

Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
www.gamcorp.com.au Email: melbourne@gamcorp.com.au
35 Butler Street, Richmond VIC 3121 Tel: 03 9543 2211

Our Ref: 9981-03-04(RE8726-02-01)/JD
4 July 2021

Tradezone Pty Ltd (Brand Name: Powerwave)
PO Box 3137, Helensvale
QLD 4212

PV Array Frame Engineering Certification

RE: AS/NZ 1170.2 Certification for Tilt Mounted System on Lysaght Klip Lok 700 High strength (Concealed Fix Roof)

Gamcorp (Melbourne) Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Tilt Mounted System on Lysaght Klip Lok 700 High strength (Concealed Fix Roof) within Australia. The design check is based on the information and test reports provided by Tradezone Pty Ltd.

This certificate is **only valid** for Tilt Mounted System on Lysaght Klip Lok 700 High strength (Concealed Fix Roof) itself. The roof structure or the building structure and PV panels shall be assessed separately and accordingly.

This certificate is **only valid** when roof clamp fixing to the **full rib** of roof sheeting on the top of the purlins. If the fixing condition is different from those conditions, interface spacing shall be reviewed and validated.

This certificate is **only valid** as a whole. Any information extracted from this certificate is not valid if standing alone.

We find the Installation of Tilt Mounted System on Lysaght Klip Lok 700 High strength (Concealed Fix Roof) for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to AS/NZ1170.2:2011(R2016) Wind actions
- Wind region **A, B, C, D**
- Wind terrain category **2 & 3**
- Wind average recurrence interval of **200 years**
- Maximum building height **20m**
- The maximum assessed PV panel dimensions are **1670mm x 1000mm, 1970mm x 1000mm, 2100mm x 1050mm, 2200mm x 1200mm, 2400mm x 1200mm**
- Weight of the PV panel and array frame to be 15 kg/m²
- Rails to be **MA Rails**
- Roof clamp to be **Mibet Roof Clamp 700 Hi-strength**
- Material of Rails to be **AL6005-T5 UNO**
- Each PV panel to be installed using **2 rails** minimum in all circumstances
- Roof clamps to be fixed only to the **full rib** of roof sheeting on the top of the purlins (See **Figure 1**)
- Installation of PV panels to be done in accordance with the PV panels installation manual

*ISO 9001:2015 Registered Firm
Certificate No: AU1222*

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- The certification **excludes** assessment of roof structure and PV panels

Refer to attached summary table for interface spacing (Unit: mm)

NOTES:

- **The recommended spacing nominated in this certification is based on the capacity of the array frame and the fixing of array frames to the roof, not the roof structure and PV panels. It is the responsibility of the installer to adopt the most critical spacing.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**
- **The capacity of roof clamp was obtained from test report no. 8524-01/JD, dated 24th July 2020 and provided by Melbourne Testing Services.**
- **The spacing shown in the interface tables shall be adjusted based on the assessment and requirement of the roof structures.**

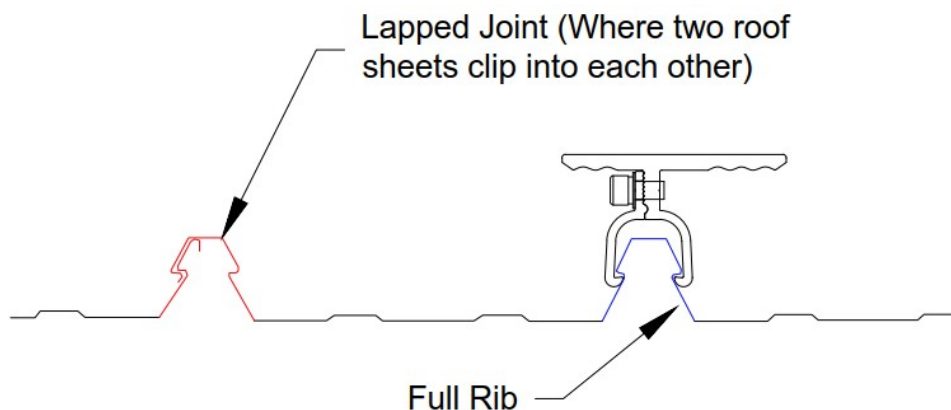


Figure 1 – Full Rib Location For Indicative



Relationships built on trust



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Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed by **Jiewen Deng** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles. This certificate is only valid till 05/07/2023. Gamcorp should be contacted for future validation. Contact Gamcorp for customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp (Melbourne) Pty Ltd

A handwritten signature in black ink, appearing to read 'L. Van Spaandonk'.

