

Design & Detailing Manual Custom Roof Panel

Version 2015.02



A fully customised and complete roofing solution that is quick to install with superior span and cantilever capabilities.



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ARCPANEL Custom roof panel Design and Detailing Manual - publishing and version details

VERSION'S ISSUED AND AMENDMENTS		
Version	Date issued	Comments
2006.01	01.06.06	First published
2015.01	08.04.15	Updated colour selection
2015.02	01.11.17	Updated logo within document

This manual is subject to regular updates, please ensure that you are working with the latest version.

Contact **ARCPANEL** to receive the latest version on 1300 200 004 or email info@arcp-panel.com.au

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ARCPANEL Custom Roof Panel - Overview

Fully Integrated Roof System

ARCPANEL Custom roof panel combines aesthetic, innovative design, with high strength, durability and excellent thermal insulation. **ARCPANEL** panels can also be curved to produce an outstanding architectural feature and provide increased interior space. The **ARCPANEL** Custom roof panel can achieve significant cantilevers, in some applications up to half the actual back span and this unique system eliminates the need for complex, expensive roof structures. The lightweight **ARCPANEL** panels are easily handled on site, achieving faster, lower cost installation.

Unique Design & Construction

ARCPANEL pre-fabrication starts with standard Corrugated **COLORBOND**[®] sheeting, bonded to both sides of profiled EPS. The panel yields high strength resulting in large spans and cantilevers along with a high insulation value. Standard ratings from R1.7 to R6.5 can easily be achieved. The strength of this construction means that the **ARCPANEL** Custom roof panel is suitable for use in cyclonic conditions. After the panels are fixed in place, there is virtually no maintenance required other than the occasional wash down of soffits.

On site time spent fitting trusses, eave linings, plasterboard, battens, insulation lining, roof sheeting and painting, is eliminated when using **ARCPANEL** Custom roof panel.

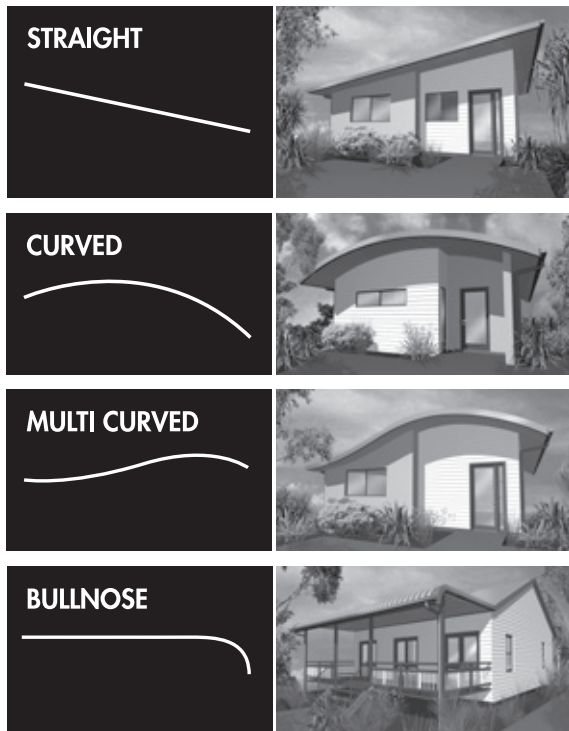
Key Features and Benefits

- ✓ Achieve up to 12.5m unsupported spans - reduce expensive support structures e.g. roof trusses & support beams
- ✓ Custom Orb profile is used on both sides, reducing the need for ceilings and internal painting
- ✓ Pre-finished - extensive range of **COLORBOND**[®] colours available
- ✓ Straight, curved or multi-curved configurations, suitable for most architectural designs
- ✓ Dependant on the design, cantilevers of up to half the actual backspan can be achieved
- ✓ Suitable for use in cyclonic wind conditions
- ✓ **ARCPANEL** Custom roof panel is available in **COLORBOND**[®] Ultra, Stainless Steel, Zinalume[®] & Xtreme
- ✓ Rapid installation makes the **ARCPANEL** Custom roof panel a clear winner over traditional roof construction
- ✓ Fire rated to Group 1 - roof and wall lining material
- ✓ Superior standard thermal ratings up to R6.5 are achieved using the **ARCPANEL** Custom roof panel



ARCPANEL Custom Roof Panel - Applications

Roof Types



Straight panels can be manufactured up to 24 metres in length, suitable for housing, awnings, patios, commercial and industrial projects.

Straight, Bull nose, Curved & Multi-curved panels can be manufactured using XRW, Ultra, Stainless Steel, ZINCALUME® and Xtreme. A full range of COLORBOND® colours are available with limited colour ranges in Stainless Steel and Xtreme.

Curved panels can be manufactured to a minimum radius of 3m.

Curved panels can be manufactured in lengths up to 24 metres, panels can be joined to achieve longer runs.

Multi-curved panels can be manufactured to a minimum radius of 3m.

Multi-curved panels can be manufactured in lengths up to 24 metres, panels can be joined to achieve longer runs.

Panels can be manufactured to suit a Bull nose radii of 600mm, 750mm and 900mm.

Bull nose panels can be manufactured in lengths up to 24 metres.

Also available as an elliptical panel, please contact ARCPANEL for further details.

Material Selection

Due to the extreme weather conditions and geographic locations in Australia and its coastal areas, care should be taken when selecting the material type that will be used in constructing the ARCPANEL Custom roof panel. Technical Bulletins developed by Bluescope Steel are available from ARCPANEL, or visit www.bluescopesteel.com.au.

A ARCPANEL insulated roof system with COLORBOND® steel plays a major part in the design of a thermally efficient building. COLORBOND® steel now includes Thermatech® solar reflectance technology to reflect more of the sun's heat, especially in summer. In hot weather, COLORBOND® steel with Thermatech® can help reduce peak roof temperatures by up to 11°C.

ARCPANEL Custom Roof Panel - Xtreme Material Specifici-

An ideal alternative solution for your roof system in coastal, aquatic, industrial or harsh chemical environments.

Custom Xtreme Roofing Solution

Custom Xtreme is an insulated roof solution suitable for corrosive environments especially those that are in close proximity to coastal areas, aquatic centres, industrial or chemical environments. The weather side of the sheet has an advanced exterior coat paint system containing at least 70% PVF2 resin in the dry paint film. The Xtreme material finish can be applied to one or both sides of the panel.

Key Features and Benefits

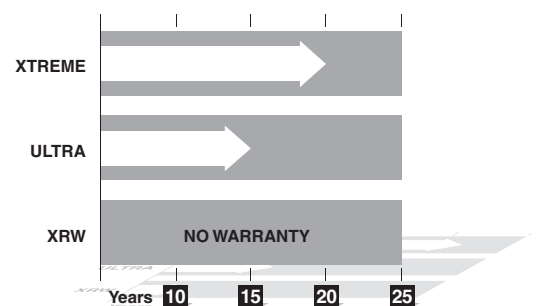
- ✓ Ideal for open and enclosed applications
- ✓ No flaking or peeling of the paint film for up to 20 years*
- ✓ Corrosion Warranties up to 25 years (depending on location)
- ✓ Outstanding colour and gloss retention suitable for roofing, cladding, and rainwater goods
- ✓ Suitable for severe marine and industrial sites with a high risk of deterioration from corrosive elements

Warranty Information

Historically, to obtain a significant warranty in severe marine, coastal, aquatic centres, industrial or harsh chemical environments stainless steel products are generally specified. However, using ARCPANEL Custom Xtreme Roof Panel™ will provide warranties up to 20 years.




TOP SHEET WARRANTY PERIOD EXAMPLE SEVERE MARINE (ISO CAT.4)




ARCPANEL Custom Roof Panel - Material and Colour Selection

BLUESCOPE STEEL - COLORBOND MATERIAL AND COLOUR SELECTION CHART **TABLE 1**

 Colour	Classification	Solar Absorbance	Availability		Suitable for use to		Curving Grade	NSW Basix Sustainability Index
			XRW	Ultra Steel	Roof Side	Ceiling Side		
COLORBOND								
Basalt™	Dark	0.69	✓		✓	✓		M
Classic Cream™	Very Light	0.31*	✓		✓	✓	✓	L
Cottage Green	Dark	0.75	✓			✓	✓	D
Cove™	Light	0.54	✓		✓	✓		L
Deep Ocean®	Dark	0.749	✓			✓	✓	D
Dune®	Light	0.466	✓	✓	✓	✓	✓	L
Evening Haze®	Light	0.427	✓		✓	✓	✓	L
Gully™	Dark	0.63	✓		✓	✓		M
Ironstone®	Dark	0.74	✓			✓	✓	D
Jasper®	Dark	0.682	✓		✓	✓	✓	M
Mangrove™	Dark	0.64	✓		✓	✓		M
Manor Red®	Dark	0.688	✓		✓	✓	✓	M
Monument®	Dark	0.73	✓	✓		✓	✓	D
Night Sky®	Dark	0.96	✓			✓		D
Pale Eucalypt®	Dark	0.597	✓		✓	✓	✓	M
Paperbark®	Light	0.421	✓		✓	✓	✓	L
Shale Grey®	Light	0.433	✓		✓	✓	✓	L
Surfmist®	Very Light	0.318*	✓	✓	✓	✓	✓	L
Terrain™	Dark	0.69	✓		✓	✓		M
Wallaby™	Dark	0.69	✓	✓	✓	✓		M
Whitehaven®	Very Light	0.23	✓		✓	✓		L
Windspray®	Dark	0.584	✓	✓	✓	✓	✓	M
Woodland Grey®	Dark	0.706	✓	✓		✓		D
Zincalume	Very Light	<0.35*			✓		✓	L

STAINLESS STEEL								
Surfmist®	Very Light	0.318*			✓	✓		L

ARCPANEL XTREME								
 PROTECT YOUR ROOF FROM HARSH CORROSIVE ENVIRONMENTS								
Off White	Very Light	0.318*			✓	✓		L

*Greater deemed to satisfy insulation concessions apply to these colours when used for Class 5 to 8, 9a and 9b buildings.

General Disclaimer: Colours and availability are subject to change, please contact **ARCPANEL** to confirm colours and availability prior to specification.

Notes: 1) Some colours listed above may require longer manufacturing lead times. Please contact **ARCPANEL** for further information.

2) COLORBOND® and colour names are registered trade marks of Bluescope Steel Limited™.

Refer to Page 43 for colour swatches.

ARCPANEL Custom Roof Panel - General Specifications

Panel Sizes

Standard panel thicknesses are available (*other panel thicknesses are available upon request*):

75mm - 85mm - 100mm - 125mm - 140mm - 160mm - 175mm - 200mm - 250mm

Panel Lengths

Generally straight, curved and multi-curved panels can be supplied up to 24 metres in length. Longer lengths can be supplied, please contact **ARCPANEL** for details.

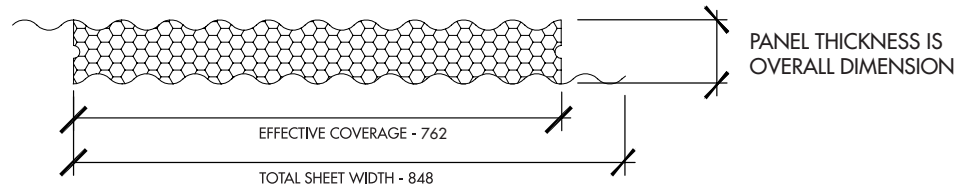
Panel Configurations

Panels can be manufactured in straight, curved and multi-curved configurations. Refer to roof type guide on page 4 for further information.

Panel Finish

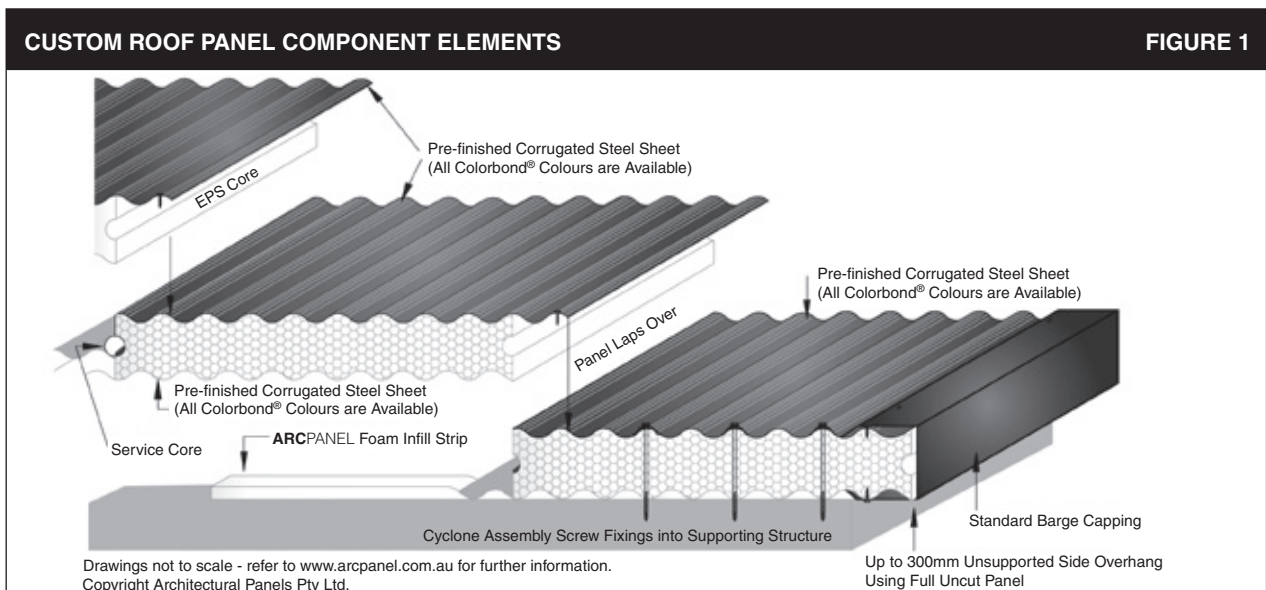
The **ARCPANEL** Custom roof panel is only available in a custom orb (corrugated) finish to both the inside and outside linings. Please refer to table 1 on page 5 for further information on colours and material types. Base metal thickness of 0.420mm and a total coated thickness of 0.470mm is used as standard, unless otherwise stated.

Panel Dimensions



ARCPANEL CUSTOM PANEL SPECIFICATIONS							TABLE 2
Cover Width	Core Material	Length	Thermal Conductivity	Top Sheet Finish	Bottom Sheet Finish	Sheet Material	Typical Panel Weight
762mm	Expanded Polystyrene	Ordered to Size	0.038 W/mK	COLORBOND® XRW COLORBOND® ZINCALUME® Xtreme Stainless Steel	COLORBOND® XRW COLORBOND® ULTRA ZINCALUME® Xtreme Stainless Steel	0.42BMT G550 Steel	75mm = 9.8kg/m ²
							85mm = 9.9kg/m ²
							100mm = 10.1kg/m ²
							125mm = 10.5kg/m ²
							140mm = 10.7kg/m ²
							160mm = 11.0kg/m ²
							175mm = 11.2kg/m ²
							250mm = 12.3kg/m ²

Custom Panel Component Elements

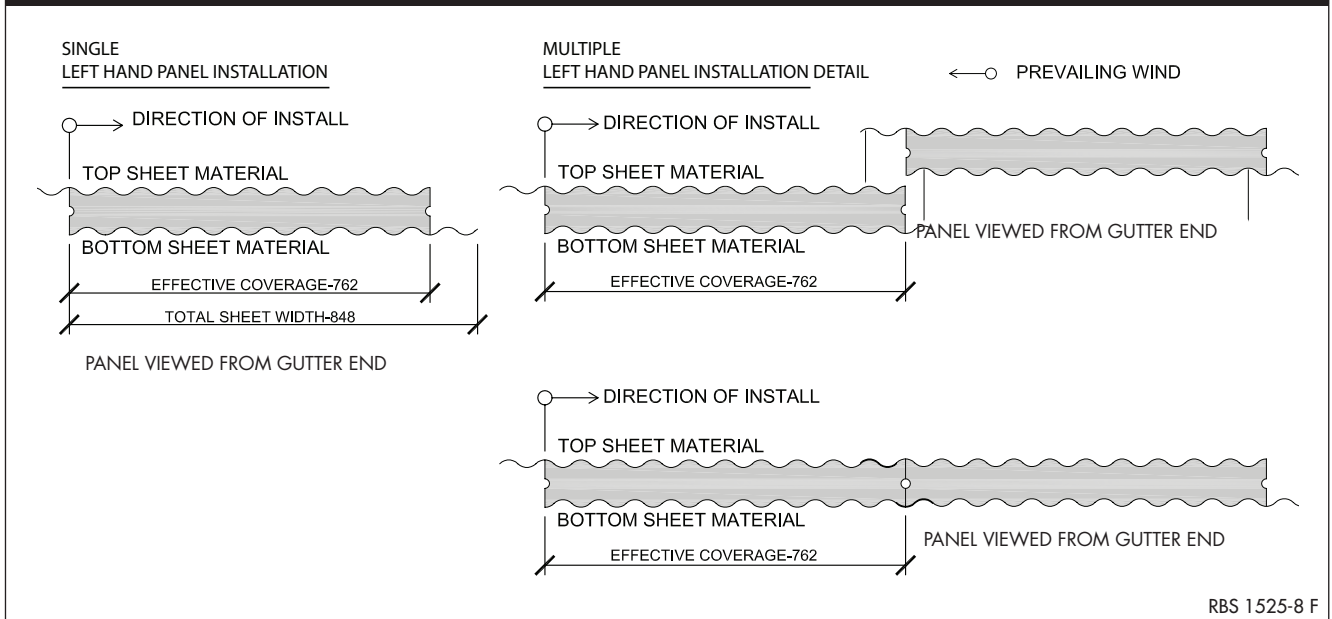


ARCPANEL Custom Roof Panel - Lapping Details

As shown in the following details (figures 2.1 and 2.2), the **ARCPANEL** Custom roof panel can be installed from left to right (left hand) or right to left (right hand), this is normally determined prior to undertaking of the workshop drawings. Should a specific installation direction be required please advise **ARCPANEL** at time of order. Direction of lap is determined by looking from the gutter end of the roof panel.

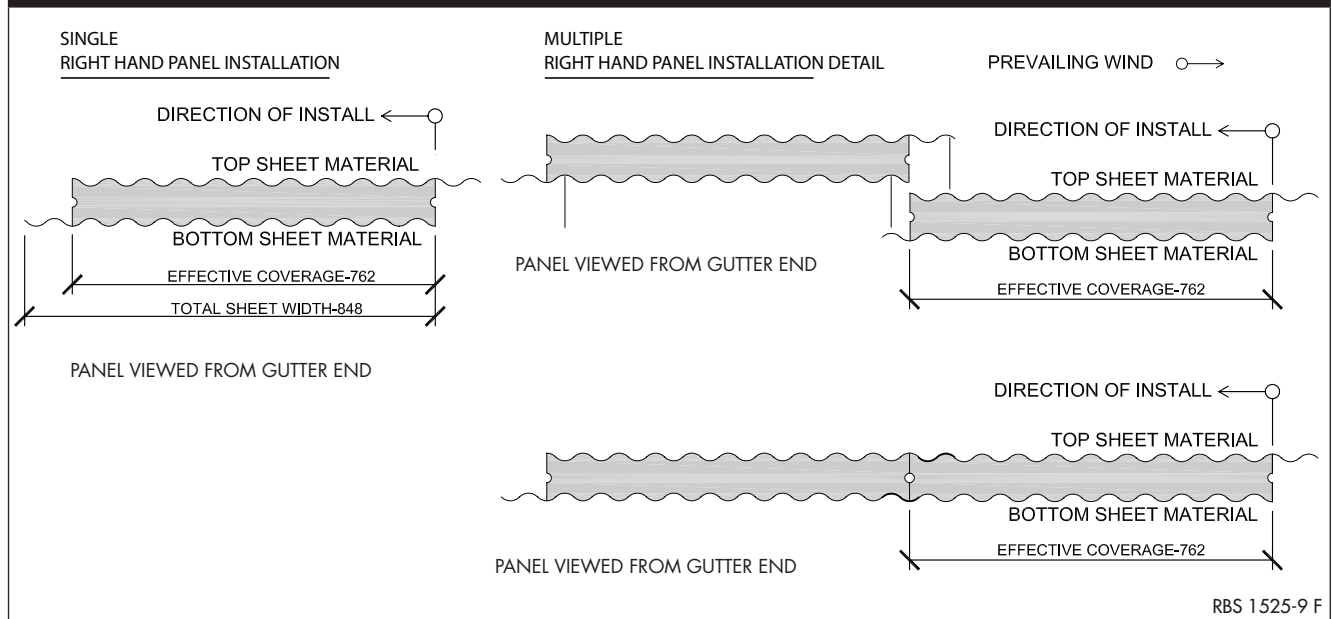
CUSTOM ROOF PANEL LAPPING DETAIL (LEFT HAND)

FIGURE 2.1



CUSTOM ROOF PANEL LAPPING DETAIL (RIGHT HAND)

FIGURE 2.2



ARCPANEL Custom Roof Panel - Accessory Information

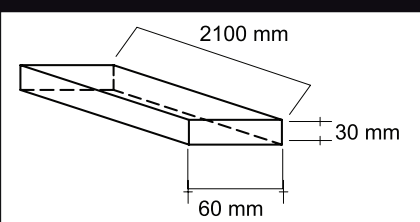
Foam Infill Strip

Details: 2100mm x 60mm x 30mm compressible grey foam.

Used: On all external and internal support points as required. It is fitted to the top of the wall frame or supporting member prior to the installation of the panel. It is used to fill up the void left between the support member and the roof corrugations.

Note: For aquatic applications a closed cell foam infill strip or 6mm Purlin tape is recommended.

FOAM INFILL STRIP FIGURE 3



Corrugated Infill

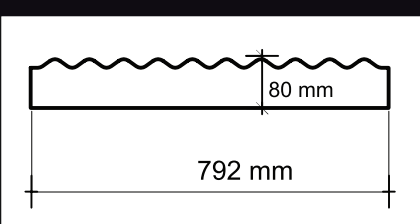
(The use of Corrugated Infill is recommended to fully seal wall/soffit junctions. Refer to page 32 for further details).

Details: 792mm x 80mm x 0.42mm COLORBOND® Surfmist®.

Used: On internal or external walls or both.

It is attached to the wall prior to installing the lining. It is used as a permanent barrier between the inside and outside. It is used on walls that run at 90 degrees to the run of the roof panels.

