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35 Butler Street, Richmond VIC 3121 Tel: 03 9543 2211

Our Ref: 9981-03-06(RE8726-02-03)/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 Longline 305 (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 Longline 305 (Concealed Fix Roof). The design check is based on the information and test reports provided by Tradezone Pty Ltd.

For a definition of a **lapped joint** in the roof sheeting, please see **Figure 1**.

This certificate is **only valid** for Tilt Mounted System on Lysaght Longline 305 (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 **lapped joints** of roof sheeting on 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 Longline 305 (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
- Material of Rails to be **AL6005-T5 UNO**
- Rails to be **MA Rails**
- Roof Clamp to be **Mibet Roof Clamp longline 305**
- Each PV panel to be installed using **2 rails** minimum in all circumstances
- Roof clamps to be fixed only to the **lapped joints** of roof sheeting on top of the purlins (See **Figure 1**)

ISO 9001:2015 Registered Firm
Certificate No: AU1222

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- Installation of PV panels to be done in accordance with the PV panels installation manual
- 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. 8524-03/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.**

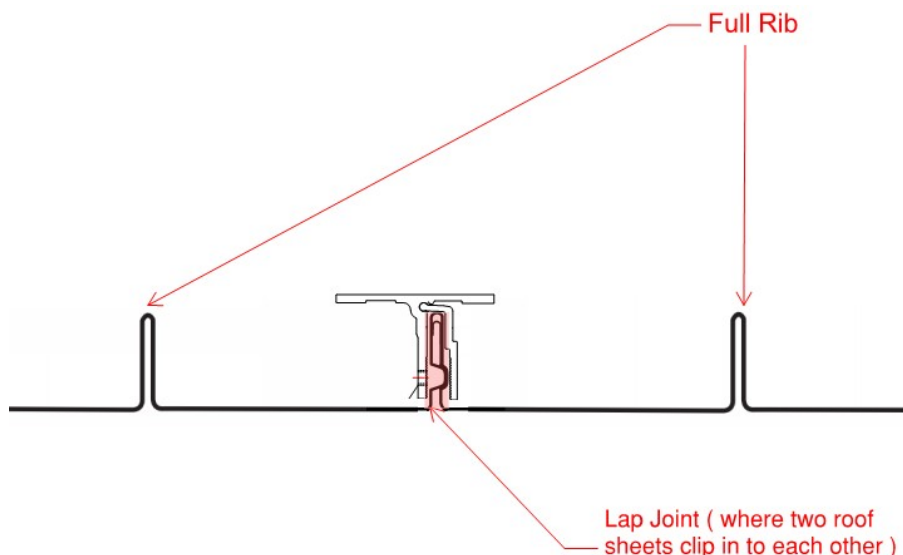


Figure 1 - Lapped Joint Definition



Relationships built on trust



Gamcorp (Melbourne) Pty Ltd A.C.N 141 076 904 A.B.N 73 015 060 240
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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 Longline 305;

*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

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Structural Design Documentation

Mibet Tilt Array Frame System Spacing Table

According to AS/NZS 1170.2-2011 (R2016)

with MA Rail – Lysaght Longline 305

within Australia

Terrain Category 2 & 3

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

Job Numl 9981-03-06 (RE8726-02-03)
Date: 02/07/2021



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ISO 9001:2015 Registered Firm
Certificate No: AU1222

Job No: 9981-03-06
Client: Tradezone Pty Ltd (Brand Name: Powerwave)
Project: Mibet Tilt Array Frame System Spacing Table
with MA Rail - Lysaght Longline 305
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 Longline 305 - 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	350	535	730	1140	--	440	595	920	--	395	535	825	--	375	505	780
B	--	360	485	750	--	--	400	610	--	--	360	550	--	--	340	520
C	--	--	--	480	--	--	--	395	--	--	--	355	--	--	--	335
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	375	510	785	--	--	415	640	--	--	375	575	--	--	355	545
B	--	--	340	525	--	--	--	430	--	--	--	385	--	--	--	365
C	--	--	--	340	--	--	--	--	--	--	--	--	--	--	--	--
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	--	325	445	680	--	--	365	555	--	--	325	500	--	--	--	475
B	--	--	--	455	--	--	--	375	--	--	--	335	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	425	650	890	1400	425	650	890	1400	365	560	765	1195	325	500	680	1060
B	--	435	590	915	--	435	590	915	--	375	510	785	--	335	455	695
C	--	--	380	585	--	--	380	585	--	--	325	505	--	--	--	450
D	--	--	--	375	--	--	--	375	--	--	--	230	--	--	--	--

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	620	960	--	455	620	960	--	395	530	820	--	350	475	735
B	--	--	415	635	--	--	415	635	--	--	355	545	--	--	220	485
C	--	--	--	410	--	--	--	410	--	--	--	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	--	395	535	830	--	395	535	830	--	340	460	710	--	--	415	635
B	--	--	360	550	--	--	360	550	--	--	--	475	--	--	--	425
C	--	--	--	355	--	--	--	355	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	620	970	--	375	505	785	--	335	455	705	--	220	430	665
B	--	--	415	640	--	--	340	520	--	--	--	470	--	--	--	440
C	--	--	--	410	--	--	--	335	--	--	--	--	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	220	435	670	--	--	355	545	--	--	220	490	--	--	--	465
B	--	--	--	445	--	--	--	365	--	--	--	325	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	375	580	--	--	--	475	--	--	--	425	--	--	--	405
B	--	--	--	385	--	--	--	220	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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 \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	360	555	755	1195	360	555	755	1195	--	475	650	1015	--	425	580	900
B	--	370	500	775	--	370	500	775	--	220	435	670	--	--	385	595
C	--	--	285	500	--	--	285	500	--	--	--	430	--	--	--	380
D	--	--	--	220	--	--	--	220	--	--	--	--	--	--	--	--