L. Van Spaandonk
Principal Engineer
FIEAust CPEng NER 5038980
NT Registration: 244137ES
QLD Registration: 18703
VIC Registration: EC 45972
TAS Registration: CC7366

Attachments:

- Summary table for interface spacing, Tilt mount - Lysaght Klip Lok 700 High strength(Concealed Fix Roof)

*ISO 9001:2015 Registered Firm
Certificate No: AU1222*



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Gamcorp (Melbourne) Pty Ltd
Consulting Structural & Civil Engineers
A.C.N 141 076 904
A.B.N 73 015 060 240

www.gamcorp.com.au
melbourne@gamcorp.com.au

Structural Design Documentation

Mibet Tilt Array Frame System Spacing Table

According to AS/NZS 1170.2-2011 (R2016)

with MA Rail – Lysaght Klip-Lok 700 Hi-Strength

within Australia

Terrain Category 2 & 3

For: Tradezone Pty Ltd (Brand Name: Powerwave)
PO Box 3137, Helensvale
QLD 4212

Job Numl 9981-03-04
Date: 02/07/2021



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Job No: 9981-03-04
Client: Tradezone Pty Ltd (Brand Name: Powerwave)
Project: Mibet Tilt Array Frame System Spacing Table
with MA Rail - Lysaght Klip-Lok 700 Hi-Strength
Address: within Australia

Australian Standards

AS/NZS 1170.0:2002 – Structural design actions, Part 0: General principles
AS/NZS 1170.1:2002 (R2016) – Structural design actions, Part 1: Permanent, imposed
and other actions
AS/NZS 1170.2:2011 (R2016) – Structural design actions, Part 2: Wind actions
AS/NZS 1664.1:1997 – Aluminium structures - Limit state design
AS 4100:2020 – Steel Structures
AS/NZS 4600:2018 – Cold-formed Steel Structures

Wind Terrain Category: WTC 2 & 3

Designed: JD
Checked: AA
Date: Jul-21

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 1.67m x 1m
 Terrain category: 2

Tilt angle to roof surface (α) - $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	535	820	1115	1610	440	670	910	1405	300	605	815	1260	245	570	775	1195
B	--	550	745	1145	--	450	610	935	--	410	550	840	--	385	515	790
C	--	--	480	735	--	--	395	600	--	--	--	545	--	--	--	515
D	--	--	--	475	--	--	--	390	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	245	575	780	1200	--	470	635	975	--	425	575	880	--	310	545	830
B	--	385	520	800	--	--	430	655	--	--	390	590	--	--	365	555
C	--	--	--	515	--	--	--	425	--	--	--	385	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	500	675	1040	--	325	555	850	--	225	500	765	--	--	475	720
B	--	--	455	695	--	--	375	570	--	--	--	515	--	--	--	485
C	--	--	--	450	--	--	--	370	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 1.67m x 1m
 Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	645	995	1355	1730	645	995	1355	1730	560	855	1165	1640	500	765	1040	1570
B	435	665	900	1395	435	665	900	1395	375	575	775	1200	--	515	690	1065
C	--	430	585	895	--	430	585	895	--	375	505	770	--	--	450	685
D	--	--	375	570	--	--	375	570	--	--	--	495	--	--	--	440

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	455	695	945	1465	455	695	945	1465	300	600	815	1255	--	535	725	1120
B	--	465	630	965	--	465	630	965	--	405	545	835	--	--	485	745
C	--	--	410	625	--	--	410	625	--	--	--	540	--	--	--	480
D	--	--	--	405	--	--	--	405	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	300	605	820	1265	300	605	820	1265	--	525	705	1085	--	465	630	970
B	--	405	550	840	--	405	550	840	--	--	475	725	--	--	425	645
C	--	--	--	545	--	--	--	545	--	--	--	470	--	--	--	420
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 1.97m x 1m
 Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	455	695	950	1480	245	570	775	1200	--	515	695	1075	--	485	660	1015
B	--	465	630	975	--	385	520	795	--	345	470	715	--	325	440	675
C	--	--	410	625	--	--	335	515	--	--	--	465	--	--	--	435
D	--	--	--	405	--	--	--	330	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	490	665	1020	--	300	545	835	--	--	490	750	--	--	465	710
B	--	325	445	680	--	--	365	555	--	--	325	505	--	--	--	475
C	--	--	--	440	--	--	--	360	--	--	--	325	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	425	575	885	--	--	470	720	--	--	425	650	--	--	310	615
B	--	--	385	590	--	--	220	485	--	--	--	435	--	--	--	410
C	--	--	--	385	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 1.97m x 1m
 Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	550	845	1155	1645	550	845	1155	1645	475	730	995	1550	425	650	885	1375
B	370	565	765	1185	370	565	765	1185	220	490	660	1020	--	435	590	905
C	--	370	495	760	--	370	495	760	--	220	430	655	--	--	380	585
D	--	--	220	485	--	--	220	485	--	--	--	420	--	--	--	375

