fit Naturelite® skylight insert stopend to fill the gap at the gutter end to prevent water and insects entering the cavity.



**Step 7:** Predrill oversized holes on the non-clip side of the Naturelite® skylight roof panels every 1.0m through the top of the underlap rib or side. Install 10g or 12g fasteners at 1.0m intervals across the underlap side of the roof.



**Step 8:** Predrill oversized holes (8-9mm) on the non-clip side of the Naturelite® skylight roof panels to suit 14g roof fasteners, in preparation for fastening the roof panel to the supporting beam.



**Step 9:** No fasteners are required on the clip side.

**Step 10:** Brush metal swarf and debris clean off the roof at the end of project.

**Step 11:** Insert optional profile cut skylight stop end above fascia flashing below the SolarSpan® Naturelite® skylight roof profile for added protection of any open voids (ask your SolarSpan® representative for more information, limited colour options available).

## Clean up and Maintenance

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Ensure all metal filings (swarf) are swept off and disposed of into bins as you install each sheet. These filings can leave unsightly stains on the surface of the sheet and also on floor tiles/pavers, etc, in the near vicinity.

Intermittent cleaning of all surfaces not washed by regular rainfall will prolong the life of the products and keep them looking their best. A mild detergent solution is recommended ensuring the surfaces are always wiped off with clean water afterwards. Hosing of the ceiling is to be avoided as it will cause water to sit inside panel joins and flashings leading to possible corrosion.

## Installation Checklist

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Description	Completed (tick)	Name/Signed
Pitch equal to or greater than 2 or 5 degrees		
All roofing turn up / turn down done		
Trimming of underlay		
Downpipe selection suitable		
Clean down of roof and gutter (removing any swarf)		
Any incorrectly drilled holes are sealed		
Electrical completed by Licensed Professional		



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