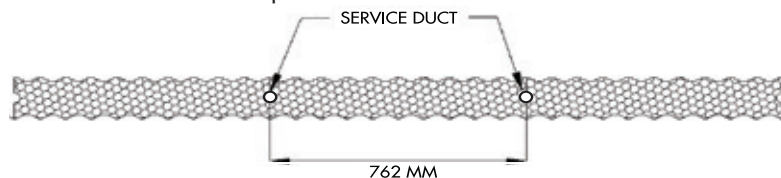
CORRUGATED INFILL FIGURE 4



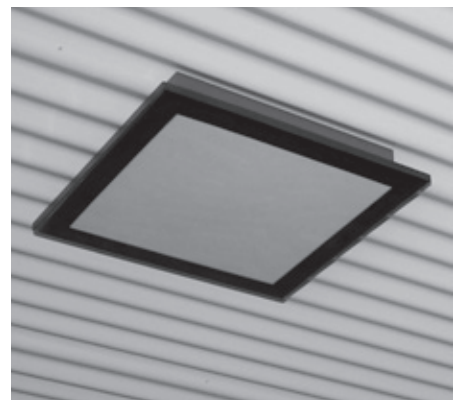
Services

The ARCPANEL Custom roof panels incorporate a service duct at panel joints ie. @ 762 mm approx c/c. The duct is 30 mm in diameter and runs the full length of the panel.

Electrical fixtures are best placed on panel joints where possible. It is advisable that the electrical contractor is present during the installation of the ARCPANEL Custom roof panels.



- The electrical contractor can run wiring from supporting walls through service ducts to the required outlets.
- The underside sheet of the ARCPANEL Custom roof panels can be drilled or a circular opening cut for inlet or outlet of wiring.
- Electrical fixtures that are not on the panel joints can be wired by drilling an opening or by pushing a heated rod sideways or use a long auger bit and drill into the polystyrene core to the required outlet.



ARCPANEL Custom Roof Panel - Accessory Information

Timber Mounting Blocks

A profiled circular timber block is available to mount low voltage lights, pendant lights, ceiling fans etc. The timber block is supplied natural (unpainted), it will need to be painted or oiled on site to suit the ceiling colour.

The mounting of the timber block is to be undertaken in the following method: for light weight lighting and fans, two toggle bolts are used to secure the mounting block to the underside of the ceiling.

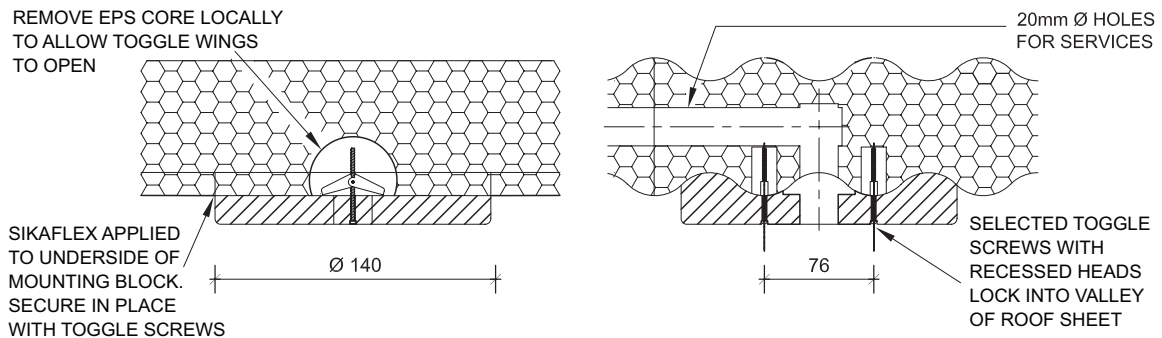
For heavier items such as large ceiling fans and large pendant lighting the block is to be bolted through the panel, using a standard bolt fitted with a cyclone plate, washer and seal.

The dimensions of the block are approximately 140mm in diameter (170mm also available) and will sit proud of the ceiling lining by approximately 16mm. The maximum recommended load is 30kg.

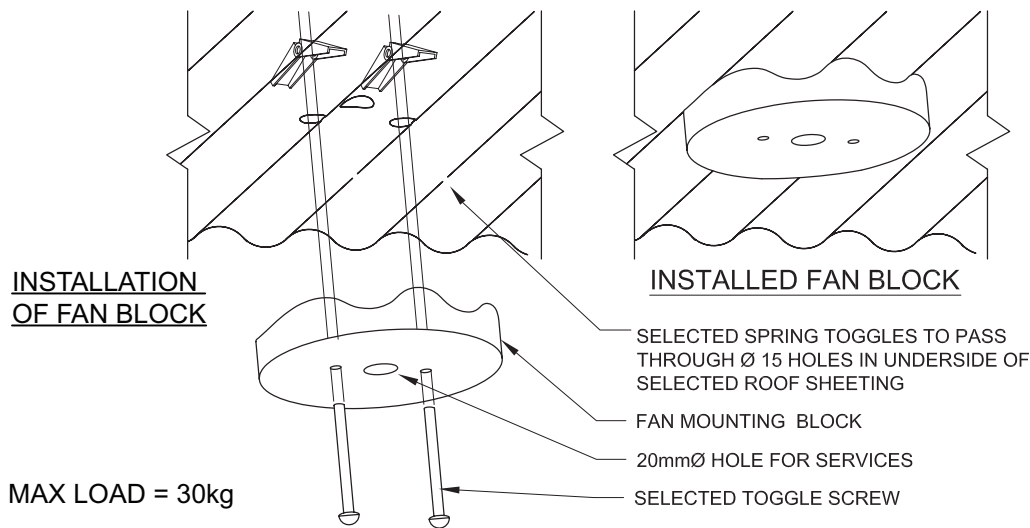


TIMBER MOUNTING BLOCK INSTALLATION

FIGURE 5



FAN MOUNTING BLOCK INSTALLATION - SECTIONS



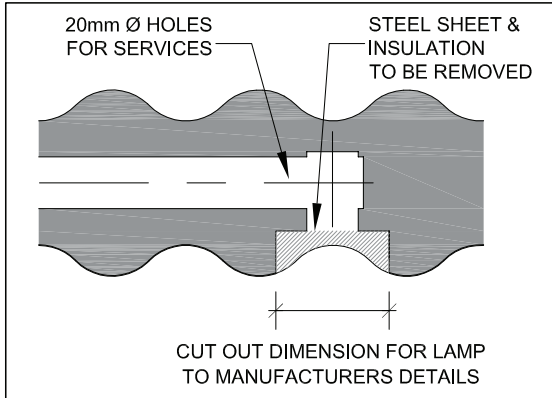
RBS 1525-53A

ARCPANEL Custom Roof Panel - Accessory Information

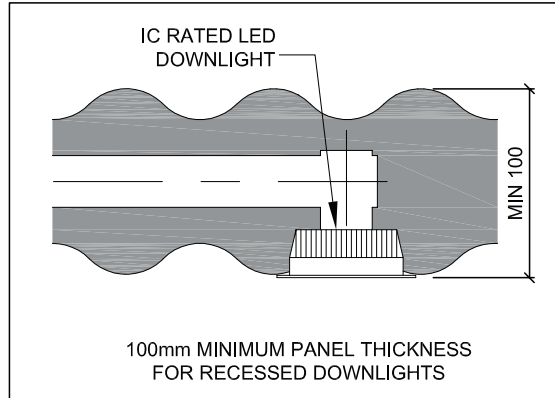
LED down lights can be installed directly into **ARCPANEL** panels with a thickness of 100mm or more. For panels less than 100mm, down lights can be surface mounted using the timber mounting block.

LED DOWNLIGHTS INSTALLATION

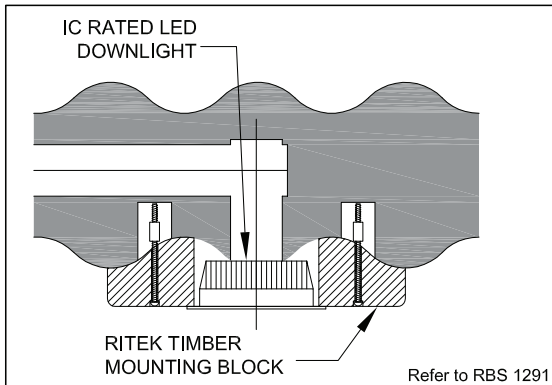
FIGURE 5.1



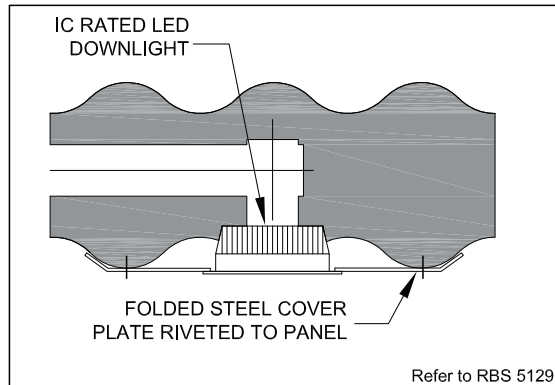
PREPARATION OF PANEL FOR INSTALLATION OF IC RATED LED DOWNLIGHTS



IC RATED LED DOWNLIGHT INSTALLED DIRECTLY INTO PANEL



IC RATED LED DOWNLIGHT INSTALLED IN TIMBER MOUNTING BLOCK ATTACHED TO PANEL



IC RATED LED DOWNLIGHT INSTALLED IN STEEL COVER PLATE ATTACHED TO PANEL

ALL ELECTRICAL WORK TO BE CARRIED OUT BY A LICENSED ELECTRICIAN TO RELEVANT AUSTRALIAN STANDARDS

LED DOWNLIGHTS TO BE IC CLASS - ABUTTED & COVERED.

CUT OUT DIMENSIONS TO LIGHT MANUFACTURERS SPECIFICATIONS

RECOMMENDED DOWNLIGHTS:

SUNNY AUSTRALIA LIGHTING
PREMIER MODELS S9071, S9072, S9073
FIXED HEAD RECESSED LED DOWNLIGHT KITS

REFER TO DESIGN & DETAILING MANUAL FOR INSTALLATION OF ELECTRICAL SERVICES AND TIMBER MOUNTING BLOCKS

SPECIFIED LIGHTS RECOMMENDED AND SUPPLIED BY

NOOSA LIGHTING
www.noosalighting.com.au

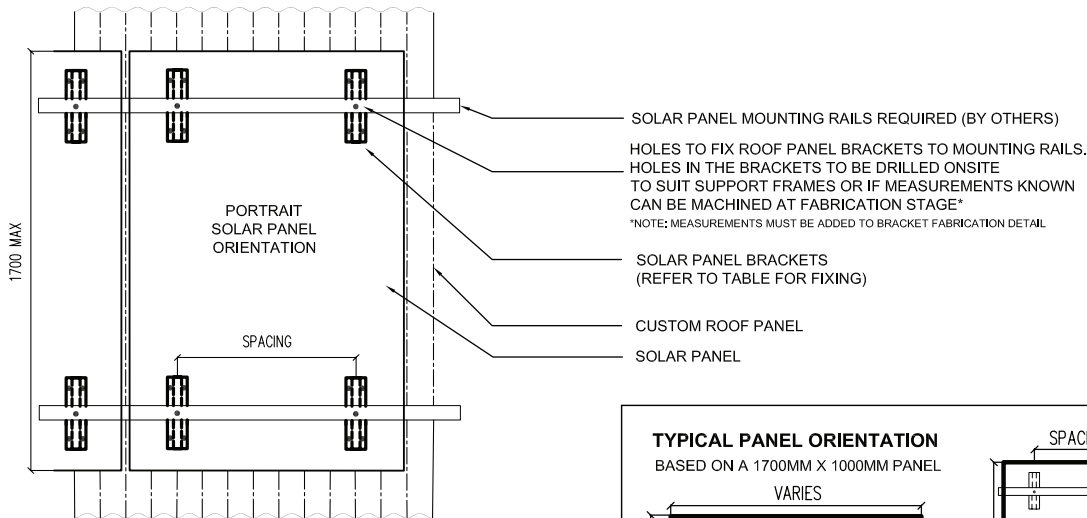
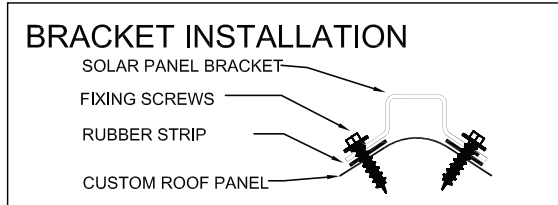
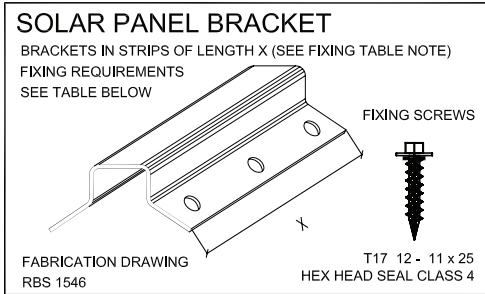
S9071 Model shown



FOR FURTHER INFORMATION VISIT
www.sunnylighting.com.au/downlights/led-downlights/premier

SOLAR PANEL BRACKET - CORRUGATED

FIGURE 5.2



FIXING REQUIREMENTS

USING TYPE 17 12-11-25 CLASS 4 WITH SEAL

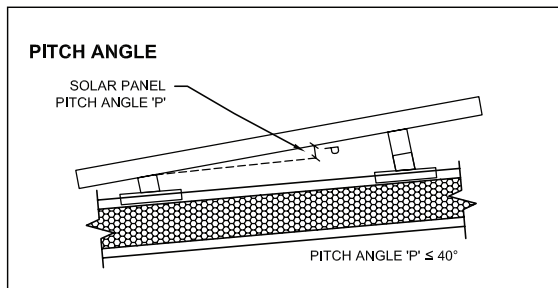
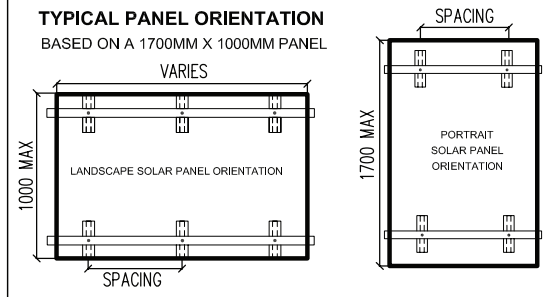
PORTRAIT SOLAR PANEL ORIENTATION							
SOLAR PANEL PITCH < 5°				SOLAR PANEL PITCH ≥ 5°			
WIND CLASS	LIMIT STATE DESIGN PRESSURE (kPa)	SPACING OF BRACKETS (mm)	SCREWS PER BRACKET	WIND CLASS	LIMIT STATE DESIGN PRESSURE (kPa)	SPACING OF BRACKETS (mm)	SCREWS PER BRACKET
N2-W33	1.52	600	4	N2-W33	2.16	600	6
N3-W41	2.34	450	6	N3-W41	3.32	450	6
N4-W50	3.50	300	6	N4-W50	4.97	300	6
N5-W60	5.03	300	6	N5-W60	7.14	300	10
C1-W41	3.11	300	4	C1-W41	3.79	300	6
C2-W50	4.62	300	6	C2-W50	5.64	300	8
C3-W60	6.65	225	6	C3-W60	8.11	300	10
C4-W70	9.05	225	10	C4-W70	11.04	225	10

LANDSCAPE SOLAR PANEL ORIENTATION							
SOLAR PANEL PITCH P < 5°				SOLAR PANEL PITCH P ≥ 5°			
WIND CLASS	LIMIT STATE DESIGN PRESSURE (kPa)	SPACING OF BRACKETS (mm)	SCREWS PER BRACKET	WIND CLASS	LIMIT STATE DESIGN PRESSURE (kPa)	SPACING OF BRACKETS (mm)	SCREWS PER BRACKET
N2-W33	1.52	600	4	N2-W33	2.16	600	4
N3-W41	2.34	600	4	N3-W41	3.32	450	4
N4-W50	3.50	450	4	N4-W50	4.97	300	4
N5-W60	5.03	450	6	N5-W60	7.14	300	6
C1-W41	3.11	450	4	C1-W41	3.79	450	4
C2-W50	4.62	300	4	C2-W50	5.64	450	6
C3-W60	6.65	450	8	C3-W60	8.11	450	10
C4-W70	9.05	300	8	C4-W70	11.04	300	8

NOTE: 4/6/8 SCREW BRACKET = 200MM LONG. 10 SCREW BRACKET = 250MM LONG

FIXING TABLE APPLIES TO SOLAR PANELS UP TO 1700MM X 1000MM INSTALLED WITH RAILS DISTRIBUTING THE LOAD ACROSS NUMEROUS BRACKETS. FOR PANELS OUTSIDE THIS SPEC AND INSTALLATION METHOD, PROFESSIONAL CONSULTANTS ARE REQUIRED AND JOB SPECIFIC FIXING REQUIREMENTS SHOULD BE CALCULATED USING THE PULL OUT VALUE OF 260N/SCREW.

NOTE: THE DESIGN OF THE ROOF BRACKET SYSTEM FOR A SOLAR PANEL MOUNTING APPLICATION REQUIRES THE SERVICES OF PROFESSIONAL CONSULTANTS. THIS INFORMATION HAS BEEN PREPARED AS A SOURCE OF INFORMATION TO PROVIDE GENERAL GUIDANCE TO PROFESSIONAL CONSULTANTS AND NO WAY REPLACES THE SERVICES OF PROFESSIONAL CONSULTANTS. NO LIABILITY CAN THEREFORE BE ACCEPTED BY ARCHITECTURAL PANELS PTY LTD FOR ITS USE. WHEN PLACING OBJECTS ON ROOF, MAXIMUM DISTRIBUTED LIVE LOAD IS 0.25KPA AND REFER TO MAX ALLOWABLE DEAD LOADS ON PAGE 24. CERTIFIED BY TOD CONSULTING ENGINEERS 21/06/13



NOTES

IF BRACKETS TO BE USED IN A COASTAL AREA WE RECOMMEND POWDER COATING THE BRACKETS FOR CORROSION RESISTANCE.

TYPE 17 12-11-25 CLASS 4 WITH SEAL
TYPICAL PULLOUT PER SCREW 260N

ARCPANEL Custom Roof Panel - Span Tables & Thermal Ratings

SPAN TABLE - NON CYCLONIC

TABLE 3A

Midspan deflection up to span/120 at serviceability limit state; Self weight deflection up to span/600. Maximum unsupported Spans (mm)

Wind Class (Permissible)	Strength Limit State Design Wind Pressure (P) (kPa)	Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value	
		R1.7		R2.0		R2.4		R3.1		R3.5		R4.1		R4.5		R5.2		R6.5	
		75mm Panel		85mm Panel		100mm Panel		125mm Panel		140mm Panel		160mm Panel		175mm Panel		200mm Panel		250mm Panel	
		Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever
N2-W33	1.52	4900	1960	5400	2160	6200	2480	7500	3000	8100	3240	8500	3400	9500	3800	10500	4200	12000	4500
	1.68	4720	1885	5205	2080	5980	2390	7220	2885	7820	3125	8200	3280	9200	3680	10160	4060	11600	4340
	1.85	4540	1815	5010	2000	5760	2300	6940	2775	7540	3015	7900	3160	8900	3560	9820	3925	11200	4180
	2.01	4360	1740	4815	1925	5540	2215	6660	2660	7260	2900	7600	3040	8600	3440	9480	3790	10800	4020
	2.18	4180	1670	4620	1845	5320	2125	6380	2550	6980	2790	7300	2920	8300	3320	9140	3655	10400	3860
N3-W41	2.34	4000	1600	4425	1770	5100	2040	6100	2440	6700	2680	7000	2800	8000	3200	8800	3520	10000	3700
	2.57	3840	1500	4265	1665	4910	1920	5880	2300	6460	2525	6760	2645	7720	3020	8500	3325	9680	3520
	2.80	3680	1405	4105	1565	4720	1800	5660	2160	6220	2375	6520	2490	7440	2840	8200	3130	9360	3340
	3.03	3520	1310	3945	1465	4530	1685	5440	2025	5980	2225	6280	2335	7160	2665	7900	2940	9040	3165
	3.26	3360	1215	3785	1365	4340	1565	5220	1885	5740	2075	6040	2180	6880	2485	7600	2745	8720	2985
N4-W50	3.50	3200	1120	3625	1265	4150	1450	5000	1750	5500	1925	5800	2030	6600	2310	7300	2555	8400	2810
	3.80	3040	1040	3450	1175	3980	1355	4820	1645	5300	1810	5600	1910	6360	2170	7040	2400	7980	2625
	4.11	2880	960	3275	1085	3810	1265	4640	1540	5100	1695	5400	1790	6120	2030	6780	2250	7560	2440
	4.41	2720	880	3100	1000	3640	1170	4460	1435	4900	1580	5200	1675	5880	1895	6520	2100	7140	2255
	4.72	2560	800	2925	910	3470	1080	4280	1330	4700	1465	5000	1555	5640	1755	6260	1950	6720	2070
N5-W60	5.03	2400	720	2750	825	3300	990	4100	1230	4500	1350	4800	1440	5400	1620	6000	1800	6300	1890

SPAN TABLE - NON CYCLONIC - DOUBLE SPAN (OPTION) [Y SPAN MUST = (0.3X TO 0.7X)]

TABLE 3B

Midspan deflection up to span/120 at serviceability limit state; Self weight deflection up to span/600. Maximum unsupported Spans (mm)



Wind Class (Permissible)	Strength Limit State Design Wind Pressure (P) (kPa)	Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value	
		R1.7		R2.0		R2.4		R3.1		R3.5		R4.1		R4.5		R5.2		R6.5	
		75mm Panel		85mm Panel		100mm Panel		125mm Panel		140mm Panel		160mm Panel		175mm Panel		200mm Panel		250mm Panel	
		Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever
N2-W33	1.52	5390	1885	5940	2075	6820	2385	8250	2885	8910	3115	9350	3270	9975	3490	11025	3855	12500	4375
	1.68	5190	1815	5725	2000	6575	2300	7940	2775	8600	3005	9020	3155	9660	3380	10665	3730	12080	4225
	1.85	4990	1745	5510	1925	6335	2215	7630	2665	8290	2895	8690	3040	9345	3270	10310	3605	11660	4080
	2.01	4795	1675	5295	1850	6090	2130	7325	2560	7985	2790	8360	2925	9030	3160	9950	3480	11240	3930
	2.18	4595	1605	5080	1775	5850	2045	7015	2450	7675	2680	8030	2810	8715	3050	9595	3355	10820	3785
N3-W41	2.34	4400	1540	4865	1700	5610	1960	6710	2345	7370	2575	7700	2695	8400	2940	9240	3230	10400	3640
	2.57	4220	1440	4685	1595	5400	1840	6465	2205	7105	2420	7435	2535	8105	2765	8925	3040	10060	3390
	2.80	4045	1345	4510	1495	5190	1720	6225	2065	6840	2270	7170	2380	7810	2590	8610	2855	9720	3140
	3.03	3870	1245	4335	1395	4980	1600	5980	1925	6575	2115	6905	2220	7515	2420	8295	2665	9380	2895
	3.26	3695	1150	4160	1295	4770	1480	5740	1785	6310	1965	6640	2065	7220	2245	7980	2480	9040	2645
N4-W50	3.50	3520	1055	3985	1195	4565	1365	5500	1650	6050	1815	6380	1910	6930	2075	7665	2295	8700	2400
	3.80	3340	975	3790	1105	4375	1270	5300	1545	5830	1695	6160	1790	6675	1940	7390	2150	8220	2300
	4.11	3165	895	3600	1015	4190	1180	5100	1440	5610	1580	5940	1670	6425	1810	7115	2005	7740	2200
	4.41	2990	815	3405	930	4000	1085	4905	1335	5390	1465	5720	1555	6170	1675	6845	1860	7260	2100
	4.72	2815	735	3215	840	3815	995	4705	1230	5170	1350	5500	1435	5920	1545	6570	1715	6780	2000
N5-W60	5.03	2640	660	3025	755	3630	905	4510	1125	4950	1235	5280	1320	5670	1415	6300	1575	6300	1900