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	290	595	805	1245	290	595	805	1245	--	510	690	1070	--	455	620	955
B	--	400	535	825	--	400	535	825	--	345	465	710	--	--	415	635
C	--	--	350	535	--	--	350	535	--	--	--	460	--	--	--	410
D	--	--	--	345	--	--	--	345	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	515	695	1075	--	515	695	1075	--	445	600	925	--	300	535	825
B	--	345	465	715	--	345	465	715	--	--	405	620	--	--	360	550
C	--	--	--	465	--	--	--	465	--	--	--	400	--	--	--	355
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.1m x 1.05m
 Terrain category: 2

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	245	650	885	1385	--	535	720	1120	--	475	650	1005	--	345	615	950
B	--	435	590	910	--	350	485	740	--	--	435	670	--	--	410	630
C	--	--	385	585	--	--	--	480	--	--	--	430	--	--	--	410
D	--	--	--	375	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	355	620	955	--	--	505	775	--	--	355	700	--	--	260	660
B	--	--	415	635	--	--	240	520	--	--	--	470	--	--	--	440
C	--	--	--	410	--	--	--	235	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	535	825	--	--	290	675	--	--	--	605	--	--	--	575
B	--	--	360	550	--	--	--	450	--	--	--	410	--	--	--	385
C	--	--	--	355	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.1m x 1.05m
 Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	515	790	1080	1610	515	790	1080	1610	310	680	925	1445	--	605	825	1285
B	245	525	715	1105	245	525	715	1105	--	455	615	950	--	405	550	845
C	--	340	465	710	--	340	465	710	--	--	400	610	--	--	355	545
D	--	--	--	455	--	--	--	455	--	--	--	395	--	--	--	350

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	555	750	1165	--	555	750	1165	--	390	645	1000	--	255	575	890
B	--	370	500	770	--	370	500	770	--	--	435	665	--	--	385	590
C	--	--	--	495	--	--	--	495	--	--	--	430	--	--	--	385
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	475	650	1005	--	475	650	1005	--	225	560	865	--	--	500	770
B	--	--	435	665	--	--	435	665	--	--	375	575	--	--	230	515
C	--	--	--	435	--	--	--	435	--	--	--	375	--	--	--	230
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.2m x 1.2m
 Terrain category: 2

Tilt angle to roof surface (α) - $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	670	1320	--	--	505	1070	--	--	--	785	--	--	--	715
B	--	--	565	865	--	--	260	710	--	--	--	640	--	--	--	600
C	--	--	--	555	--	--	--	295	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	--	715	--	--	--	605	--	--	--	475	--	--	--	--
B	--	--	--	605	--	--	--	380	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	--	630	--	--	--	--	--	--	--	--	--	--	--	--
B	--	--	--	450	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.2m x 1.2m
 Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	610	1030	1585	--	610	1030	1585	--	410	700	1380	--	--	630	1225
B	--	385	685	1055	--	385	685	1055	--	--	590	910	--	--	410	805
C	--	--	--	675	--	--	--	675	--	--	--	585	--	--	--	510
D	--	--	--	430	--	--	--	430	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	595	1110	--	--	595	1110	--	--	--	770	--	--	--	675
B	--	--	305	735	--	--	305	735	--	--	--	635	--	--	--	565
C	--	--	--	355	--	--	--	355	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H \leq 5				5<H \leq 10				10<H \leq 15				15<H \leq 20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	--	785	--	--	--	785	--	--	--	665	--	--	--	600
B	--	--	--	635	--	--	--	635	--	--	--	550	--	--	--	355
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.4m x 1.2m
 Terrain category: 2

Tilt angle to roof surface (α) - $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	620	1210	--	--	--	860	--	--	--	700	--	--	--	665
B	--	--	395	795	--	--	--	650	--	--	--	585	--	--	--	550
C	--	--	--	510	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	--	665	--	--	--	500	--	--	--	--	--	--	--	--
B	--	--	--	555	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) - $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H≤5				5<H≤10				10<H≤15				15<H≤20			
	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal	Corner	Edge	Interme diate	Internal
A	--	--	--	595	--	--	--	--	--	--	--	--	--	--	--	--
B	--	--	--	320	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Klip-Lok 700 High Strength - mm

Type of Rail: MA Rail
 Type of Interface: Tilt Roof Set
 Solar Panel Dimension: 2.4m x 1.2m
 Terrain category: 3