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	--	390	525	815	--	390	525	815	--	335	455	700	--	--	405	625
B	--	--	350	540	--	--	350	540	--	--	--	465	--	--	--	415
C	--	--	--	350	--	--	--	350	--	--	--	--	--	--	--	--
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	--	335	455	705	--	335	455	705	--	--	395	605	--	--	350	540
B	--	--	--	470	--	--	--	470	--	--	--	405	--	--	--	360
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	425	580	905	--	345	475	735	--	--	425	655	--	--	400	620
B	--	--	385	595	--	--	--	485	--	--	--	440	--	--	--	410
C	--	--	--	385	--	--	--	--	--	--	--	--	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	405	625	--	--	--	510	--	--	--	455	--	--	--	435
B	--	--	--	415	--	--	--	245	--	--	--	--	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	350	540	--	--	--	440	--	--	--	395	--	--	--	375
B	--	--	--	360	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	230	515	705	1115	230	515	705	1115	--	445	605	950	--	395	540	840
B	--	340	470	725	--	340	470	725	--	--	405	625	--	--	360	555
C	--	--	--	465	--	--	--	465	--	--	--	400	--	--	--	355
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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	--	360	490	760	--	360	490	760	--	--	425	655	--	--	375	580
B	--	--	--	505	--	--	--	505	--	--	--	435	--	--	--	385
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	425	660	--	--	425	660	--	--	365	565	--	--	--	505
B	--	--	--	435	--	--	--	435	--	--	--	375	--	--	--	230
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	235	555	865	--	--	340	700	--	--	235	625	--	--	--	595
B	--	--	--	570	--	--	--	465	--	--	--	420	--	--	--	390
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	--	595	--	--	--	485	--	--	--	325	--	--	--	260
B	--	--	--	395	--	--	--	--	--	--	--	--	--	--	--	--
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	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal	Corner	Edge	Intermedate	Internal
A	--	--	--	515	--	--	--	285	--	--	--	--	--	--	--	--
B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	--	495	675	1065	--	495	675	1065	--	310	580	905	--	--	515	805
B	--	--	445	690	--	--	445	690	--	--	265	595	--	--	--	530
C	--	--	--	445	--	--	--	445	--	--	--	265	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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	--	--	465	725	--	--	465	725	--	--	235	625	--	--	--	555
B	--	--	--	480	--	--	--	480	--	--	--	415	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	235	630	--	--	235	630	--	--	--	540	--	--	--	475
B	--	--	--	415	--	--	--	415	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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	--	--	505	790	--	--	260	640	--	--	--	575	--	--	--	545
B	--	--	--	520	--	--	--	425	--	--	--	265	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	545	--	--	--	325	--	--	--	--	--	--	--	--
B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	475	--	--	--	--	--	--	--	--	--	--	--	--
B	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Tilt Array Frame System Spacing Table For Concealed Fix Roof – Lysaght Longline 305 - 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 \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	--	340	620	975	--	340	620	975	--	--	530	830	--	--	475	735
B	--	--	410	635	--	--	410	635	--	--	--	545	--	--	--	485
C	--	--	--	405	--	--	--	405	--	--	--	--	--	--	--	--
D	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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	--	--	310	665	--	--	310	665	--	--	--	570	--	--	--	510
B	--	--	--	440	--	--	--	440	--	--	--	--	--	--	--	--
C	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
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	--	--	--	575	--	--	--	575	--	--	--	495	--	--	--	325
B	--	--	--	265	--	--	--	265	--	--	--	--	--	--	--	--
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 305	Roof Clamp 305	as per drawing provided by client

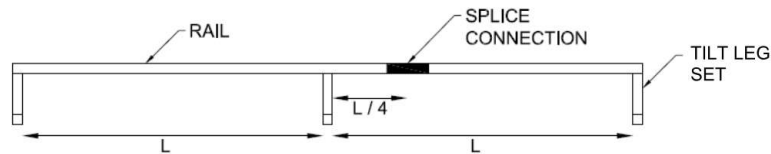
Note 2 Maximum uplift wind pressure is limited to 5 kPa. "--" states more uplift pressure.

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.

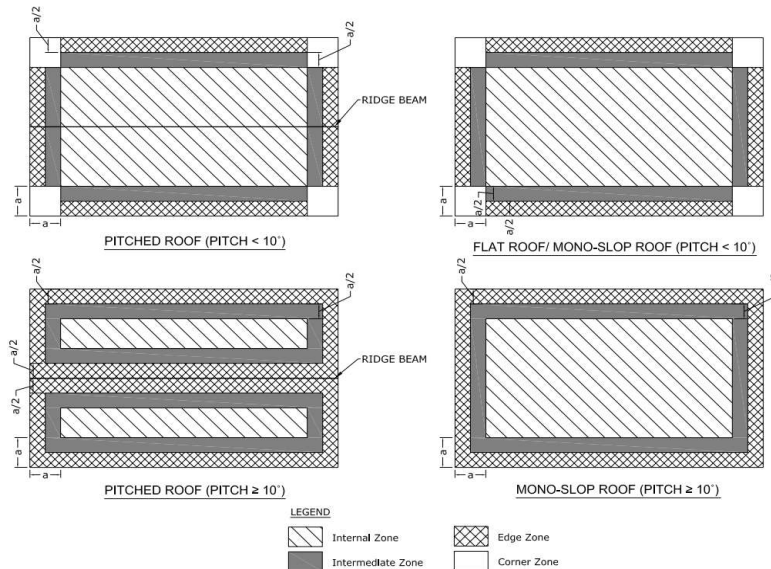


Figure 1 - Roof Zones Definition

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)