Span Selection Notes (Non Cyclonic Areas)

- Tables 3A, 3B and 3C apply to typical enclosed buildings built on the ground, less than 20m high with sealed doors and windows capable of resisting the applied wind pressures
- Roof pressure coefficients: Cpe = 1.5 X -0.9 = -1.35, Cpi = +0.2 [Cpi = +0.7 at cantilever]
- The building designer must take into account any application where the Cpi would exceed > 0.2 in open or partly open structures
- Maximum cantilever for N1-W28, N2-W33 & N3-W41 is up to 50% actual backspan no greater than max length shown
- Maximum cantilever for N4-W50 & N5-W60 is up to 40% actual backspan no greater than max length shown (Maximum cantilever lengths cannot be exceeded. Choose a thicker panel to achieve the required cantilever) (Minimum width of cantilevered roof is 1.5 x cantilever)
- Wind Load Serviceability Criteria based on AS 4055, Vs=0.64 x Vu
- Oversized gutters may affect the cantilever capability, please contact ARCPANEL for advice
- Limited racking, diaphragm action and lateral restraint capacity, refer to page 16
- 300mm maximum side cantilever using full uncut panel
- Thermal R-Values are Total R-Values (Winter - Tested conductivity 0.038W/m.K at 23°C)
- Spans shown are for XRW, ULTRA materials. For Xtreme material, spans reduce by 5% for each use of the Xtreme material (top / bottom sheet) for ULS Design Wind Pressures less than 2.34kPa. For cantilevers see page 14.
- In locations where the roof panels are not fixed to the parallel raked external walls (due to glazing and the like), the engineer shall select the panels using the max wind pressure calculated with upwind local pressure coefficients in accordance with AS1170.2

Span Selection Notes (Cyclonic Areas)

- Table 3D applies to typical enclosed buildings built on the ground, less than 20m high with sealed doors and windows capable of resisting the applied wind pressures
- Roof pressure coefficients: Cpe = 1.5 X -0.9 = -1.35, Cpi = +0.7
- Maximum cantilever for all cyclonic areas is up to 30% actual backspan (Maximum cantilever lengths cannot be exceeded. Choose a thicker panel to achieve the required cantilever) (Minimum width of cantilevered roof is 1.5 x cantilever)
- Wind Load Serviceability Criteria based on AS 4055, Vs=0.64 x Vu
- Oversized gutters may affect the cantilever capability, please contact ARCPANEL for advice
- Limited racking, diaphragm action and lateral restraint capacity, refer to page 16
- 300mm maximum side cantilever using full uncut panel
- Thermal R-Values are Total R-Values (Winter - Tested conductivity 0.038W/m.K at 23°C)
- In locations where the roof panels are not fixed to the parallel raked external walls (due to glazing and the like), the engineer shall select the panels using the max wind pressure calculated with upwind local pressure coefficients in accordance with AS1170.2

REFER TO PAGE 24 FOR MAXIMUM DEAD LOADS.

ARCPANEL Custom Roof Panel - Span Tables & Thermal Ratings

SPAN TABLE - CYCLONIC - SINGLE SPAN **TABLE 3C**
 Midspan deflection up to span/120 at serviceability limit state; Self weight deflection up to span/700. Maximum unsupported Spans (mm)

Wind Class (Permissible)	Strength Limit State Design Wind Pressure (P) (kPa)	Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value		Total R Value	
		R1.7		R2.0		R2.4		R3.1		R3.5		R4.1		R4.5		R5.2		R6.5	
		75mm Panel		85mm Panel		100mm Panel		125mm Panel		140mm Panel		160mm Panel		175mm Panel		200mm Panel		250mm Panel	
		Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever	Max Span	Max Cantilever
C1-W41	3.11	3100	930	3600	1080	4000	1200	4600	1380	5200	1560	5300	1590	5900	1770	6400	1920	8500	2500
	3.41	2930	875	3400	1020	3830	1145	4440	1330	5000	1500	5100	1530	5680	1700	6180	1850	8180	2400
	3.71	2760	825	3200	960	3660	1095	4280	1280	4800	1440	4900	1470	5460	1635	5960	1785	7860	2300
	4.01	2590	775	3000	900	3490	1045	4120	1235	4600	1380	4700	1410	5240	1570	5740	1720	7540	2200
	4.32	2420	725	2800	840	3320	995	3960	1185	4400	1320	4500	1350	5020	1505	5520	1655	7220	2100
C2-W50	4.62	2250	675	2600	780	3150	945	3800	1140	4200	1260	4300	1290	4800	1440	5300	1590	6900	2000
	5.03	2140	625	2470	720	2980	870	3640	1060	4010	1170	4120	1200	4590	1335	5080	1480	6480	1840
	5.43	2030	575	2340	660	2810	795	3480	980	3820	1080	3940	1110	4380	1235	4860	1370	6060	1680
	5.84	1920	525	2210	600	2640	720	3320	905	3630	990	3760	1025	4170	1135	4640	1265	5640	1520
	6.24	1810	475	2080	545	2470	645	3160	825	3440	900	3580	935	3960	1035	4420	1155	5220	1360
C3-W60	6.65	1700	425	1950	485	2300	575	3000	750	3250	810	3400	850	3750	935	4200	1050	4800	1200
	7.13	1640	410	1870	465	2200	550	2840	710	3080	770	3220	805	3600	900	4040	1010	4540	1130
	7.61	1580	395	1790	445	2100	525	2680	670	2910	725	3040	760	3450	860	3880	970	4280	1060
	8.09	1520	380	1710	425	2000	500	2520	630	2740	685	2860	715	3300	825	3720	930	4020	990
	8.57	1460	365	1630	405	1900	475	2360	590	2570	640	2680	670	3150	785	3560	890	3760	920
C4-W70	9.05	1400	350	1550	385	1800	450	2200	550	2400	600	2500	625	3000	750	3400	850	3500	850

General Span Selection Notes

Live Loads: Maximum distributed live load 0.25kPa.

Roofs in Alpine Areas: Designer must refer to ARCPANEL for engineering advice regarding snow loadings.

Deflection Limits: The ARCPANEL span tables have been provided with specific deflection limits indicated for serviceability wind speeds. The building designer must take all necessary care to select an appropriate panel thickness for their specific situation, taking into account the amount of potential roof panel movement relative to any attached non-structural elements, such as internal wall partitions and window frames etc. The building designer must also make allowance for deflections which can exceed those in the tables when the wind speeds are occasionally above the designated serviceability wind speed during extreme weather conditions.

Cantilever Deflections: Note that cantilever deflections will depend on the backspan, rigidity of supports, building geometry and building permeability. Cantilever deflection can be up to (cantilever length) / 50 at serviceability wind speeds. The building designer must take all necessary care to select an appropriate panel thickness for their specific situation taking into account the amount of potential roof panel movement at the ends of and along the sides of cantilevered sections of the roof, relative to any adjacent attached flashings, downpipes, screen partitions and walls. The builder designer must also make allowance for cantilever deflections which can exceed (cantilever length) / 50 when wind speeds occasionally exceed serviceability wind speeds during extreme weather conditions. Cantilever deflections due to self weight can be up to (cantilever length) / 400.

NOTE: ABOVE SPAN TABLES ARE APPLICABLE TO ARCPANEL CUSTOM PANEL ONLY AND ARE ACHIEVABLE BY USING PROVEN MANUFACTURING METHODS AND PRODUCT TESTING. STRUCTURAL ADEQUACY OF THE PANEL IS CERTIFIED BY ARCPANEL CONSULTING ENGINEERS.
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MAXIMUM ALLOWABLE DISTRIBUTED DEAD LOAD **TABLE 3D**
 KG/M² FOR INTERNAL SPANS (DEFLECTION < SPAN/300)

Span	PANEL THICKNESS - CUSTOM PANEL								
	75	85	100	125	140	160	175	200	250
<3M	15	15	20	25	25	25	30	35	50
3M - 6M	-	10	15	20	20	20	25	25	40
6M - 8M	-	-	-	10	15	15	20	20	25
8M - 10M	-	-	-	-	-	-	10	15	15

NOTES:

- 1) For dead load requirements that exceed the above criteria, refer to ARCPANEL for specific engineering advice.
- 2) No dead load is permitted on cantilevers without specific written approval from ARCPANEL.
- 3) The above loads are unfactored.

ARCPANEL Custom Roof Panel - Attached Canopy Span Tables

ARCPANEL CUSTOM PANEL SPAN TABLE - ATTACHED CANOPY (NON CYCLONIC)

TABLE 3E

SPAN TABLES FOR CANOPIES, AWNINGS & CARPORTS ATTACHED TO BUILDINGS

Wind Class	Panel Thickness	ATTACHED					FREE STANDING		ALL
		3 Sides Open Case A	2 Sides Open Case B	1 Side Open Case C	Enclosed Case D	Attached Fly-over Roof	Free Roof Blockage <75%	Free Roof Blockage >75%	
N2-W33	75	5145	5145	5145	5145	5145	5250	5145	1800
	85	5700	5700	5550	5550	5700	5825	5700	1940
	100	6510	6510	6510	6510	6510	6655	6510	2275
	125	7875	7875	7875	7875	7875	7960	7875	2750
	140	8505	8505	8505	8505	8505	8700	8505	2975
	160	8925	8925	8925	8925	8925	9540	8925	3125
	175	9975	9975	9975	9975	9975	10150	9975	3475
	200	11025	11025	11025	11025	11025	11075	11025	3850
	250	12500	12500	12500	12500	12500	12800	12500	4375
N3-W41	75	5000	4600	4200	4200	4600	5220	4600	1475
	85	5400	4950	4575	4575	4950	5775	4950	1600
	100	6300	5800	5355	5355	5800	6600	5800	1875
	125	7600	7000	6405	6405	7000	7900	7000	2240
	140	8300	7650	7035	7035	7650	8650	7650	2460
	160	9200	8500	7350	7350	8500	9540	8500	2570
	175	9900	9100	8400	8400	9100	10150	9100	2940
	200	10950	10100	9240	9240	10100	11075	10100	3230
N4-W50	75	4100	3600	3360	3360	3600	4375	3600	1005
	85	4450	4075	3750	3750	4075	4850	4075	1125
	100	5200	4800	4355	4355	4800	5525	4800	1305
	125	6300	5800	5250	5250	5800	6625	5800	1575
	140	6900	6350	5775	5775	6350	7275	6350	1730
	160	7700	7050	6090	6090	7050	8075	7050	1825
	175	8250	7550	6930	6930	7550	8675	7550	2075
	200	9150	8400	7665	7665	8400	9600	8400	2300
	250	10900	10000	8700	8700	10000	11400	10000	2400
N5-W60	75	3100	2700	2520	2520	2700	3650	2700	630
	85	3725	3175	2775	2775	3175	4075	3175	695
	100	4400	3800	3465	3465	3800	4650	3800	865
	125	5300	4800	4305	4305	4800	5575	4800	1075
	140	5800	5300	4725	4725	5300	6125	5300	1180
	160	6400	5900	5040	5040	5900	6825	5900	1260
	175	6950	6350	5760	5760	6350	7325	6350	1415
	200	7750	7050	6300	6300	7050	8125	7050	1575
250	9200	7900	6300	6300	7900	9675	7900	1900	

APPLICATION EXAMPLES

Attached canopy span tables apply to panels used for canopies, awnings, patio and building roofs that are attached to another building.

Case A, B, C and D attached canopies must be lower than the building eaves.

The height of the fly-over roof must not be more than the ridge of the building it is attached to.



3 SIDES OPEN (CASE A)



2 SIDES OPEN (CASE B)



1 SIDE OPEN (CASE C)



FULLY ENCLOSED (CASE D)

Span Selection Notes (Non Cyclonic Areas)

- Spans selected in accordance with the above maximum limits are certified to be structurally adequate in accordance with AS1170.2-2011.
- Refer to Custom roof panel span notes for cyclonic and non cyclonic spans on page 11 and 12. Refer to Custom roof panel fixing information on page 24.
- Max deflections at midspan are L/70 at permissible design wind pressures. Max deflections at midspan are L/250 for 0.25kPa Live Load.
- Max Dead Load deflections are L/500 (N2-W33).
- The slope of an attached canopy, fly-over roof, or free roof with a monoslope (single skillion) roof must be less than or equal to 10 degrees. The slope of an attached canopy, fly-over roof, or free roof with a pitched (gable, double skillion) roof must be less than or equal to 22.5 degrees.

ARCPANEL Custom Roof Panel - Attached Canopy Span Tables

ARCPANEL CUSTOM PANEL SPAN TABLE - ATTACHED CANOPY (CYCLONIC)

TABLE 3F

SPAN TABLES FOR CANOPIES, AWNINGS & CARPORTS ATTACHED TO BUILDINGS

		ATTACHED					FREE STANDING		ALL
		3 Sides Open Case A	2 Sides Open Case B	1 Side Open Case C	Enclosed Case D	Attached Fly-over Roof	Free Roof Blockage <75%	Free Roof Blockage >75%	
Wind Class	Panel Thickness	Max Span	Max Span	Max Span	Max Span	Max Span	Max Span	Max Span	Max Cantilever
C1-W41	75	5000	4200	3600	3100	4200	5220	4200	930
	85	5350	4925	4300	3450	4925	5775	4925	1035
	100	6300	5800	5200	4000	5800	6600	5800	1200
	125	7600	7000	6400	4600	7000	7900	7000	1380
	140	8300	7650	7050	5200	7650	8650	7650	1560
	160	9200	8500	7850	5300	8500	9540	8500	1590
	175	9900	9100	8450	5900	9100	10150	9100	1770
	200	10950	10100	9350	6400	10100	11075	10100	1920
	250	12500	12000	11100	8500	12000	12800	12000	2500
C2-W50	75	3500	3000	2600	2250	3000	4100	3000	675
	85	4150	3550	3050	2475	3550	4850	3550	745
	100	5000	4200	3600	3150	4200	5525	4200	945
	125	6300	5600	4800	3800	5600	6625	5600	1140
	140	6900	6350	5500	4200	6350	7275	6350	1260
	160	7700	7050	6400	4300	7050	8075	7050	1290
	175	8250	7550	7000	4800	7550	8675	7550	1440
	200	9150	8400	7800	5300	8400	9600	8400	1590
	250	10900	10000	9250	6900	10000	11400	10000	2000
C3-W60	75	2600	2200	1950	1700	2200	3000	2200	425
	85	3050	2600	2275	1850	2600	3500	2600	465
	100	3600	3100	2700	2300	3100	4300	3100	575
	125	4700	4000	3450	3000	4000	5575	4000	750
	140	5400	4600	3900	3250	4600	6125	4600	810
	160	6300	5300	4550	3400	5300	6825	5300	850
	175	6950	5850	5000	3750	5850	7325	5850	935
	200	7750	6800	5800	4200	6800	8125	6800	1050
	250	9200	7900	6580	4800	7900	9675	7900	1200
C4-W70	75	2000	1750	1600	1400	1750	2350	1750	350
	85	2350	2050	1800	1500	2050	2700	2050	375
	100	2800	2400	2100	1800	2400	3275	2400	450
	125	3600	3050	2650	2200	3050	4200	3050	550
	140	4100	3450	3000	2400	3450	4825	3450	600
	160	4700	4000	3400	2500	4000	5600	4000	625
	175	5200	4400	3800	3000	4400	6200	4400	750
	200	6000	5050	4350	3400	5050	7000	5050	850
	250	7250	5790	4830	3500	5790	8250	5790	850

APPLICATION EXAMPLES

Free roof and attached fly-over span tables apply to panels used for canopies, patio and building roofs that are not enclosed by walls underneath.

'Roof Blockage >75%' implies that items stored under the roof block more than 75% of the cross section exposed to the wind.



Span Selection Notes (Cyclonic Areas)

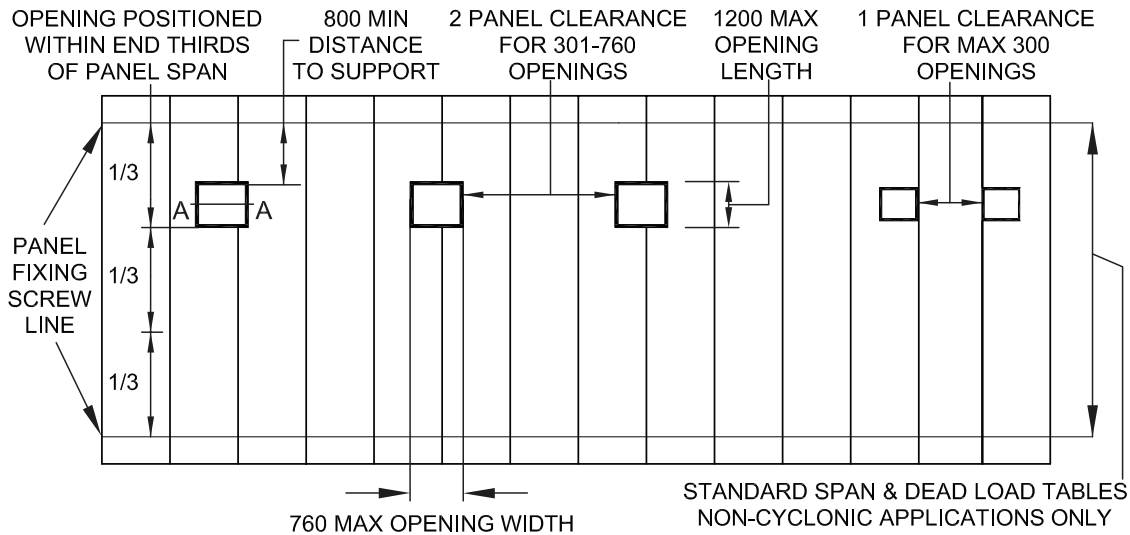
- Spans selected in accordance with the above maximum limits are certified to be structurally adequate in accordance with AS1170.2-2011.
- Refer to Custom roof panel span notes for cyclonic and non cyclonic spans on page 11 and 12.
Refer to Custom roof panel fixing information on page 24.
- Max deflections at midspan are L/70 at permissible design wind pressures.
Max deflections at midspan are L/250 for 0.25kPa Live Load.
- Max Dead Load deflections are L/500 (N2-W33).

ARCPANEL Custom Roof Panel - Roof Penetrations

ROOF PENETRATIONS

FIGURE 6

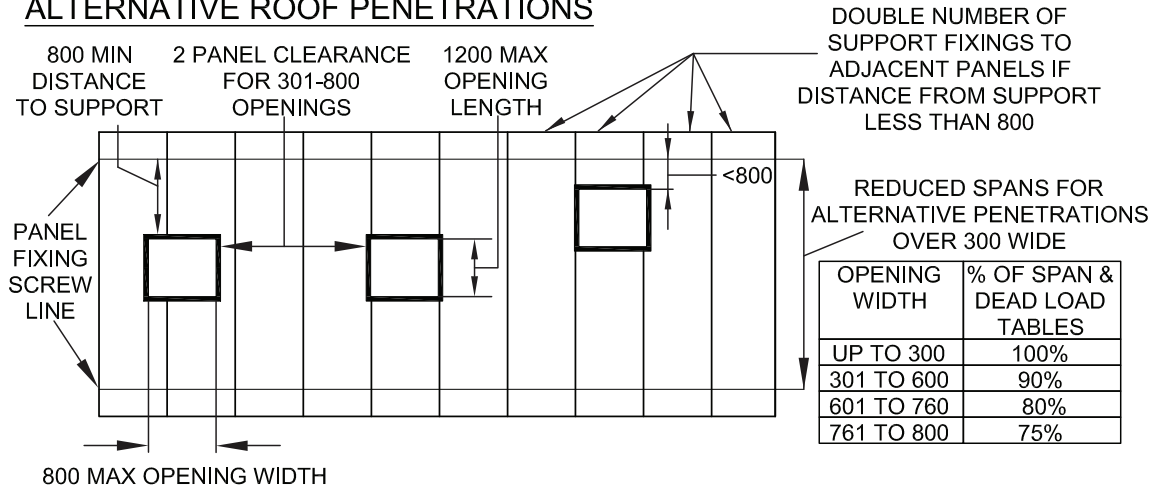
STANDARD ROOF PENETRATIONS - NON CYCLONIC ONLY



STANDARD ROOF PENETRATIONS - NOTE

If the (non-cyclonic) roof penetration is a maximum of 760mm wide by 1200mm long, and is positioned within the first third of the panel span, is 800mm minimum from the support, and has the continuous fully welded 2mm thick C-Channel, then the standard span tables apply.

ALTERNATIVE ROOF PENETRATIONS



ALTERNATIVE ROOF PENETRATIONS - NOTES

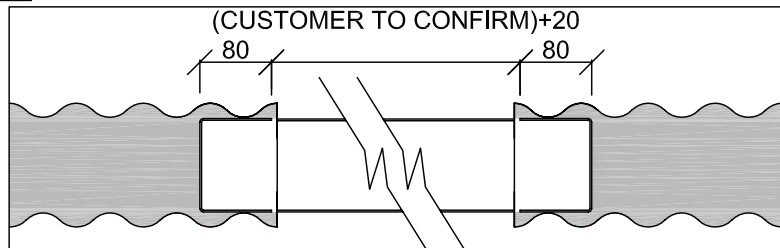
- Openings up to 300mm wide - full span tables
- Openings 301mm to 600mm wide - 90% of span tables
- Openings 601mm to 760mm wide - 80% of span tables
- Openings 761mm to 800mm wide - 75% of span tables
- Superimposed dead load capacity is reduced by the equivalent percentages as above
- Maximum length of openings to be 1200mm
- Continuous welded 2mm C-Channel to be provided to perimeter of openings greater than 300mm width
- Penetrations to be at least 800mm from the support OR where support fixing situation requires fixing every second crest; penetration can be within 800mm of support provided the adjacent whole panels each side to the penetration are provided with fixings to every crest.
- A minimum of 2 whole panels to be provided between roof penetrations greater than 300mm; 1 whole panel for openings of 300mm or less
- When considering the racking capacity of the roof diaphragm; the project design engineer is to allow that roof penetrations with length more than 800mm will divide up the length of roof sections
- Refer to ARCPANEL for any proposed penetrations outside the rules stated.