Tilt angle to roof surface (α) – $\alpha \leq 15^\circ$

Wind Region	Building Height – H (m)															
	H ≤ 5				5 < H ≤ 10				10 < H ≤ 15				15 < H ≤ 20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	515	765	1485	--	515	765	1485	--	--	645	1265	--	--	595	1125
B	--	260	625	970	--	260	625	970	--	--	535	835	--	--	320	740
C	--	--	--	620	--	--	--	620	--	--	--	535	--	--	--	360
D	--	--	--	275	--	--	--	275	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $15^\circ < \alpha \leq 25^\circ$

Wind Region	Building Height – H (m)															
	H ≤ 5				5 < H ≤ 10				10 < H ≤ 15				15 < H ≤ 20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	450	1020	--	--	450	1020	--	--	--	700	--	--	--	630
B	--	--	--	675	--	--	--	675	--	--	--	580	--	--	--	400
C	--	--	--	235	--	--	--	235	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt angle to roof surface (α) – $25^\circ < \alpha \leq 30^\circ$

Wind Region	Building Height – H (m)															
	H ≤ 5				5 < H ≤ 10				10 < H ≤ 15				15 < H ≤ 20			
	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal	Corner	Edge	Intermediate	Internal
A	--	--	--	700	--	--	--	700	--	--	--	615	--	--	--	500
B	--	--	--	585	--	--	--	585	--	--	--	385	--	--	--	235
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

General Notes

Note 1 Following components are satisfied to use according to AS/NZS 1170.2-2011(R2016)

Components	Part Number	Description
MA Rail	MA Rail	as per drawing provided by client
Inter Clamp Kit (MA)	Inter Clamp Kit (MA)	as per drawing provided by client
End Clamp Kit (MA)	End Clamp Kit (MA)	as per drawing provided by client
Standard Tilt System	Standard Tilt System	as per drawing provided by client
Roof Clamp	Roof Clamp 700	as per drawing provided by client

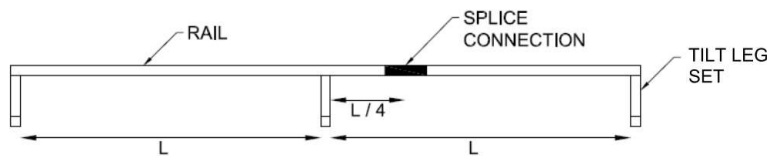
Note 2 Maximum uplift wind pressure is limited to 5 kPa. "--" states more uplift pressure.

Note 3 Tilt angle is measured from roof surface.

Note 4 Deflection is limited to Minimum of L/120 and 15mm

Note 5 Terrain Category 2 (TC2) refers to open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.
 Terrain Category 3 (TC3) refers to terrain with numerous closely spaced obstructions having heights generally from 3 m to 10 m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. suburban housing, light industrial estates or dense forests.

Note 6 The optimised location of rail splice connection is at quarter length of the spacing of the interface. No Splice connection should be placed at the centre of spacing or over the interface.



Note 7 Refer Figure 1 for definition of roof zones.

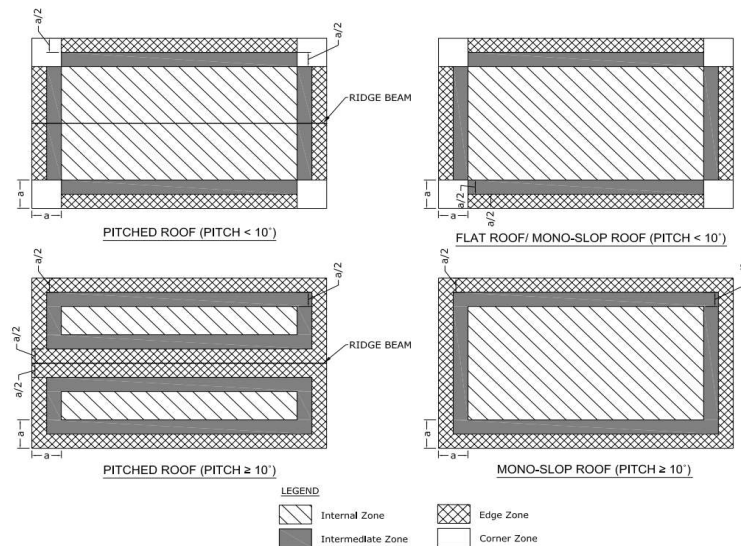


Figure 1 - Roof Zones Definition

In Figure 1, the value of dimension "a" is the minimum of 0.2b, 0.2d and h. (b & d are building dimensions and h is its height)