RBS 1525-49-1 B

CONTINUOUS C - CHANNEL

FIGURE 7

SECTION A-A



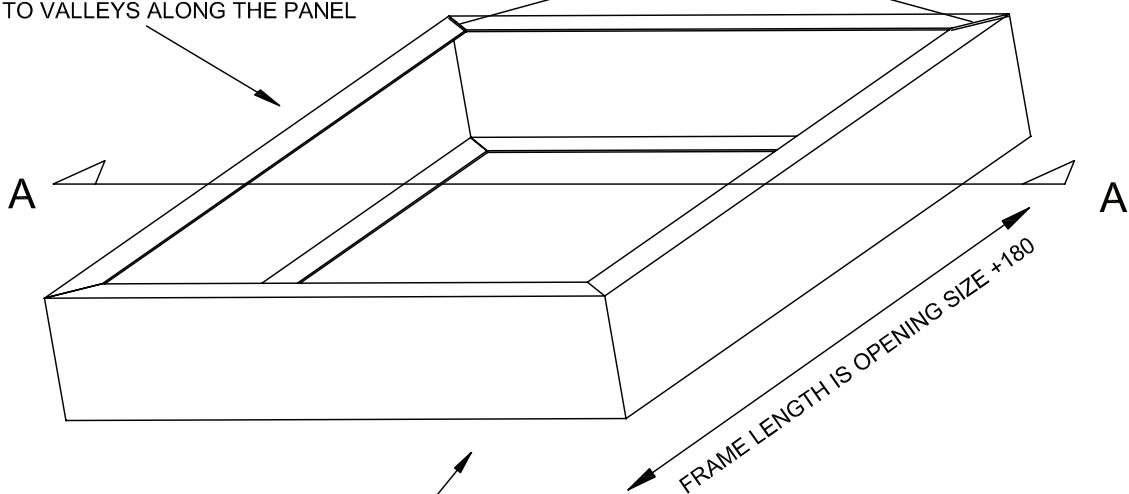
CONTINUOUS C - CHANNEL FRAME

TOP FIXINGS

SCREWS FIXED INTO FRAME EVERY 2ND CREST FOR CORRUGATED AND EVERY CREST FOR TRIMDEK ACROSS THE PANEL VALLEY AND AT 150MM CENTRES TO VALLEYS ALONG THE PANEL

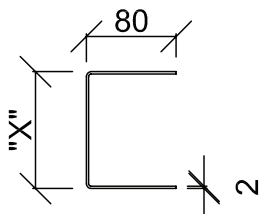
FRAME WIDTH IS OPENING SIZE +180

WELD SEAMS



BOTTOM FIXINGS

RIVETS FIXED INTO FRAME EVERY 2ND CREST ACROSS THE PANEL VALLEY AND AT 150MM CENTRES TO VALLEYS ALONG THE PANEL



CONTINUOUS C CHANNEL	
PANEL THICKNESS	DIMENSION 'X'
75mm	39mm
85mm	49mm
100mm	64mm
125mm	89mm
140mm	104mm
160mm	124mm
175mm	139mm
200mm	164mm
250mm	214mm

CONTINUOUS C-CHANNEL ONLY REQUIRED FOR OPENINGS GREATER THAN 300mm WIDE

RBS 1525-49-2 C

ARCPANEL Custom Roof Panel - Technical Properties

RACKING CAPACITY KN (LIMIT STATE) (P)

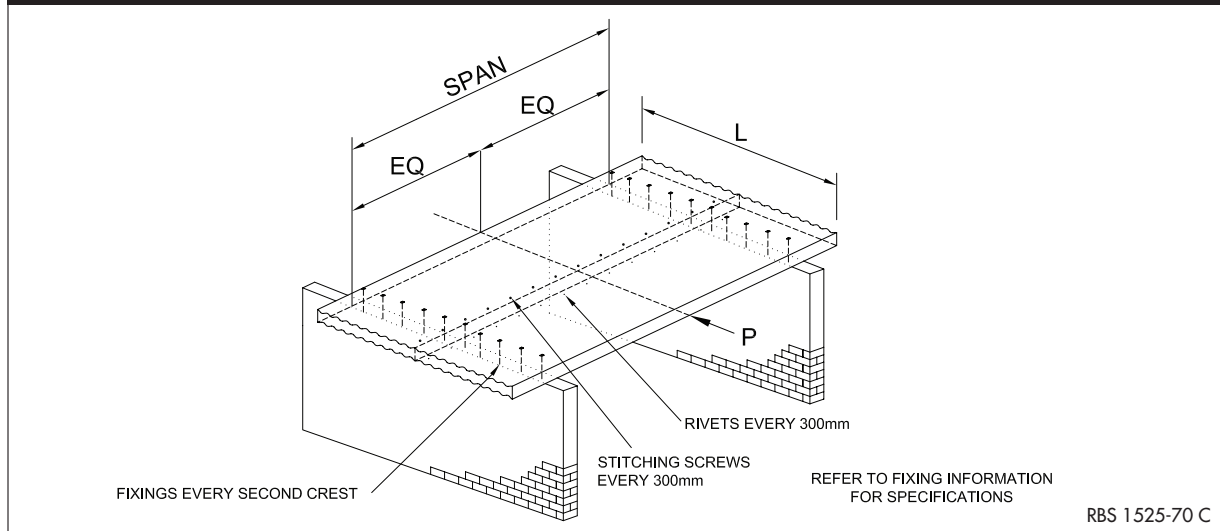
TABLE 6

PANEL THICKNESS 75 - 250mm	Panel Span (H) mm								
	4800	5400	6000	6600	7200	7800	8400	9000	12500
1 Panel (L=762mm)	2	1.8	1.6	1.5	1.35	1.25	1.1	0.95	0.55
2 Panels (L=1524mm)	4.1	3.6	3.3	3	2.7	2.5	2.3	2.1	1.65
kN per m	2.7	2.4	2.1	1.95	1.8	1.6	1.5	1	1.2

Allowable lateral load (kN) Min length 762 mm *Note: For straight, curved and multi-curved panels

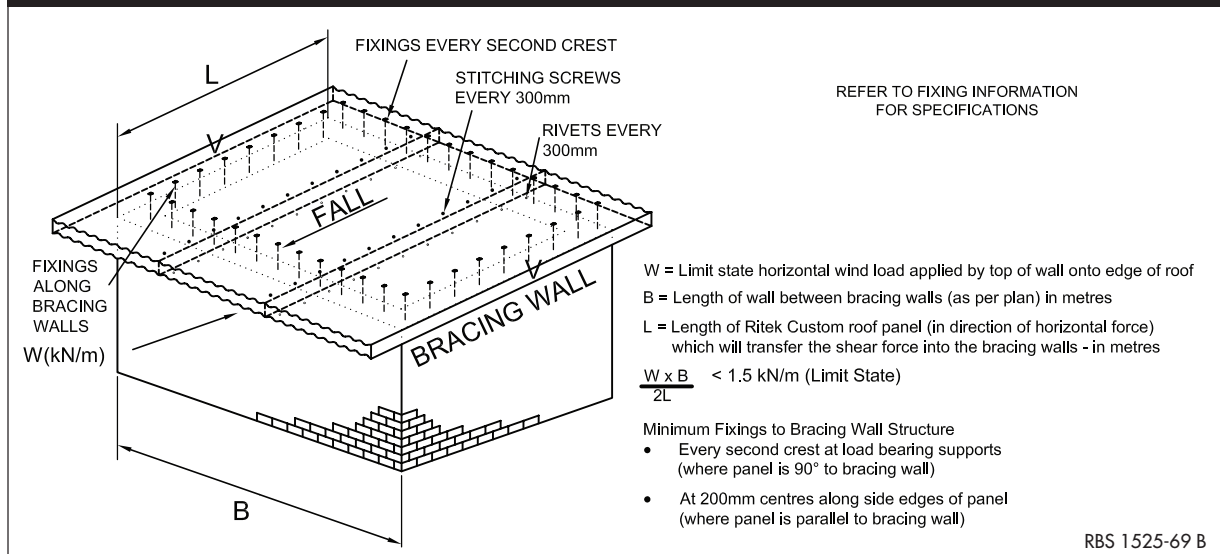
RACKING CAPACITY TEST METHOD

FIGURE 8



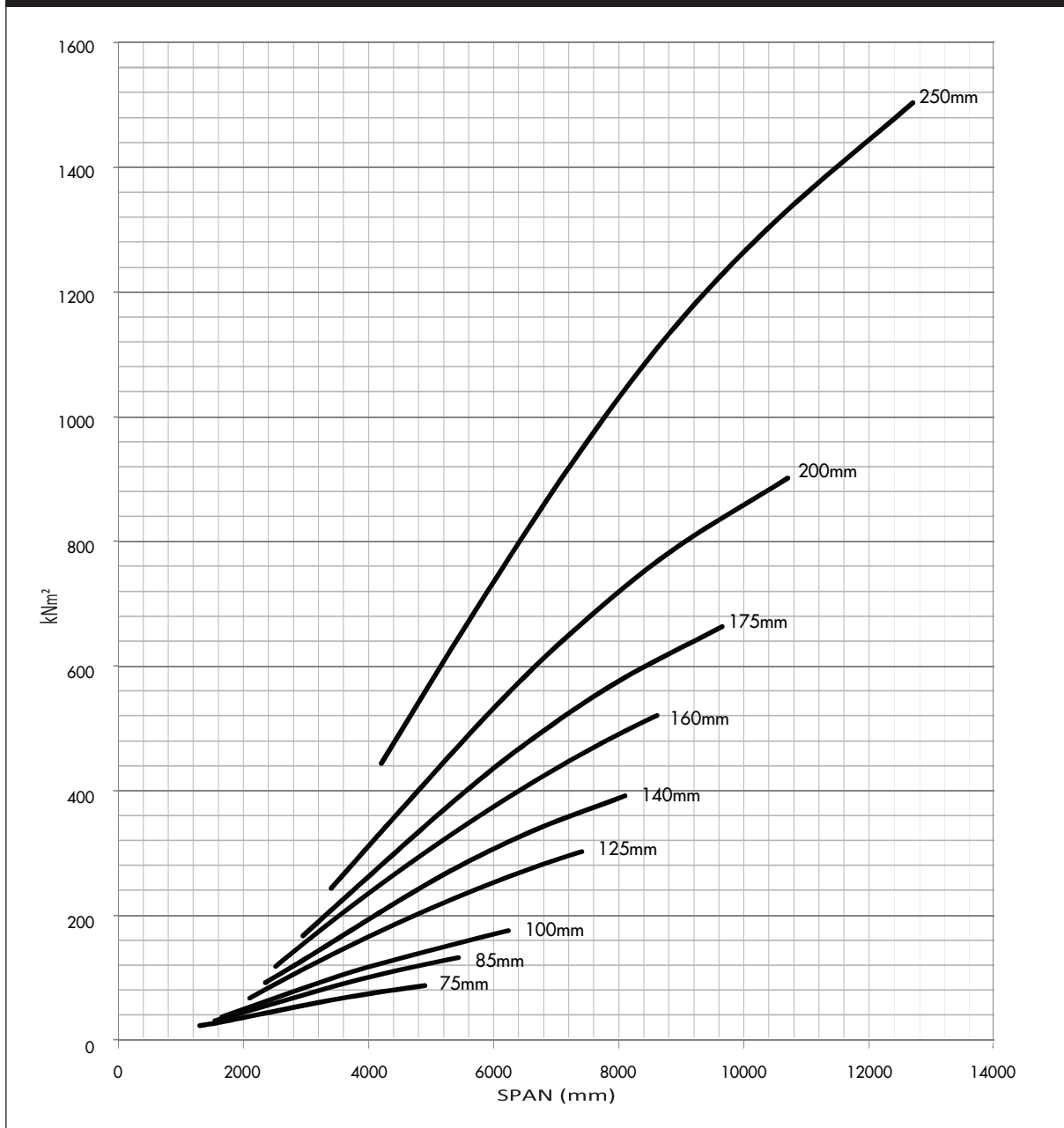
ROOF DIAPHRAGM ACTION CAPACITY

FIGURE 9



ARCPANEL roof diaphragm action assumes there is adequate structural connection through the full length of the building along supporting walls and beams, capable of resisting the resulting overall tension and compressive loads caused by any **ARCPANEL** roof diaphragm action, as would be normally required in a traditionally braced roof.

STIFFNESS Vs SPAN FOR VARYING PANEL THICKNESS PER 762mm WIDE PANEL



CUSTOM PANEL THICKNESS Vs STIFFNESS FOR VARYING SPANS (EI) PER 762mm WIDE PANEL TABLE 7

75mm		85mm		100mm		125mm		140mm		160mm		175mm		200mm		250mm	
Span (mm)	EI	Span (mm)	EI	Span (mm)	EI	Span (mm)	EI	Span (mm)	EI	Span (m)	EI	Span (m)	EI	Span (mm)	EI	Span (mm)	EI
1300	22	1450	28	1700	40	2100	67	2350	91	2500	107	2950	166	3400	242	4200	442
1600	27	1800	36	2150	54	2700	97	3100	136	3300	162	3900	252	4500	366	5700	686
2400	43	2750	60	2900	80	3750	151	4500	223	4800	266	5400	385	6050	536	7250	923
3200	59	3625	82	3300	94	4100	168	5500	280	5800	329	6600	480	7350	661	8800	1130
4000	73	4425	99	4150	121	5000	211	6700	337	7000	394	8000	574	8850	783	10500	1310
4900	86	5400	117	5100	148	6100	256	8100	390	8600	462	9650	661	10700	899	12500	1480

Note: In accordance with AS1562.1 1992, AS4040 1992

ARCPANEL Custom Roof Panel - Acoustic Properties



INTRODUCTION

Sound Transmission Loss tests were carried out for Ritek Building Solutions Pty Ltd at the acoustic laboratory of Lorient Australia Pty Ltd, Banyo, Qld, on Monday, 25 February and Tuesday, 26 February 2008. The results are covered in report no. 207 141 R01 dated April 2008.

The purpose of the tests was to determine the sound transmission loss of two insulated roof sheeting panels together with a number of roof/ceiling systems which incorporated various plasterboard ceilings that normally would be suspended below the roof. In some cases, insulation was included within the void between the roof panel and the plasterboard ceiling.

The roof panel comprised two layers of corrugated steel roofing panels bonded together by a rigid polystyrene SL insulation. The roof sheeting panels are available in various thicknesses. For the acoustic testing the 75mm thick, being the thinnest panel, and the 140mm thick, being the thickest panel, were used.

TESTING PROCEDURE

Testing was carried out in accordance with ISO Standards 140-3 and ISO 717-1.

Equipment: All of Bruel & Kjaer manufacture including type 2260 Investigator, BZ7204 Building Acoustic Software and omni directional sound source and rotating microphone system.

Source Room Volume: 82 m³

Receiving Room Volume: 72m³

Sample Area: 7.15m²

Laboratory tested to Rw 75

SUMMARY OF RESULTS – Tested Constructions

Custom Roof Panel Thickness Description	75mm to 120mm		125mm to 170mm		175mm to 250mm	
	Rw	Rw + Ctr	Rw	Rw + Ctr	Rw	Rw + Ctr
Custom Panel	22dB	20dB	24dB	21dB	24dB	21dB
Custom Panel with Rondo 303 furring channels directly fixed to the panel with a ceiling comprising one layer of 13mm CSR Soundchek plasterboard.	32dB	27dB	33dB	28dB	34dB	29dB
As above with an additional layer of 13mm CSR Soundchek plasterboard.	35dB	30dB	36dB	31dB	37dB	32dB
As above with the addition of Tontine HSB2 polyester insulation in the cavity. The intention was to use Tontine TSB2 polyester insulation but the HSB2 was supplied in lieu of the TSB2.	38dB	32dB	39dB	33dB	40dB	34dB
Custom Panel with 96mm top hat sections resiliently mounted to the Custom Panel. The ceiling comprising one layer of 13mm CSR Soundchek plasterboard.	43dB	33dB	44dB	34dB	45dB	35dB
As above with the addition of R2.0 105mm glasswool batt placed in the cavity so that there was mild compression of the insulation by the plasterboard panel.	52dB	40dB	53dB	41dB	54dB	42dB
Custom panel with 96mm top hat sections resiliently mounted to the Custom Panel, a 64mm top hat section was then fixed at right angles to the 96mm top hat section. The cavity was filled with R2.0 glasswool insulation batts so that the addition of the single layer of 13mm CSR Soundchek caused a mild compression of the glasswool insulation.	56dB	46dB	57dB	47dB	58dB	48dB

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 Member Firm of the Australian Association of Acoustical Consultants

ARCPANEL Custom Roof Panel - Fire Properties

EARLY FIRE HAZARD PROPERTIES		AS/NZS 1530.3	TABLE 9
Ignitability Index	=	0	
Spread of flame	=	0	
Heat evolved index	=	0	
Smoke produced index	=	4	

RITEK [®] CUSTOM ROOF PANEL - GROUP 1 MATERIAL		FIRE RATING AS ISO 9705 - 2003				TABLE 10
in accordance with BCA specifications C1.10a						
TABLE 1 WALL AND CEILING LINING MATERIALS (Materials Groups Permitted)						
BCA Building Class	Fire Isolated Exits Wall/Ceiling	Public Corridors Wall Ceiling		Specific Areas Wall Ceiling		Other Areas Wall/Ceiling
Class 2 & 3 Excluding accommodation for the aged, people with disabilities and children						
Unsprinklered	1	1, 2	1, 2	1, 2, 3	1, 2, 3	1, 2, 3
Sprinklered	1	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3
Class 3& 9a Accommodation for the aged, people with disabilities and children, health-care buildings						
Unsprinklered	1	1	1	1, 2	1, 2	1, 2, 3
Sprinklered	1	1, 2	1, 2	1, 2, 3	1, 2, 3	1, 2, 3
Class 5, 6, 7, 8 & 9b Schools						
Unsprinklered	1	1, 2	1, 2	1, 2, 3	1, 2	1, 2, 3
Sprinklered	1	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3	1, 2, 3
Class 9b - other than schools						
Unsprinklered	1	1,	1	1, 2	1, 2	1, 2, 3
Sprinklered	1	1, 2	1, 2	1, 2, 3	1, 2, 3	1, 2, 3
Class 9c						
Sprinklered	1	1, 2	1, 2	1, 2, 3	1, 2, 3	1, 2, 3

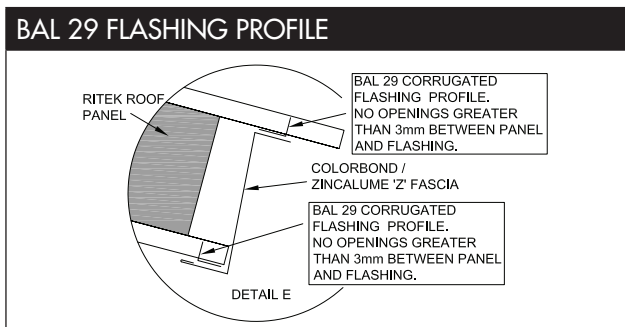
CONSTRUCTION OF BUILDINGS IN BUSHFIRE PRONE AREAS

ARCPANEL CUSTOM PANEL MEETS THE REQUIREMENTS FOR BUILDINGS ASSESSED IN BUSHFIRE PRONE AREAS IN ACCORDANCE WITH SECTION 2 AS 3959 - 2009 AS BAL - 29

Designated bushfire prone area means land which has been designated under a power in legislation as being subject, or likely to be subject to bushfires.

AS 3959-2009 determines that any residence situated less than 100m from unmanaged vegetation (including forests, woodlands, scrub, rainforests and shrubland) over one hectare in size, is deemed to be in a bushfire prone area and all new houses or alterations and additions must meet the Bushfire Attack Level (BAL) requirements.

A full range of BAL 29 Flashings are available, please contact **ARCPANEL** for further details.



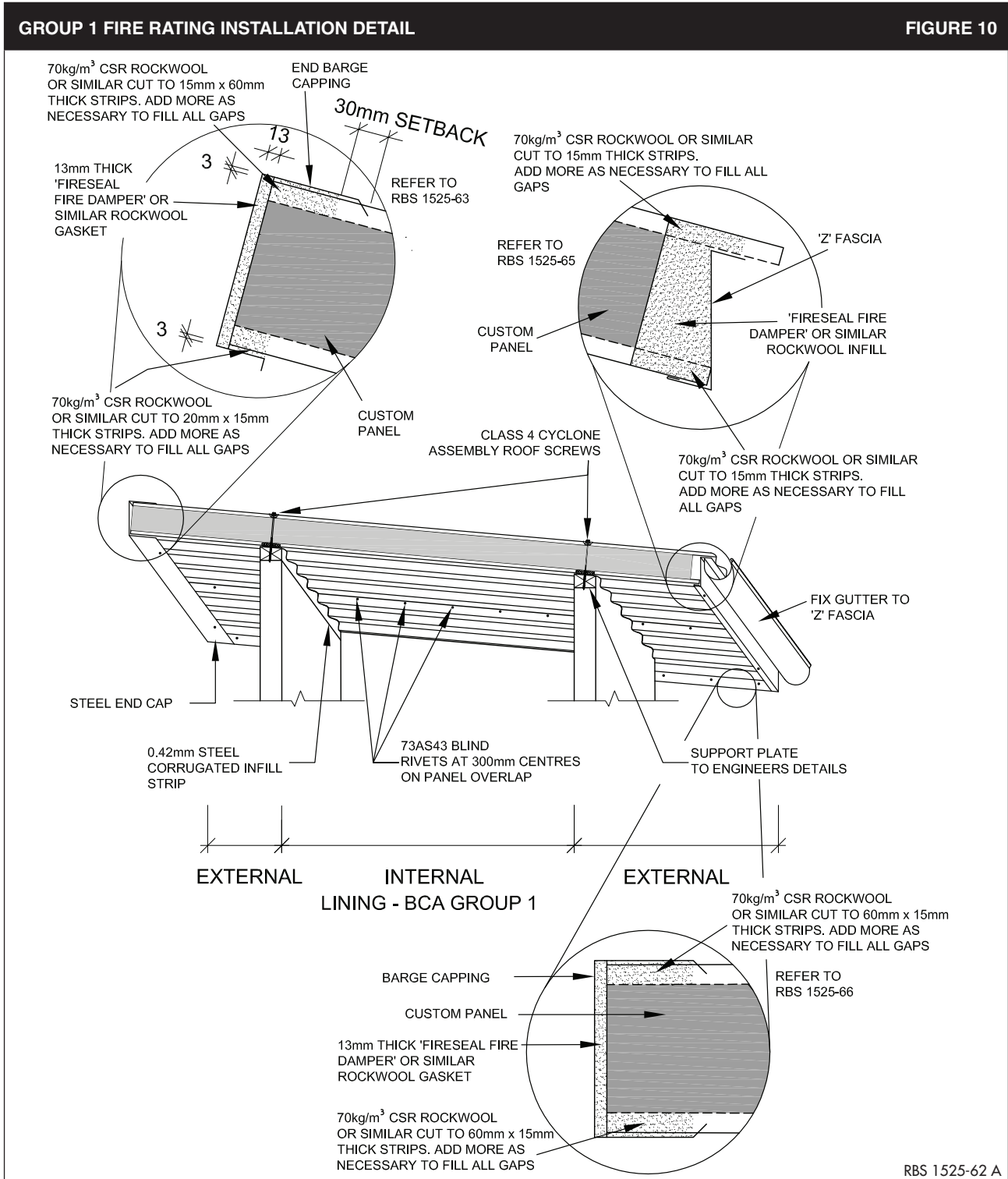
Note. 73 AS 5-8 rivets required to fix BAL 29 flashing profile in to place.

ARCPANEL Custom Roof Panel - Fire Properties

NCC/BCA - Group 1 Fire Rating Installation Detail

To achieve a 'Group 1' fire rating the **ARCPANEL** Custom roof panel must be installed in accordance with the following details. All penetrations through the panel also must be suitably sealed with fire retardant products. Please refer to the table and data on page 21 of this manual for further information on the 'Group 1' fire rating.

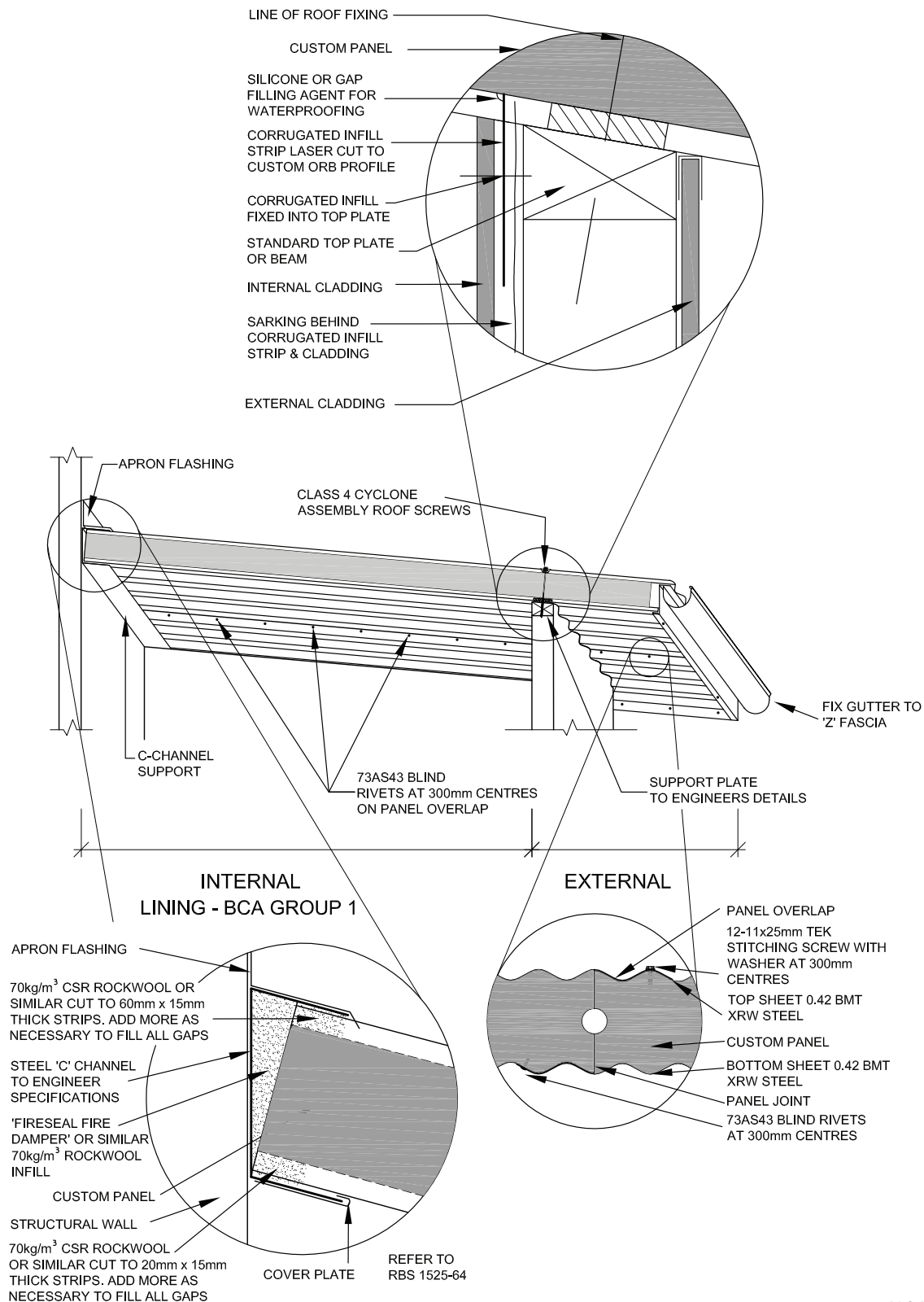
Should you require any further information please contact **ARCPANEL** for further details.



ARCPANEL Custom Roof Panel - Fire Properties

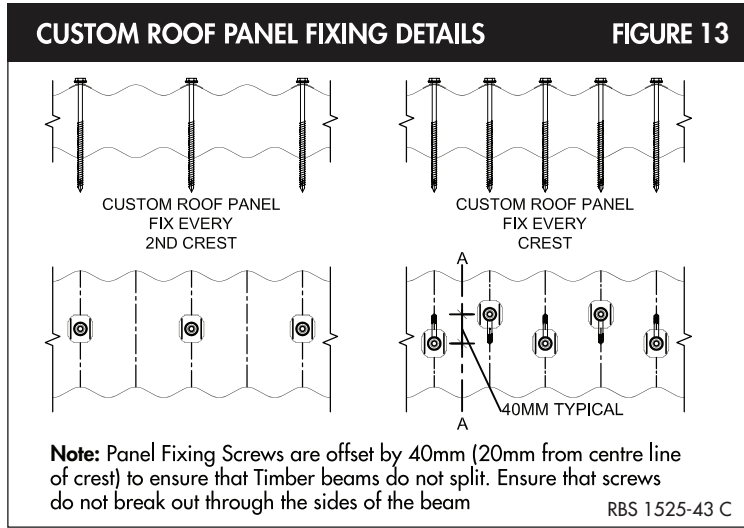
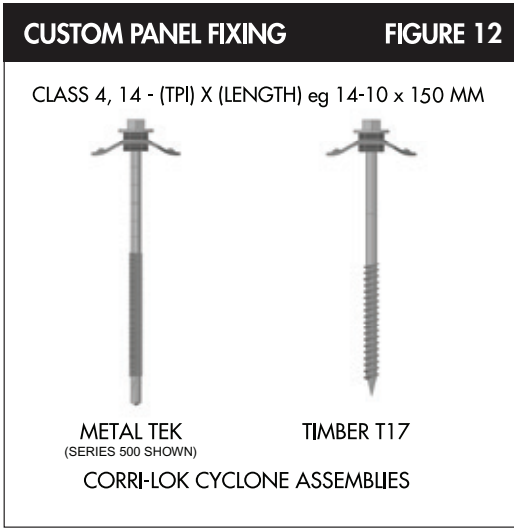
GROUP 1 FIRE RATING INSTALLATION DETAIL

FIGURE 11



RBS 1525-62 A

ARCPANEL Custom Roof Panel - Maximum Dead Load & Fixing



FIXING SCREW SELECTION

CUSTOM PANEL FIXING CLASS 4 WITH CORRI-LOK CYCLONE ASSEMBLY						TABLE 11			
		FIXING TO STEEL				FIXING TO TIMBER			
		MINIMUM FIXING SCREW EMBEDMENT 30MM				MINIMUM FIXING SCREW EMBEDMENT 35MM			
PANEL SIZE (MM)	MINIMUM FIXING SCREW LENGTH (MM)	ACTUAL TO ORDER STEEL SCREW STEEL THICKNESS 2.0MM TO 5.0MM		ACTUAL TO ORDER STEEL SCREW STEEL THICKNESS 5.1MM TO 12.0MM		MINIMUM FIXING SCREW LENGTH (MM)	ACTUAL TO ORDER TIMBER SCREW		
		SCREW TYPE	SIZE	SCREW TYPE	SIZE		SCREW TYPE	SIZE	
75	105	METAL TEK	14-14 x 115MM	METAL TEK	14-20 x 150MM Series 500	110	TIMBER T17	14-10 x 115MM	
85	115	METAL TEK	14-14 x 115MM	METAL TEK	14-20 x 150MM Series 500	120	TIMBER T17	14-10 x 125MM	
100	130	METAL TEK	14-14 x 135MM	METAL TEK	14-20 x 150MM Series 500	135	TIMBER T17	14-10 x 150MM	
125	155	METAL TEK	14-14 x 175MM	METAL TEK	14-20 x 200MM Series 500	160	TIMBER T17	14-10 x 175MM	
140	170	METAL TEK	14-14 x 175MM	METAL TEK	14-20 x 200MM Series 500	175	TIMBER T17	14-10 x 175MM	
160	190	METAL TEK	14-14 x 205MM	METAL TEK	14-20 x 200MM Series 500	195	TIMBER T17	14-10 x 200MM	
175	205	METAL TEK	14-14 x 205MM	METAL TEK	14-20 x 250MM Series 500	210	TIMBER T17	14-10 x 240MM	
200	230	METAL TEK	14-10 x 230MM(*CC1)	METAL TEK	14-20 x 250MM Series 500	235	TIMBER T17	14-10 x 240MM	
		METAL TEK	14-20 x 250 MM SERIES 500 (3.0mm to 5.0mm)						
250	280	TIMBER T17	14-10 x 300MM (*PD1)	METAL TEK	14-20 x 300MM Series 500	285	TIMBER T17	14-10 x 300MM	
		METAL TEK	14-20 x 300 MM SERIES 500 (3.0mm to 5.0mm)						

NOTES:

- SUFFIX (* PD1) =** PRE DRILL AND USE T17 TIMBER SCREW, PRE DRILL HOLE SIZE 5.5MM TO 5.7MM DIAMETER (**DRILL BITS TO BE SUPPLIED**)
- SUFFIX (* CC1) =** 14-10 x "X" CAN BE USED FOR STEEL 4.1MM TO 5MM IF SUITABLE CUTTING COMPOUND IS USED, REFER TO TECHNICAL SERVICES

14-10 x 'X' MM SCREWS CAN BE SUBSTITUTED FOR 14-14-'X' MM SCREWS IN STEEL BETWEEN 1.3MM TO 4.0MM

14-20 x 200 MM SERIES 500 SCREW CAN BE USED FOR 160MM CUSTOM PANEL INTO 3.0MM TO 12.0MM IF THERE IS NO VOID BETWEEN PANEL AND FIXING BEAM / TOP PLATE

CLEARANCE MUST BE CHECKED TO ALLOW FOR PROTRUDING SCREW LENGTH THROUGH FIXING POINT

FIXING BEAM / TOP PLATE MUST BE PITCHED TO SUIT THE ROOF PANEL PITCH

FIXING TO OTHER SUBSTRATES (ALUMINIUM, STAINLESS STEEL ETC) MAY BE POSSIBLE, REFER TO TECHNICAL SERVICES

FIXING TO STEEL SUBSTRATES LESS THAN 2.0mm, REFER TO TECHNICAL SERVICES

FIXING SCREW TABLE REFLECTS THE RANGE OF SCREWS CURRENTLY AVAILABLE ON THE MARKET FROM BUILDEX OR POWERS FASTENERS

ARCPANEL Custom Roof Panel - Fixing Information

FIXING SCREW SELECTION NOTES - NON CYCLONIC AREAS	TABLE 12
End Support Fixing, Corri-Lok Cyclone Assembly, Class 4	
1. Every second crest when pressure $[P] \times (3/4 \text{ backspan} + 4/3 \text{ cantilever [m]})$ is not greater than 22.5 [kN/m]	
2. Every crest when pressure $[P] \times (3/4 \text{ backspan} + 4/3 \text{ cantilever [m]})$ is greater 22.5 [kN/m]	
3. Raked external walls running parallel to the span fixing point at every 200mm c/c	
Internal Support Fixing, Corri-Lok Cyclone Assembly, Class 4	
1. Every second crest when pressure $[P] \times (\text{span1} + \text{span2 [m]}) \times 0.625$ is not greater than 22.5 [kN/m]	
2. Every crest when pressure $[P] \times (\text{span1} + \text{span2 [m]}) \times 0.625$ is greater than 22.5 [kN/m]	
3. Raked external walls running parallel to the span fixing point at every 200mm c/c	

FIXING SCREW SELECTION NOTES - CYCLONIC AREAS	TABLE 13
End Support Fixing, Corri-Lok Cyclone Assembly, Class 4	
1. Every second crest when pressure $[P] \times (3/4 \text{ backspan} + 4/3 \text{ cantilever [m]})$ is not greater than 22.5 [kN/m]	
2. Every crest when pressure $[P] \times (3/4 \text{ backspan} + 4/3 \text{ cantilever [m]})$ is greater 22.5 [kN/m]	
3. Raked external walls running parallel to the span fixing point at every 200mm c/c	
Internal Support Fixing, Corri-Lok Cyclone Assembly, Class 4	
1. Every second crest when pressure $[P] \times (\text{span1} + \text{span2 [m]}) \times 0.625$ is not greater than 22.5 [kN/m]	
2. Every crest when pressure $[P] \times (\text{span1} + \text{span2 [m]}) \times 0.625$ is greater than 22.5 [kN/m]	
3. Raked external walls running parallel to the span fixing point at every 200mm c/c	

*Note: Refer to ARCPANEL the use of stainless steel fixing

Stitching Screws - Top

Details: Hex Seal Class 4 - 12 - 11 x 25 - Type T17 with seal washer
 Spacing: Used at 300mm centres on the top sheet lap and may be used to attach rainwater goods

Stitching Screws - Underside (NT Cyclonic Applications only)

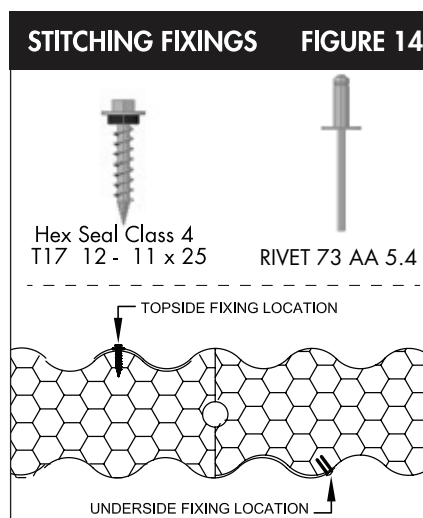
Details: Hex Class 4 - 10 - 12 x 25 - Type T17 no seal washer
 Spacing: Used at 300mm centres on the underside of the sheet lap

Rivets - Underside

Details: 73 AA 5-4
 Spacing: Used at 300mm centres on the underside sheet lap

Rivets - BAL Flashings

Details: 73 AS 5-8
 Spacing: Refer to Table 15



ARCPANEL ROOF PANELS FIXING SCHEDULE				TABLE 14
Fastener	Fixing Type	Fastener Material	Accessories	Permissible Load
Ajax	Type 17	Steel	Cyclonic Clip	2.619
Buildex	500 Series	Steel	Cyclonic Clip	2.8
Powers	Metal Tek	Stainless Steel	20mm Bonded Washer	1.88
Note: The worst case static load, based on a 140mm panel in W60C conditions within 5 fixings/panel at a continuous support is 1.847KN in accordance with AS1562.1 1992, AS4040 1992				

The above is the recommended fixing schedule for the ARCPANEL Custom roof panels, however in some situations additional fixing and/or different spacing may be required due to wind loads, structural requirements etc. The building designer will need to be consulted to confirm that the above fixings will be adequate for the individual project. ARCPANEL recommends that an experienced installer is used for fixing and finishing of the ARCPANEL Custom roof panels.

ARCPANEL Custom Roof Panel - Fixing / Rainwater Lapping Information

FIXING SCHEDULE - RAINWATER GOODS

TABLE 15

Item	Topside		Underside		Vertical Face	
	Type	Spacing	Type	Spacing	Type	Spacing
Barge Capping	Stitching screws	300mm	Rivet	300mm	Rivets	All external corners
Z Fascia	Rivet	Every 2nd crest	Rivet	Every 2nd crest	Rivet	All external corners
Apron Flashing	Stitching screws (end)	Every 2nd crest	N/A		N/A	
	Stitching screws (side)	300mm				
C - Channel (Refer to Fixing Detail)	Stitching screws	Every 2nd crest *1	Rivets attach to cover plate	300mm	No allowance is made for fixings required to attach C - Channel to the wall or frame	
	12 x 35 Metal Tek					
End Cap	Stitching screws	Every 2nd crest	Rivet	300mm	N/A	
Ridge Cap	Stitching screws	Every 2nd crest	N/A		N/A	

Tables 15 and 16 list the recommended fixing method for the **ARCPANEL** Custom roof panels, however in some situations additional fixing and/or different spacing may be required due to wind loads, structural requirements etc. An engineer should be consulted to confirm that the above fixings will be adequate for the individual project. **ARCPANEL** recommends that an experienced installer is used for fixing and finishing of the **ARCPANEL** Custom roof panels.

*1 Please refer to standard fixing C - Channel details

STANDARD RAINWATER LAPPING ALLOWANCE FOR RAINWATER GOODS

TABLE 16

Wastage Allowance - (Amount added to exact roof dimension, in mm)				
Item	Length	At Joins	External Corners (Mitred Joins)	90 Degree Returns
Barge Capping Side & End	150mm	150mm	N/A	250mm
Z Fascia	150mm	150mm	N/A	N/A
Gutter	150mm	150mm	250mm	250mm
Apron Flashing	150mm	150mm	250mm	250mm
C-Channel	100mm	0	150mm	150mm

Downpipe Outlets

Details: Supplied to suit gutter chosen.

Used: Are supplied at intervals specified on customer's drawing, failing this they will be typically supplied to suit a spacing of 12.0m, refer to relevant standards.

Downpipes

Downpipes are not supplied by **ARCPANEL**.

Gutter Stop Ends

Supplied in left and right hand, to suit gutter chosen.

Gutter Brackets (Concealed)

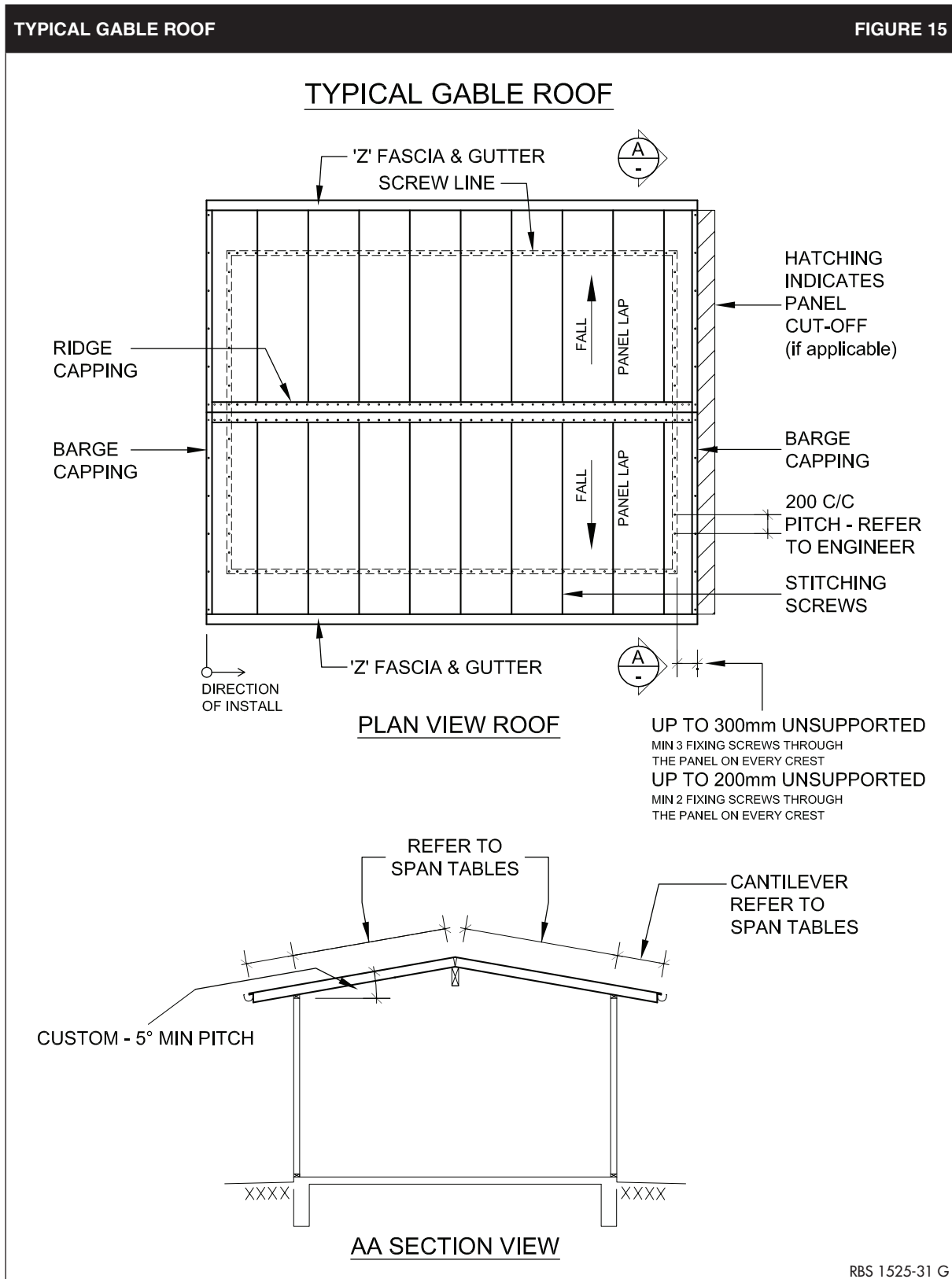
Brackets are typically calculated at 900 C / C (mm).

Gutter Brackets (External for half round)

Brackets are typically calculated at 900 C / C (mm).

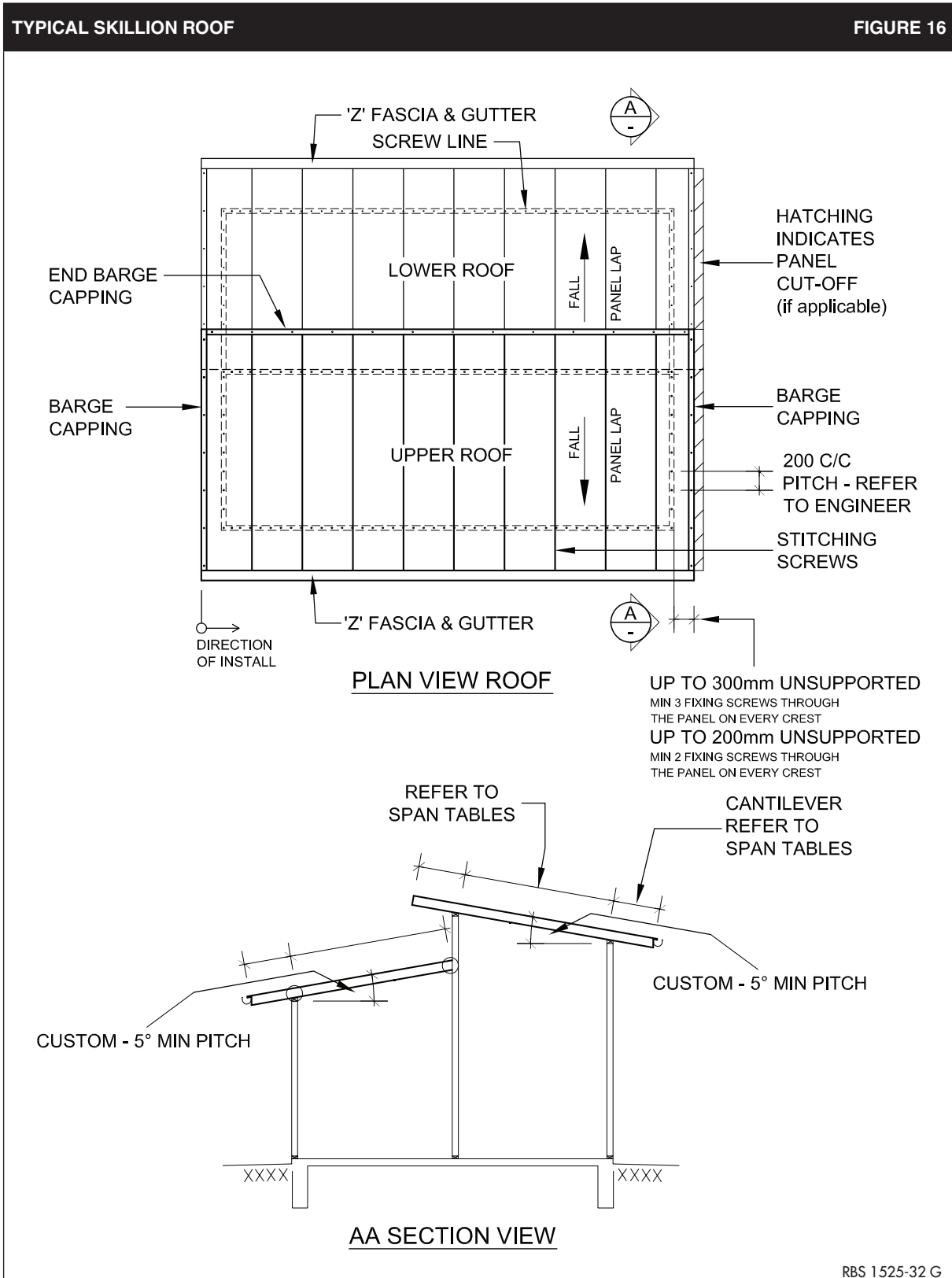
ARCPANEL Custom Roof Panel - Typical Roof Plan

Figure 15 shows standard components used in constructing a gable end **ARCPANEL** Custom roof panel, this includes hold down positions, stitching screws and rainwater goods.



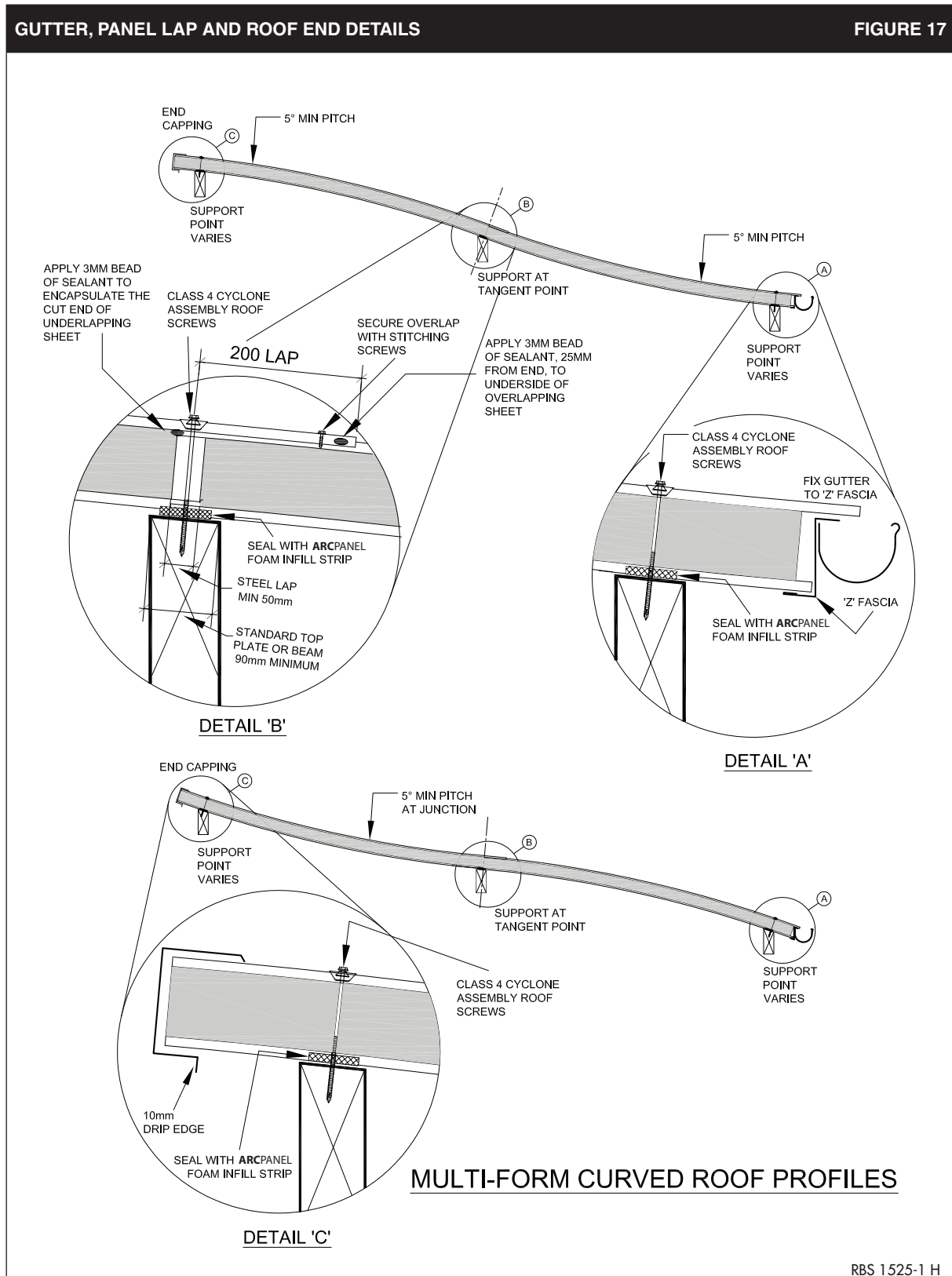
ARCPANEL Custom Roof Panel - Typical Roof Plan

Figure 16 shows standard components used in constructing a skillion roof using the **ARCPANEL** Custom roof panel, this includes hold down positions, stitching screws and rainwater goods.



ARCPANEL Custom Roof Panel - Typical Details

Figure 17 shows some of the standard **ARCPANEL** Custom roof panel details, detail 'A', reflecting a typical gutter end, detail 'B', a standard lap detail and final detail 'C', treatment of the top end of a roof.

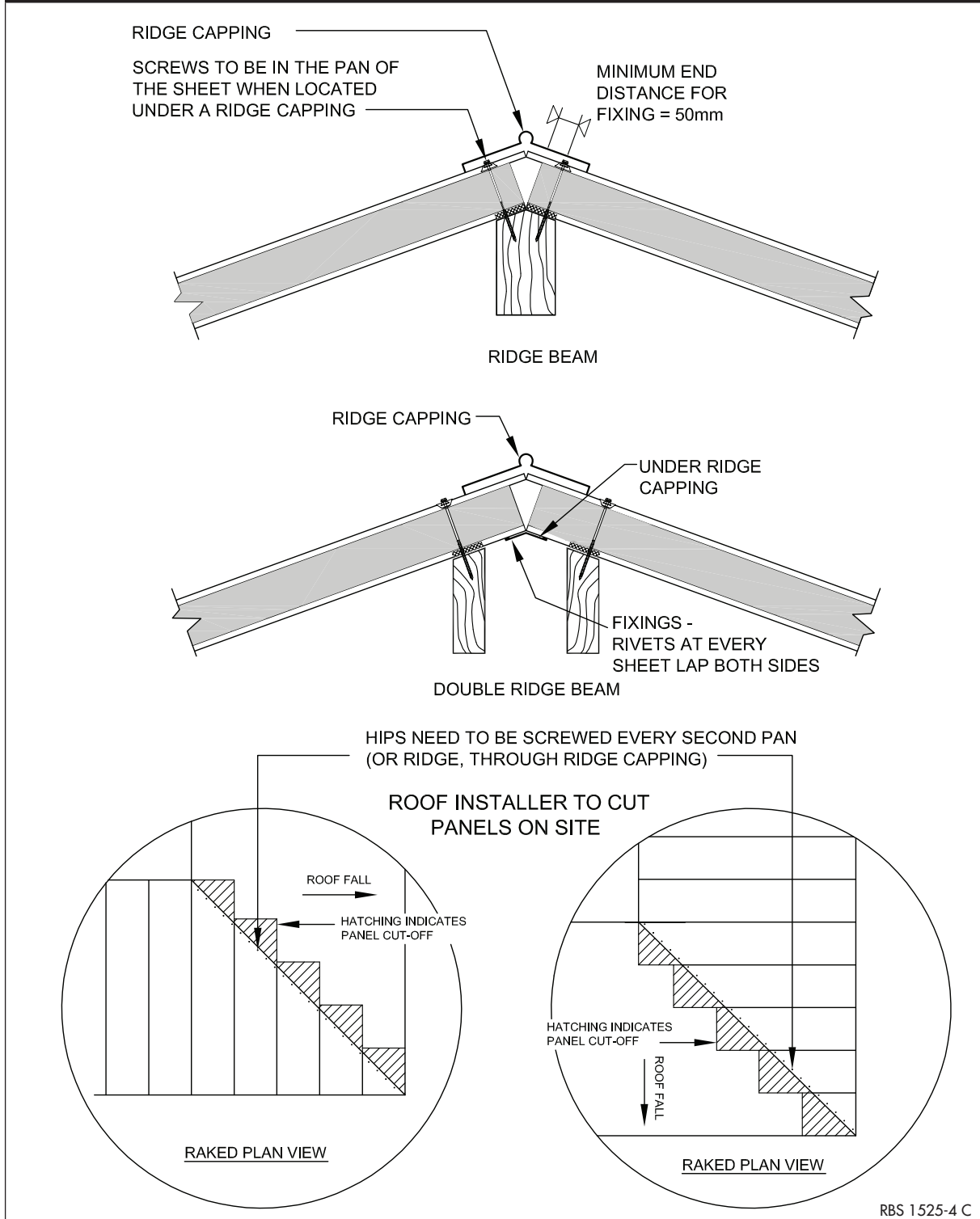


ARCPANEL Custom Roof Panel - Typical Details

Figure 18 provides details on how the **ARCPANEL** Custom roof panel is used on hipped roofs, or in the case of a verandah roof, a 90 degree return. In the case of hipped roofs, all panels are to be cut on site, **ARCPANEL** does not pre cut any roof panels. The roof is laid and marked as would be a conventional roof sheet, care is taken to include the lap when measuring and cutting panels.

TYPICAL HIP ROOF JUNCTION

FIGURE 18



RBS 1525-4 C

ARCPANEL Custom Roof Panel - Typical Details

Figure 19 shows a typical skillion roof using the C-Channel to support the panels at one end, also shown is the typical gutter and end capping details.

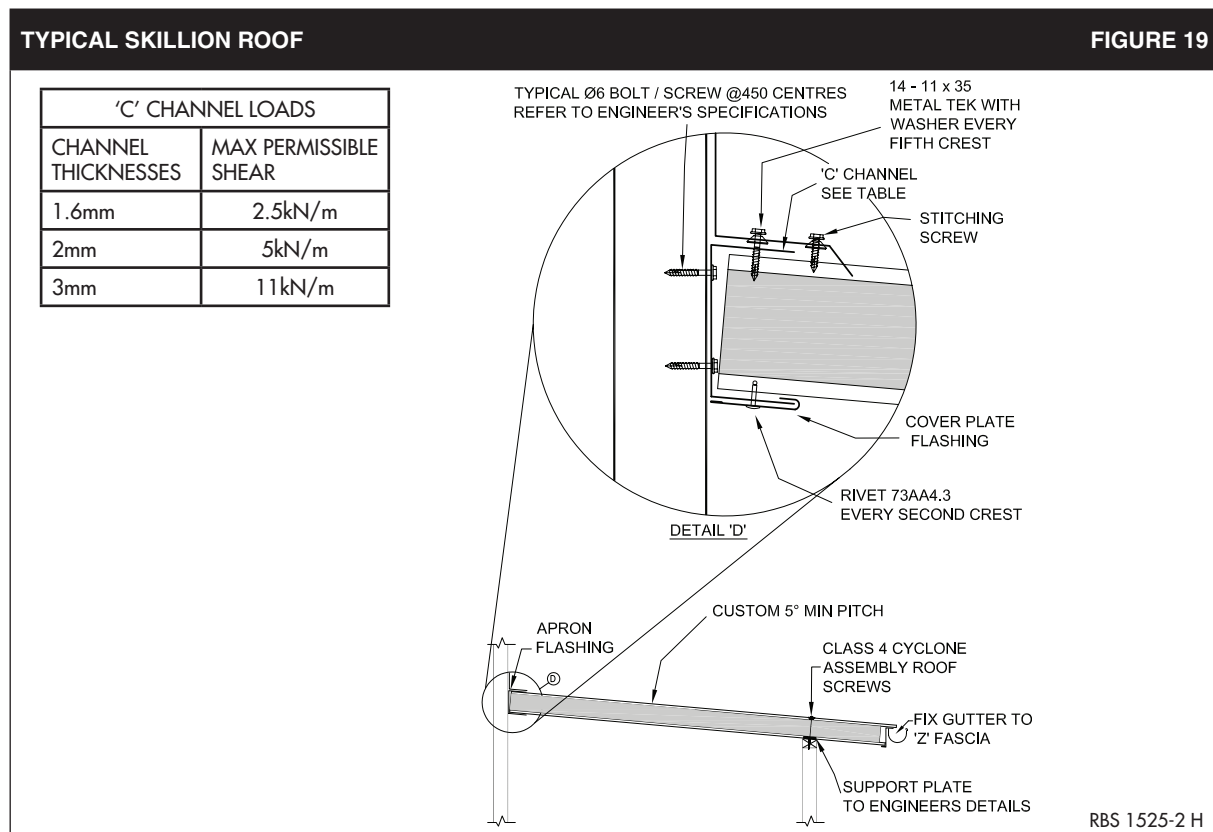
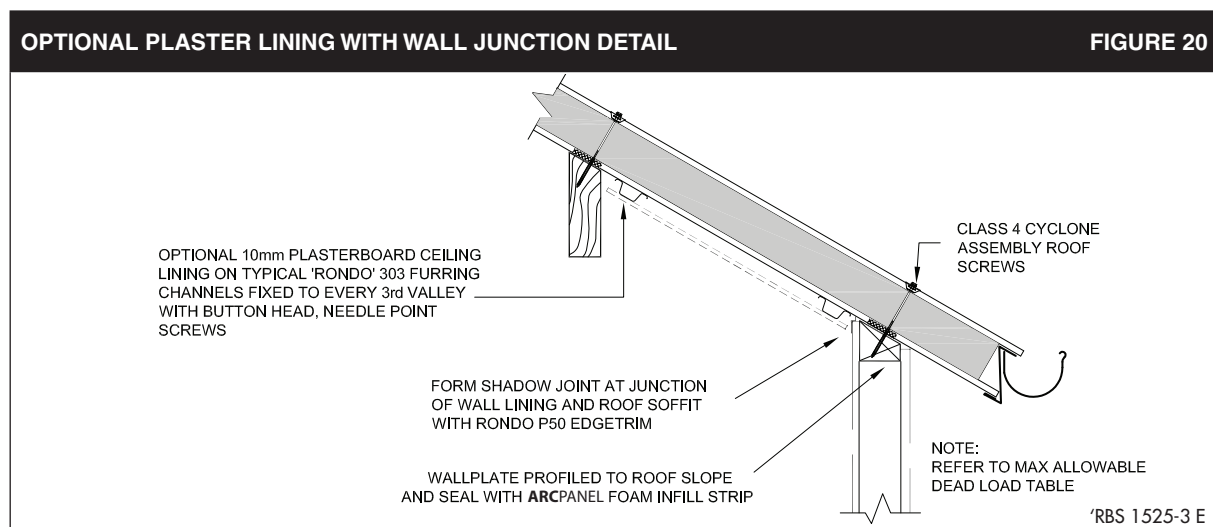


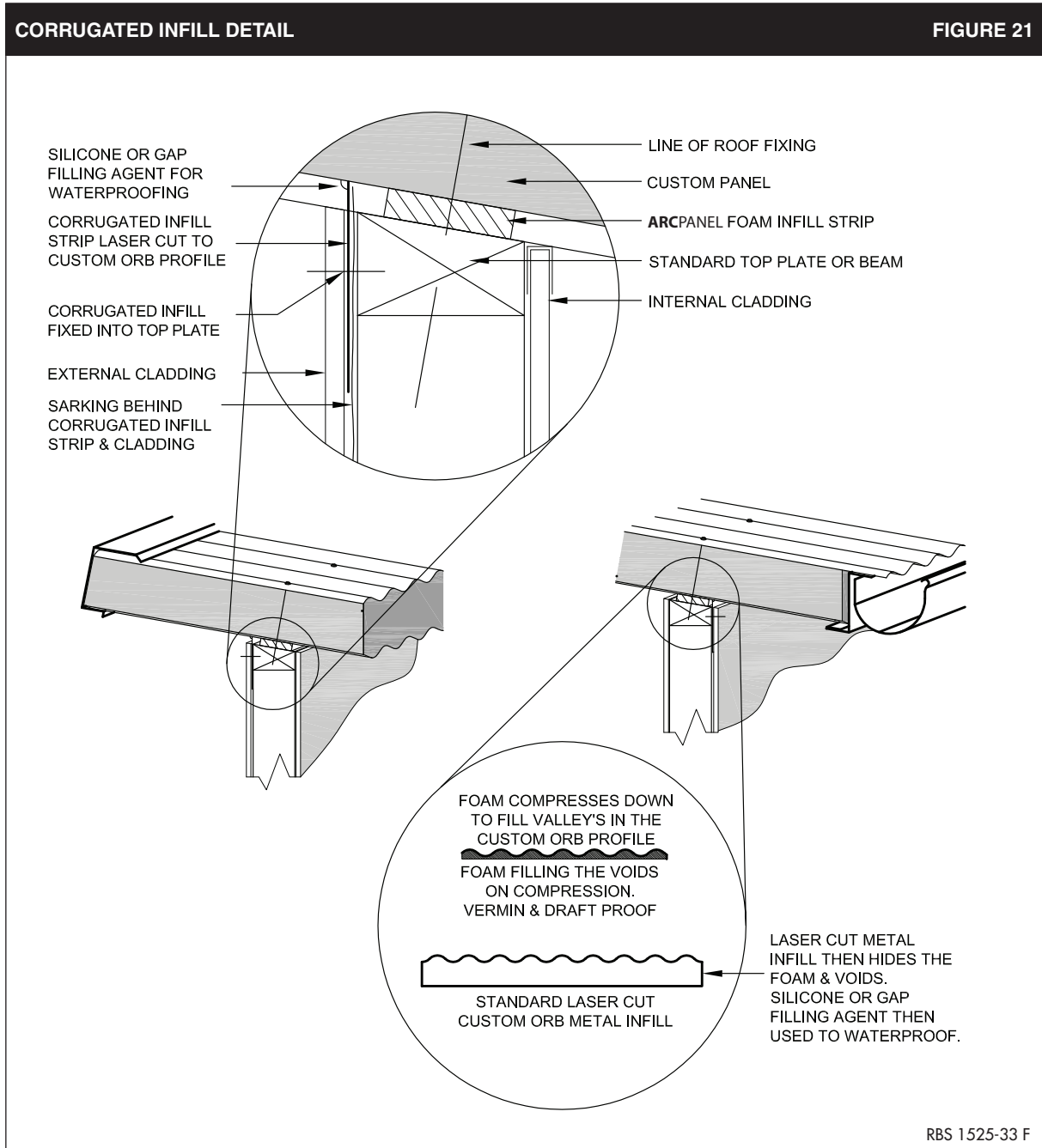
Figure 20 provides details on how to attach a plasterboard lining to the underside of the **ARCPANEL** Custom roof panel, by using standard metal furring channel, the plasterboard is attached in the conventional manner. The wall / ceiling junction as shown, does require a shadow joint junction.



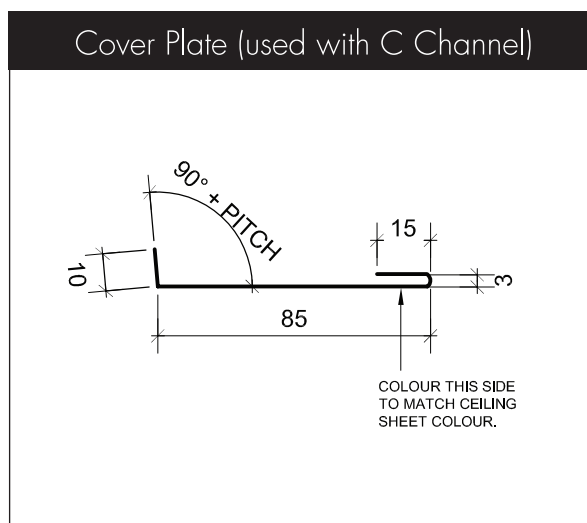
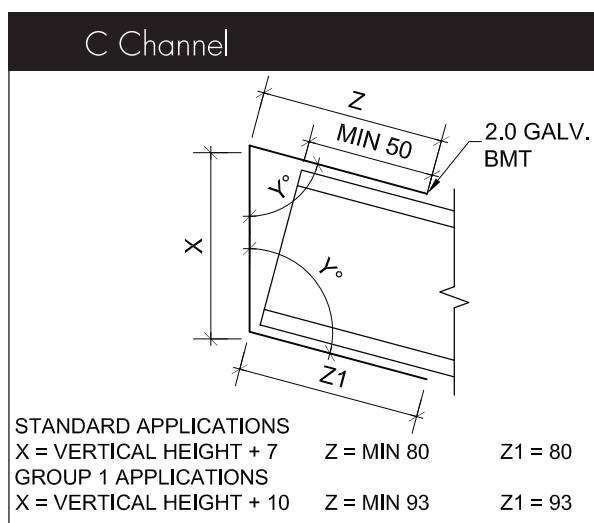
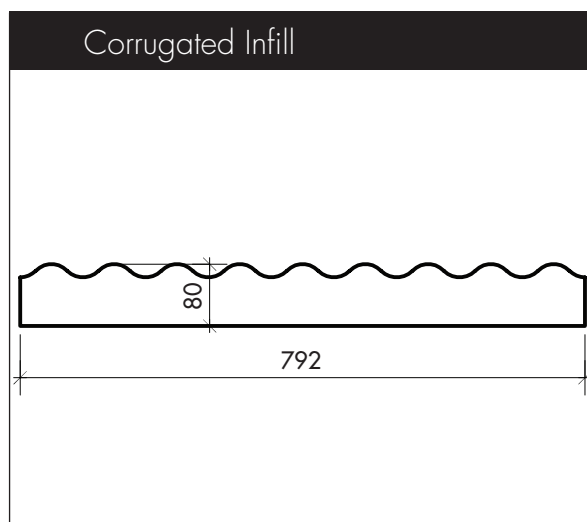
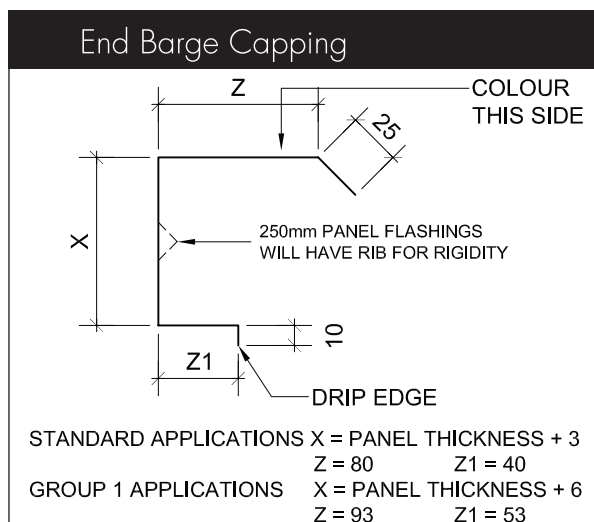
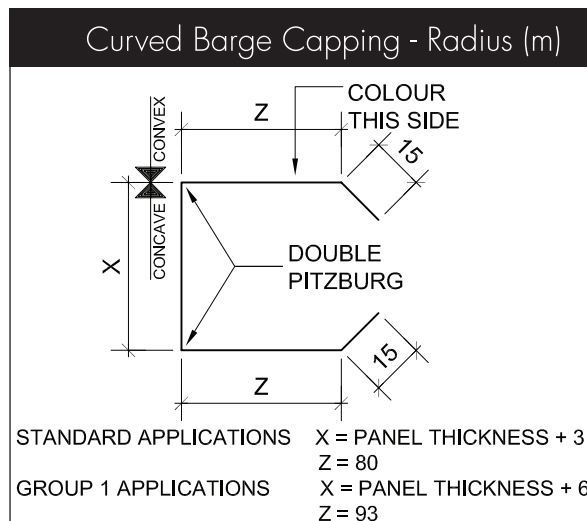
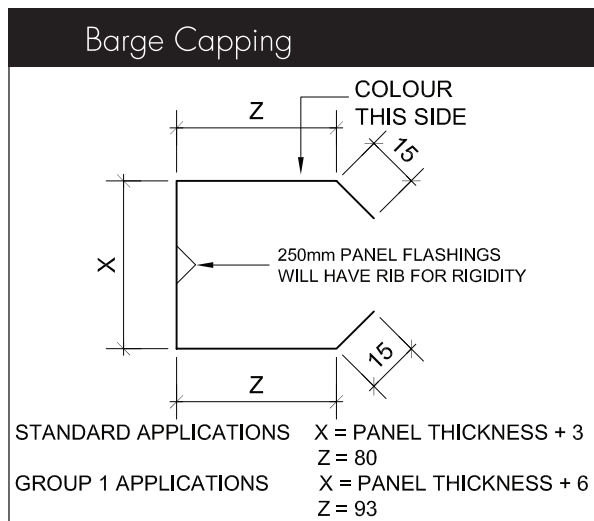
Refer to maximum allowable distributed dead load table on page 24.
Suspended ceilings can be used, contact **ARCPANEL** for further information.

ARCPANEL Custom Roof Panel - Corrugated Infill Detail (Optional)

Figure 21 showing typical use of the corrugated infill detail.



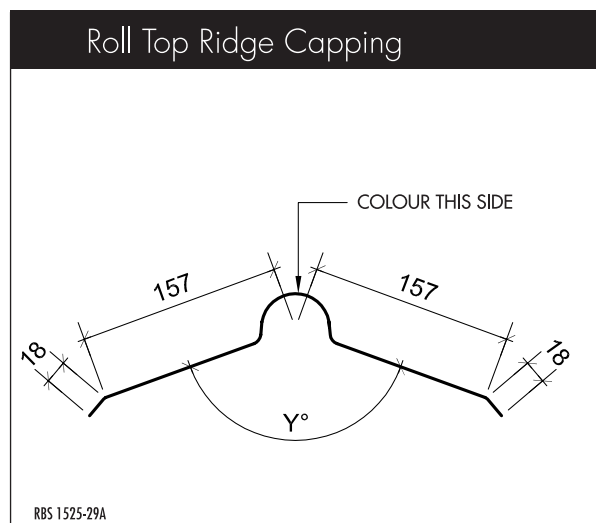
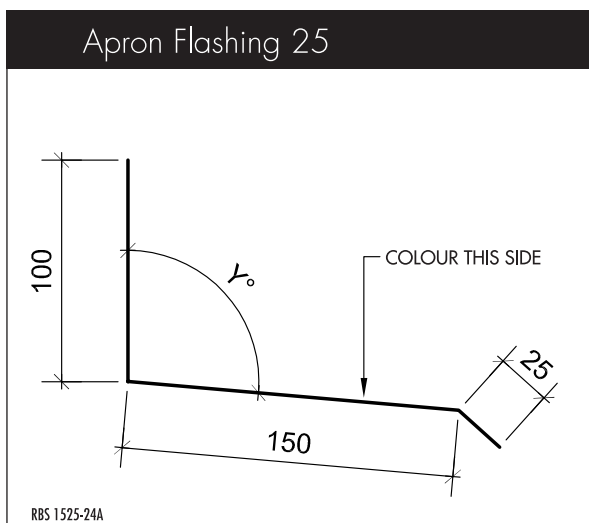
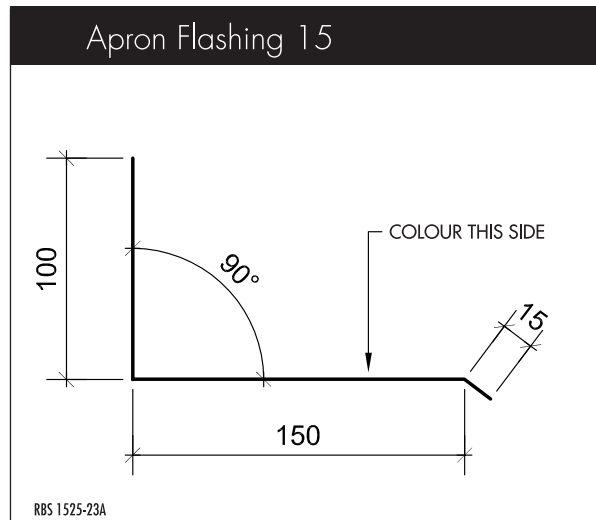
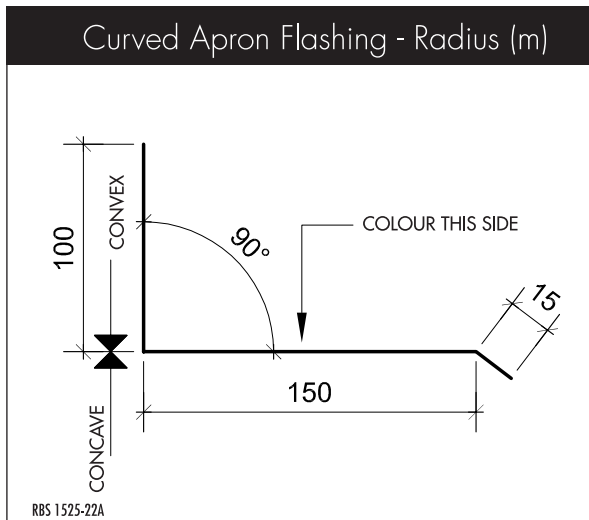
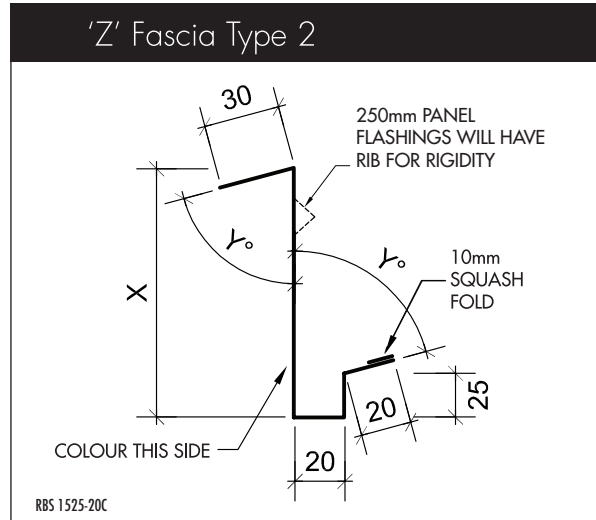
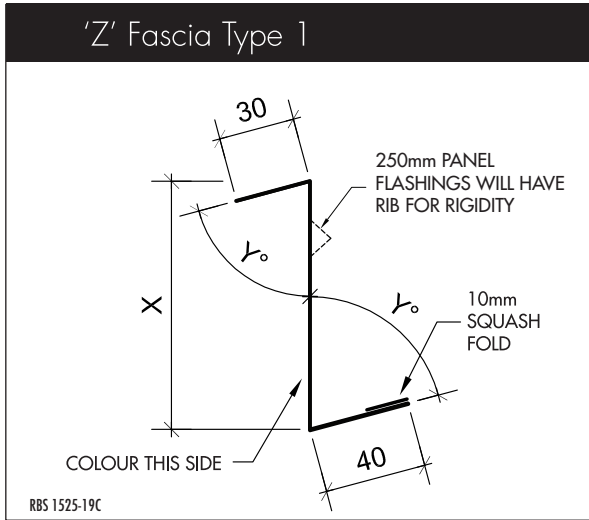
ARCPANEL Custom Roof Panel - Rainwater Goods



X = Dependent on panel thickness, Y = Dependent on roof pitch. Typically BMT = 0.55. Refer to page 26 for fixing details.

Additional Note. If poly film is supplied on any ARCPANEL panels, flashings and accessories, it must be removed within one week of manufacture. In the event that any ARCPANEL panels, flashings and accessories require storage in excess of one week, they must be fully covered and protected from direct sunlight and weathering. Failure to remove the poly film may result in difficulty to remove the film and possible staining.

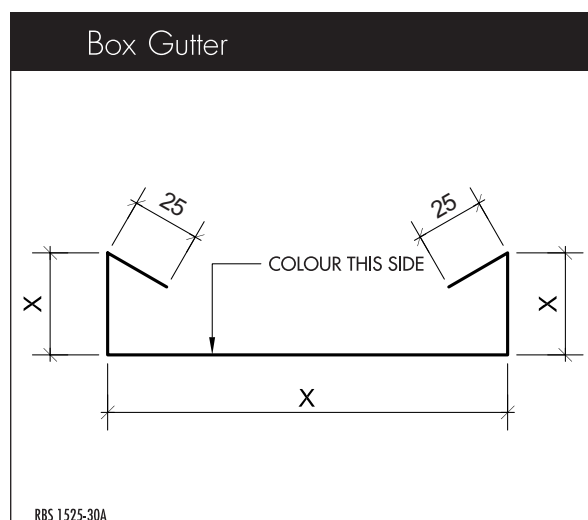
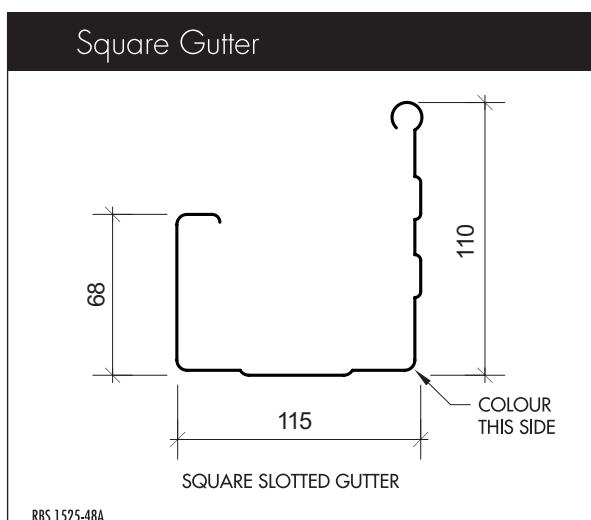
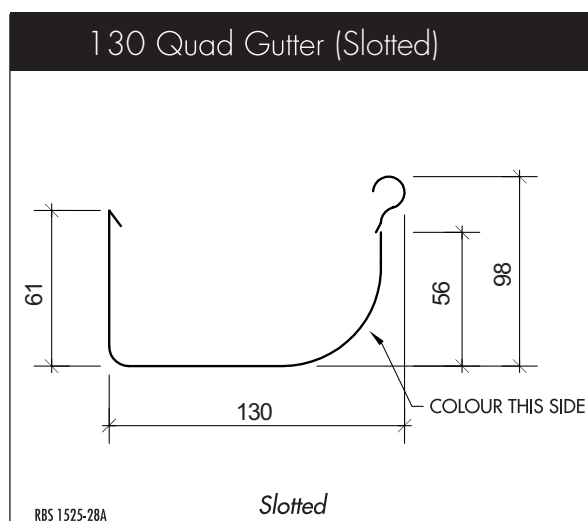
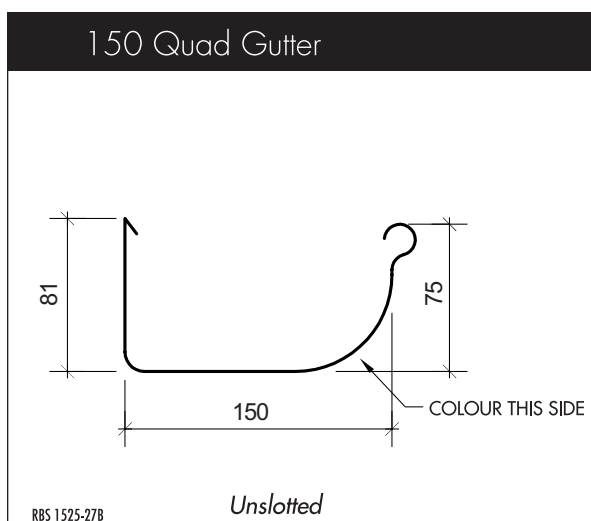
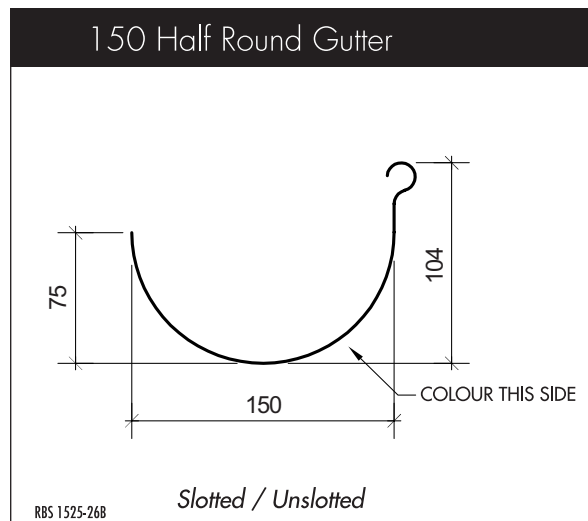
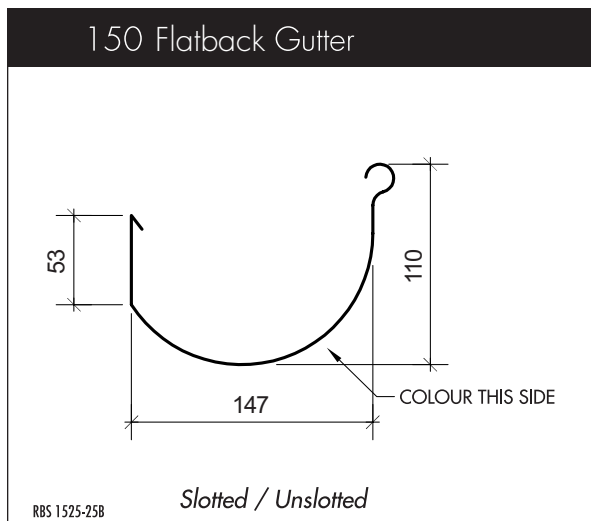
ARCPANEL Custom Roof Panel - Rainwater Goods



X = Dependent on panel thickness, Y = Dependent on roof pitch. Typically BMT = 0.55. Refer to page 26 for fixing details.

Additional Note. If poly film is supplied on any ARCPANEL panels, flashings and accessories, it must be removed within one week of manufacture. In the event that any ARCPANEL panels, flashings and accessories require storage in excess of one week, they must be fully covered and protected from direct sunlight and weathering. Failure to remove the poly film may result in difficulty to remove the film and possible staining.

ARCPANEL Custom Roof Panel - Rainwater Goods



X = Dependent on panel thickness, Y = Dependent on roof pitch. Typically BMT = 0.55. Refer to page 26 for fixing details.

* Other gutter's available, 200 half round, 175 (unslotted only) & Quad (unslotted only)

Additional Note. If poly film is supplied on any ARCPANEL panels, flashings and accessories, it must be removed within one week of manufacture. In the event that any ARCPANEL panels, flashings and accessories require storage in excess of one week, they must be fully covered and protected from direct sunlight and weathering. Failure to remove the poly film may result in difficulty to remove the film and possible staining.

ARCPANEL Custom Roof Panel - Certification



Fire Test Certificate

This is to certify that the specimen described below has been examined by BRANZ Ltd on behalf of:

Building Solutions Pty Ltd.
19 Lowermill Road
Cooroy
Queensland 4563
Australia

Test standard: AS ISO 9705
Specimen name: Ritek® Custom Panel
Specimen description: Ritek® Custom Panel nominally 250mm thick or less.

The assessed results were as follows:

Group Number 1 in accordance with BCA Specification C1.10a
Smoke Growth Rate Index (SMOGR_{RC}) < 100

Test Dates: 30 June 2006

Test Supervisor(s): P N Whiting

Certificate issued: 20 January 2011

Certificate Number: 542

Fire Testing Supervisor
For BRANZ Limited



Fire Test Certificate

This is to certify that the specimen described below has been examined by BRANZ Ltd on behalf of

Ritek Building Solutions Pty Ltd
19 Lower Mill Road
Cooroy, QLD 4563
Australia

Test standard: AS 3959-2009.

Specimen name: Ritek Building Solutions, Custom and Ecotek roofing systems.

Specimen description:

Custom: rounded corrugated style external weather sheet steel profile
Ecotek: trapezoidal style external weather sheet steel profile.

The top surface steel sheet is Colorbond® and the underside is Ritek Custom panel 0.42 mm BMT steel encapsulating a 250 mm thick or less EPS core. There is a steel end cap and Colorbond® 'Z' fascia.

Orientation: External surface exposure to BAL 29 conditions

A full description of the test specimen and the test results are given in the following Test Reports and Assessments:

Assessment report FAR 4228, 25 February 2014

Conditions of laboratory registration by IANZ do not allow assessments by the Registered Laboratory to be covered by IANZ.

Regulatory authorities are advised to examine test reports before approving any product.

The assessed results were as follows:

BAL 29 rating in accordance with AS 3959-2009

This Certificate issued: 25 February 2014

Certificate Number: 652


E Soja
Senior Fire Engineer
For BRANZ Limited

ARCPANEL Custom Roof Panel - Certification

Certificate of Test

Quote No.: LP46ANE5714

REPORT No.: FNE9120

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without written authorisation from CSIRO is forbidden.

AS/NZS 1530.3:1999 SIMULTANEOUS DETERMINATION OF IGNITABILITY, FLAME PROPAGATION, HEAT RELEASE AND SMOKE RELEASE

TRADE NAME: Ritek Custom Roof Panel

SPONSOR: Ritek Building Solutions Pty. Ltd.
19 Lowermill Road
COOROY OLD
AUSTRALIA

DESCRIPTION OF TEST SPECIMEN:

The sponsor described the specimen as a pre-fabricated roof panel comprising a profiled expanded polystyrene foam core finished on both sides with sinusoidal profile painted steel. The edges were sealed with painted steel.

Nominal thickness of steel: 0.42 mm
Nominal thickness of foam: 75 mm to 250 mm
Nominal total mass: 9.8 kg/m² (75 mm thick panel)
Colours: various

TEST PROCEDURE: Six samples were tested in accordance with Australian Standard 1530, Method for fire tests on building components and structures, Part 3: Simultaneous determination of ignitability, flame propagation, heat release and smoke release, 1999. For the test, each sample was clamped to the specimen holder in four places.

RESULTS: The following means and standard errors were obtained:

Parameter	Mean	Standard Error
Ignition Time (min)	N/A	N/A
Flame Spread Time (s)	N/A	N/A
Heat Release Integral (kJ/m ²)	N/A	N/A
Smoke Release (log ₁₀ D)	-1.040	0.115


For regulatory purposes these figures correspond to the following indices:

Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Developed Index (0-10)
0	0	0	4

The results of this fire test may be used to directly assess fire hazard, but it should be recognised that a single test method will not provide a full assessment of fire hazard under all fire conditions.

DATE OF TEST: 11 April 2008
Issued on the 11th day of April 2008 without alterations or additions.


Russell Collins
Testing Officer


Garry E Collins
Manager, Fire Testing and Assessments



This laboratory is accredited (Accreditation No. 165, Corporate Site No.3625) by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its scope of accreditation.



CSIRO Manufacturing & Infrastructure Technology
14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA
Telephone: 61 2 9490 5444 Facsimile: 61 2 9490 5555



Cyclone Testing Station
 School of Engineering and Physical Sciences
 James Cook University
 Townsville QLD 4811 Australia

Telephone (07) 4781 4754
 Facsimile (07) 4781 6788
 Email: jcu.cts@jcu.edu.au
www.jcu.edu.au/cts

SUMMARY OF TEST RESULTS – TS728a

Simulated serviceability and cyclic strength wind load testing was conducted on **125, 140, 175 and 200 mm Custom Panels**. The testing was performed with the use of new materials provided by **Ritek Building Solutions**. Note that only the cyclic strength wind load tests are NATA accredited.

Description of Panels and Set-Up Tested

Product Name: Ritek Custom Panel
 Product Details: Two 0.42 mm BMT corrugated G550 steel sheets bonded to both sides of a profiled Expanded Polystyrene (EPS) foam core
 Panel Thicknesses: 125, 140, 175 and 200 mm
 Support Details: MGP12 timber and 3 mm steel
 Fixing Details:

Panel Thickness	Supports	Fasteners	Pattern
125, 140 mm	MGP12 timber	14-10 x 175 mm Type 17	Every rib
140 mm	3 mm steel	14-14 x 175 mm self-drilling metal	Every rib
175, 200 mm	MGP12 timber	14-10 x 240 mm Type 17	Every rib

Note: All panel fasteners were fitted with cyclone washers to form cyclone assemblies.

Stitching Screws: 12-11 x 25 mm Type 17 to top and 10-12 x 25 mm Type 17 to bottom sheets at 300 mm centres

Manufacturer's Details

Name of Manufacturer: Ritek Building Solutions
 Address of Manufacturer: PO Box 730, Cooroy, QLD 4563

Report and Test Details

Report Details: Cyclone Testing Station Report No. TS728a, dated 7 July 2009
 Report Title: Serviceability and Cyclic Strength Wind Load Testing of Custom Roof Panel
 Wind Load Testing: Serviceability testing to AS4040.2/3, Low-High-Low cyclic strength testing to BCA 2009

Serviceability and Low-High-Low Cyclic Test Pressures for Successful Tests

Panel Thickness (mm)	Single Span Length (mm)	Supports	Serviceability Test Pressure (kPa)	Cyclic Strength Test Pressure (kPa)	No. of Tests	
					Serv	Strength
125	4000	Timber	3.18	5.54	1	2
125	3500		N/A	6.67	0	1
125	3000		N/A	7.98	0	2
140	4500		N/A	5.54	0	2
140	4000		3.94	N/A	1	0
140	3500		N/A	7.98	0	1
140	3250	Steel	N/A	7.98	0	1
175	3750	Timber	N/A	7.98	0	1
200	5300		N/A	5.54	0	2
200	6000		3.11	N/A	1	0

Conditions of Use

1. Test pressures to be factored down to calculate design wind pressures;
2. Refer to Report No. TS728a, (contact Ritek Building Solutions) for full details of the panels, test methods and results.

Signed 
 Mr. U. Frye
 Research Engineer


 Mr. C. J. Leitch
 Manager
 NATA Signatory



Date 08-07-09

8-7-09

ARCPANEL Custom Roof Panel - Certification



Choose products that meet Australia's highest level of BCA compliance.

CodeMark is a building product certification scheme which supports the use of new and innovative building products by providing a nationally and internationally accepted process for products to be assessed for compliance with the requirements of the building codes of Australia and New Zealand.

CodeMark strengthens the entire building supply chain and gives users confidence that their building products comply with the Building Code of Australia (or in New Zealand the New Zealand Building Code). CodeMark certificates are accredited from internationally recognised accreditation bodies, offering increased credibility and acceptance of a certificate holder's CodeMark certified products.

The scheme provides confidence and certainty to regulatory authorities and the market through the issue of a Certificate of Conformity.

How CodeMark Works: Third-party CodeMark certification bodies evaluate and certify products to ensure they meet the specified requirements of the National Construction Code (NCC) and Building Code of Australia (BCA).

Product Certification - The Australian Building Codes Board (ABCB) is committed to ensuring best practice in the building and construction industry. There are two product certification schemes to provide a nationally consistent quality of materials and products; the voluntary CodeMark building product certification scheme which the ABCB owns and jointly manages and the mandatory WaterMark plumbing and drainage product certification scheme which is managed and administered by the ABCB.

A register of CodeMark certified products is maintained by the ABCB and listed on this website. Relevant legislation requires building control authorities to accept CodeMark certified products.

Further information can be found at: <http://www.abcb.gov.au/product-certification/codemark>

Certificate of Conformity

This is to certify compliance of

Ritek® Custom Roof Panel & Ritek® Ecotek Roof Panel

Product Purpose, Use and Application

a. The Ritek® Custom Roof Panel and Ritek® Ecotek Roof Panel for roofing is certified for use where the roof is not required to achieve a Fire Resistance Level on Class 2 to 9 buildings of Type B or C or Class 1 and 10 buildings.

b. All design and fixing specifications and installations must be completed in accordance with Ritek® Custom Roof Panel Design and Detailing Manual Version 2012.02 and Ritek® Ecotek Panel Design & Detailing Manual Version 2012.02.

c. The Ritek® Custom Roof Panel Design and Detailing Manual Version 2012.02 and Ritek® Ecotek Panel Design and Detailing Manual Version 2012.02 provides details of compliant installation against this certificate in its entirety. This includes the products weatherproofing, fire hazard properties, bushfire prone areas for BAL Low, 12.5 and 19, and thermal performance. The thermal performance requirements vary between application and panel thickness. Refer to the installation documentation for specific details.

Complies with the National Construction Code – Building Code of Australia 2016

Volume One	Volume Two
<p>a. Clause A0.2 (a) being a combination of compliance with the Deemed-to-Satisfy Provisions and formulating a Performance Solution which complies with the Performance Requirements.</p> <p>b. BPI 1, SP1.2</p> <p style="margin-left: 20px;">i. BV1, B1.2</p> <p>c. CP2 and CP4.</p> <p style="margin-left: 20px;">i. Clause C1.10 (a)(i) Wall linings and ceiling linings</p> <p style="margin-left: 40px;">ii. Specification C1.10 Clause 4 – Group 1 with smoke growth rate index of less than 100.</p> <p style="margin-left: 20px;">iii. Clause C1.10 (a)(ix) Other materials including insulation materials other than lagging-type materials.</p> <p>iv. Specification C1.10 Clause 7 (including NSW Spec C1.10 NSW 7)</p> <p style="margin-left: 40px;">A. Spread of Flame = 0</p> <p style="margin-left: 40px;">B. Smoke development Index = 4</p> <p>d. FP1.4</p> <p style="margin-left: 20px;">i. GP5.1 (including NSW and QLD GP5.1, Tas GP5.1)</p> <p style="margin-left: 40px;">ii. GS.2 Protection (including NSW GS.2, SA GS.2, WA GS.3, Tas GS.3 and Tas GS.4)</p> <p>j. JP1 (including NSW J(A)P1), in NT and QLD Section J is replaced by BCA 2009 Section J</p> <p style="margin-left: 40px;">i. J1.2(a) – Thermal construction – general</p> <p style="margin-left: 40px;">ii. J1.3 Roof and ceiling construction (including SA J1.3(e) where applicable)</p>	<p>a. Clause 1.0.2 (a) being a combination of compliance with the Deemed-to-Satisfy Provisions and formulating a Performance Solution which complies with the Performance Requirements.</p> <p>b. P2.1.1 Structural stability and resistance to actions - (a), (b) and (c)</p> <p>c. P2.2.2 Weatherproofing</p> <p style="margin-left: 20px;">i. Part 3.3.4 Weatherproofing of Masonry (including all sub provisions state variations)</p> <p>d. P2.3.4 Bushfire areas (BAL Low, 12.5 and 19) (including Tas P2.3.4)</p> <p style="margin-left: 20px;">i. Part 3.7.4 Bushfire areas (including all sub provisions state variations)</p> <p>e. P2.6.1 Energy Efficiency Building (in NSW Part 2.6 does not apply, in NT Part 2.6 is replaced by BCA 2009 Part 2.6, Vic P2.6.1)</p> <p style="margin-left: 20px;">i. Part 3.12.1.1 (a) Building fabric thermal insulation</p> <p style="margin-left: 20px;">ii. Part 3.12.1.2 Roofs</p>

Conditions and Limitations

- All design and fixing specifications and installations must be completed in accordance with Ritek® Custom Roof Panel Design and Detailing Manual Version 2012.02 and Ritek® Ecotek Panel Design and Detailing Manual Version 2012.02.
- Roofs are designed in accordance with:
 - i. AS1170:2002 Part 1 (Amendment 2) and AS1170:2011 Part 2 Wind Loading Code
 - ii. AS1562.1:1992 (Amendment 3) Design and Installation of Sheet Roofing
 - iii. AS4055:2012 Wind Loads for Housing
 - iv. AS4040:1992 2/3 Low-High-Low Cyclic Strength Testing
- This certificate is limited to the details within this certificate, including the compliance elements, product description and purpose or use. This certification is to be read, considered used as a whole document and reproduced in its entirety.

ABCB Disclaimer

- This Certificate of Conformity is issued by an accredited certification body under arrangement with JAS-ANZ. The ABCB does not in any way warrant, guarantee or represent that the Product the subject of this Certificate of Conformity conforms to the BCA, nor accepts any liability arising out of the use of the Product. The ABCB disclaims to the extent permitted by law, all liability (including negligence) for claims of losses, expenses, damages and costs arising as a result of the use of the product(s) referred to in this Certificate.
- It is advised to check this Certificate of Conformity is currently valid and not withdrawn, suspended or superseded by a later issue by referring to the ABCB website, www.abcb.gov.au

John Thorpe
CertMark International

Livi Krevatin
Unrestricted Building Certifier

12/05/2016 12/05/2019

Date of Issue Date of Expiry

CMA-CM40091-401-R00

Certificate Number

Product Description

Pre-fabricated insulated roof panel, comprising metal roof sheeting, which is bonded to both sides of a profiled EPS core, pre-finished in Colourbond® colours for the top and bottom sheets. Ecotek contains a Trimdek topside and Custom Orb Colourbond® sheeting underside. Custom contains standard Custom Orb Colourbond® sheeting bonded to both sides of profiled EPS

Certificate Holder

Ritek Building Solutions
ABN: 22 750 783 066
19 Lowermill Road
Cooroy Qld 4503
Ph: 1300 929 762
W: www.ritek.net.au

Certification Body

CertMark Australia Pty Ltd
T/A CertMark Australia
ABN: 60 110 217 958
JAS-ANZ Accreditation No. 2445021DAK
PO Box 7144, Sippy Downs Qld 4556
+61 (02) 6100 4300
www.CertMark.org

ARCPANEL Custom Roof Panel - Compliance Certificate

Compliance Certificate for Building Design or Specification



TOD CONSULTING JOB NO: 06665-20150311C

RITEK CUSTOM PANEL

1. Description of component/s certified

Clearly describe the extent of work covered by this certificate, e.g. all structural aspects of the steel roof beams.

Ritek Custom Roof Panel

Prefabricated roof panel with standard Custom Orb roof sheeting, bonded both sides of a profiled EPS core.

Panels fixed into position using the specified screws (Class 4 with Cyclone Assembly Washers)

For the range of wind loads, spans and fixing spacings nominated in the Ritek Custom Panel design and detailing manual (Version 2015.01)

[Contact Ritek 1300 929 782 to design and certify projects with wind loads, spans and fixing spacings beyond the range nominated in the Ritek Custom Panel design and detailing manual (Version 2015.01)]

2. Basis of certification

Detail the basis for giving the certificate and the extent to which tests, specifications, rules, standards, codes of practice and other publications, were relied upon.

AS1170 – Parts 1 & 2 Loading Code

AS 1562.1 – Design and Installation of Metal Roofing

AS 4055 – Wind Loads for Housing

BCA – Low – High – Low cyclonic testing requirements

AS 4040 – Methods of Testing sheet roof and wall cladding

3. Reference documentation

Clearly identify any relevant documentation, e.g. numbered structural engineering plans.

Refer to Ritek Custom Panel design and detailing manual (Version 2015.01) for technical design and installation specifications.

4. Competent person details

A competent person for building work, means a person who is assessed by the building certifier for the work as competent to practise in an aspect of the building and specification design, of the building work because of the individual's skill, experience and qualifications in the aspect. The competent person must also be registered or licensed under a law applying in the State to practice the aspect.

If no relevant law requires the individual to be licensed or registered to be able to give the help, the certifier must assess the individual as having appropriate experience, qualifications or skills to be able to give the help.

If the chief executive issues any guidelines for assessing a competent person, the building certifier must use the guidelines when assessing the person.

Name (in full)

Stefan Prystupa – B.E., M.I.E. Aust

Company name (if applicable)

Tod Consulting Pty Ltd

Contact person

Phone no. business hours

07 5449 9600

Mobile no.

Fax no.

07 5449 9494

Email address

sp@todconsulting.com

Postal address

PO Box 61

NOOSAVILLE QLD

Postcode 4566

Licence or registration number (if applicable)

R.P.E.Q. 1137 NPER 97009

5. Signature of competent person

This certificate must be signed by the individual assessed by the building certifier as competent.

Signature

S. Prystupa

Date

11/03/2015

ARCPANEL Custom Roof Panel - Warranty Period

Architectural Panels Pty Ltd, (the Company), warrants that **ARCPANEL** Roofing Panels (the "Product") are manufactured from prime materials and further warrants up to a maximum period, dependent on Panel Material type, location and environmental exposure, the following:

ENVIRONMENTAL EXPOSURE - ARCPANEL TOP SHEET (ROOF SIDE) MAXIMUM WARRANTY PERIOD						
Panel Material Top Sheet (Roof Side)	Non Coastal – Location (ISO Cat. 1)	Coastal - Location >1km to 5km (ISO Cat. 2)	Marine / Industrial >200m - 1km (ISO Cat. 3)	Severe Marine / Industrial >100 - 200m (ISO Cat. 4)	Very Severe Marine / Industrial 0<100m (ISO Cat. 5)	Aquatic / Chemical / Swimming Pool - Exposure
XRW COLORBOND / ZINCALUME	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 20yrs Paint System	12yrs Corrosion 10yrs Paint System	No Warranty	No Warranty	No Warranty
ULTRA COLORBOND	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 18yrs Paint System	15yrs Corrosion 10yrs Paint System	10yrs Corrosion 10yrs Paint System	6yrs Corrosion 6yrs Paint System
ARCPANEL XTREME	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 18yrs Paint System	20yrs Corrosion 15yrs Paint System	15yrs Corrosion 10yrs Paint System	15yrs Corrosion 10yrs Paint System
COLORBOND STAINLESS	30yrs Corrosion 25yrs Paint System	30yrs Corrosion 25yrs Paint System	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 15yrs Paint System	25yrs Corrosion 15yrs Paint System	25yrs Corrosion 15yrs Paint System

ENVIRONMENTAL EXPOSURE - ARCPANEL PANEL BOTTOM SHEET (CEILING SIDE) MAXIMUM WARRANTY PERIOD						
Panel Material Bottom Sheet (Ceiling Side)	Non Coastal – Location (ISO Cat. 1)	Coastal - Location >1km to 5km (ISO Cat. 2)	Marine / Industrial >200m - 1km (ISO Cat. 3)	Severe Marine / Industrial >100 - 200m (ISO Cat. 4)	Very Severe Marine / Industrial 0<100m (ISO Cat. 5)	Aquatic / Chemical / Swimming Pool - Exposure
XRW COLORBOND / ZINCALUME	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 20yrs Paint System	12yrs Corrosion 10yrs Paint System	No Warranty	No Warranty	No Warranty
ULTRA COLORBOND	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 18yrs Paint System	15yrs Corrosion 10yrs Paint System	10yrs Corrosion 10yrs Paint System	6yrs Corrosion 6yrs Paint System
ARCPANEL XTREME	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 20yrs Paint System	20yrs Corrosion 18yrs Paint System	20yrs Corrosion 15yrs Paint System	15yrs Corrosion 10yrs Paint System	15yrs Corrosion 10yrs Paint System
COLORBOND STAINLESS	30yrs Corrosion 25yrs Paint System	30yrs Corrosion 25yrs Paint System	25yrs Corrosion 20yrs Paint System	25yrs Corrosion 15yrs Paint System	25yrs Corrosion 15yrs Paint System	25yrs Corrosion 15yrs Paint System

Definitions:

- Warranty Periods** shown in the table are the maximum warranty periods available. A specific project warranty will be determined in consideration of the intended use of the Product and the location at which the Product will be used. Warranty periods for severe / very severe marine applications are conditional and subject to calm, exposed & surf conditions.
- Corrosion Warranty** is prior to corrosion to perforation by weathering in the natural elements.
- Paint System Warranty** is that paint system will not flake or peel by weathering in the natural elements.
- Structural Performance Warranty** is governed by the lowest Corrosion Warranty period of the selected Panel Material.
- Environmental Exposure** refers to the Panel Material being subject or allowing to be subjected to an action, influence, or condition.
- Panel Material** refers to the top and bottom sheeting material used to manufacture the Product.

Marine Definition:

Surf: Area exposed to breaking surf and ocean spray

Exposed: Open expanses of salt or brackish water exposed to onshore winds, but not typically prone to breaking surf

Calm: Protected areas of salt or brackish water, including ports, harbours, bays, and river estuaries

Refer to Warranty Full Terms and Conditions

ARCPANEL Custom Roof Panel Warranty Terms & Conditions

Colorbond®

Warranty Full Terms and Conditions

The warranty is subject to the following terms and conditions:

- The Product is installed in accordance with the Company's published fixing recommendations current at the time of supply and conforms to AS 3566 Class 4.
- If installation is delayed by more than one month after delivery then packaging must be removed and replaced by a cover which does not apply pressure to the Product but provides full protection from weather and direct sunlight.
- All flashings, fasteners or components fixed to or used with the product must be manufactured from materials approved by the Company.
- Installation is made in environments/locations using only recommended materials as listed above.
- Installed pitch of the roof is equal to or greater than 5 degrees for Product with corrugated top sheet profile and 2 degrees for product with Trimdek top sheet profile above the horizontal.
- The warranty applies to the product only, all flashings, fasteners or components fixed to the roof are excluded.
- The Product must not be scratched, abraded, or damaged in any way, or coated with an incompatible material.
- The warranty does not apply if the defective area comprises less than 10% of the sheet length. Costs of dismantling and re-assembly as well as other costs will not be covered by ARCPANEL.
- Maintenance cleaning of the Product is required wherever the finish is not washed by rain to remove traces of dust, dirt and any build-up of salts or chemicals. Examples of applications requiring maintenance cleaning include, but are not limited to, fascia, soffits, eaves, car ports, patios and internal ceiling / underside of roof areas which are exposed to any build-up of salts or chemicals. Maintenance cleaning must be done six monthly as a minimum, or every three months in coastal areas where marine salt is prevalent and/or in aquatic/swimming pool applications and/or areas where high levels of industrial fallout occur. Maintenance cleaning must be conducted in accordance with the Company's "Maintaining Your ARCPANEL Roof System" brochure.
- Where used as an internal liner in a swimming pool environment the warranty is conditional upon:
 - No direct splash contact of the underside of roof by water from the pool; Internal RH <50% at all times achieved by effective HVAC; Minimal interstitial condensation (usually temporary overnight super cooling effect) consistent with this level of RH on a correctly installed roof (effective sealing of vapour check);
 - Avoidance of chlorine deposits, and hence hydrochloric acid, to underside of roof;
 - All cut edges to be sealed;
 - Regular ventilation through louvers;
 - Any mechanical extraction must be sealed; and
 - Open ceiling line without suspended ceiling below.
- The design and structural data specified is based on standard details. The successful installation depends on factors outside the control of the Company. For every project, the buyer's Design Engineer must be satisfied that the application of these guidelines will achieve the required level of structural performance and is suited to the environment/location.

This warranty does not cover:

- Consequential loss or damage, howsoever arising, whether or not it was aware of the possibility of such loss or damage;
- willful or accidental damage caused by others to goods supplied by the company;
- erection or structural defects;
- normal weathering, which includes natural reduction in paint gloss and a natural colour change of the paint finish;
- "baking of poly film onto materials. If poly film is supplied on any panels, flashings and accessories it must be removed as soon as practical after delivery, but no later than one month after delivery.
- The Product after any application of post paint treatments or systems.
- The warranty does not apply if the defective area comprises less than 10% of the sheet length. Costs of dismantling and re-assembly as well as other costs are not covered by the Company.
- perforations partly or wholly due to the following causes:
 - mechanical, chemical, corrosion or other damage sustained during transport, handling, storage, erection or subsequent to erection.
 - attack from chemical agents, fumes, liquids or solids other than direct rain falling onto the Product under warranty.
 - contact with soils, ashes, fertilizers or other moisture retaining substances.
 - areas in metallic contact with lead or copper or subject to run off from copper flashings and pipes.
 - Failure to remove debris and/or failure to provide free drainage of water including internal condensation from all surfaces of the Product.
 - deterioration of the Product caused by contact with green or wet timber or treated timber
 - installations subject to unusually corrosive environments at any time in the future.
 - storm and tempest or other acts of God.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

If it is proven to the reasonable satisfaction of the Company that any goods supplied by the Company or any services performed by the Company are defective, then the Company will (at the option of the Company) rectify the defect by the replacement, repair or payment for the cost of replacement of the affected goods, limited exclusively to the pro-rata share of the goods, as follows:

- Replacement goods will be supplied at a discount, which bears the same ratio to the then current price as that part of the warranty period not achieved bears to the full warranty period.
- The Company shall only be liable for:
 - The cost of replacing the affected product, or
 - The cost of having the product repaired, whichever is the lowest.

All warranties other than those specified by the Company are hereby excluded, and all conditions, obligations and liabilities, however arising, are hereby excluded. Nothing in this warranty, however, shall be construed as affecting any rights the buyer may have under Australian Consumer Law, the Trade Practices Act or any other Legislation which gives the buyer rights which cannot be modified or excluded by agreement.

Due to Architectural Panels Pty Ltd policy of continued improvement to its systems, the specifications and details contained in its publications may change without notice.

COLOUR RANGE

	Basalt™
	Classic Cream™
	Cottage Green
	Cove™
	Deep Ocean®
	Dune®
	Evening Haze®
	Gully™
	Ironstone®
	Jasper®
	Mangrove™
	Manor Red®
	Monument®
	Night Sky®
	Pale Eucalypt®
	Paperbark®
	Shale Grey®
	Surfmist®
	Terrain™
	Wallaby™
	Whitehaven®
	Windspray®
	Woodland Grey®
	Zincalume
	XTREME
	Off White
	STAINLESS
	Surfmist®

For further information on COLORBOND® steel, the following technical bulletins are available from ARCPANEL.

- Tb-1a steel roofing products – selection guide
- Tb-4 maintenance of Colorbond® steel and Zincalume® steel
- Tb-8 flashing materials for Zincalume® steel and Colorbond® steel sheet
- Tb-10 cut edge protection of Zinc-coated and Zinc/aluminium alloy-coated steel



I like the simplicity of the insulated roof system. Architecturally, I was attracted to the incredible cantilevers provided with such a thin elegant profile. Structurally - it can achieve enormous spans and on an environmental note, it provides terrific thermal comfort and is re-usable."

Scott Carpenter
Scott Carpenter Architect

1300 200 004

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ROOF SYSTEMS

ARC PANEL Custom Roof Panel
Design & Detailing Manual
Version 2015.02

