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General Certification for Grace Solar Ground Mounted System PG4 + MR Rail within Wind Region A

For: XIAMEN GRACE SOLAR NEW ENERGY TECHNOLOGY CO.LTD

(BYMEA Group) Building C/D, Vanke Yunxi
Huli Dist, Xiamen, Fujian Province
China

Job No.: 15158

Date: 02/08/2024

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Approval			
Author Signature		Approver Signature	
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Title	Structural Engineer	Title	Principal Engineer

Our Ref: 15158-PG4+MR/BL
02 August 2024

XIAMEN GRACE SOLAR NEW ENERGY TECHNOLOGY CO. LTD

(BYMEA Group) Building C/D, Vanke Yunxi
Huli Dist, Xiamen, Fujian Province
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RE: General Certification for Grace Solar Ground Mounted System PG4+MR Rail within Wind Region A

Gamcorp Pty Ltd, being Structural Engineers within the meaning of Australian Building Regulations, have carried out a structural design check of Ground Mount Array Frame System installation within Australia. The design check has been based on the drawings and other information provided by XIAMEN GRACE SOLAR NEW ENERGY TECHNOLOGY Co. Ltd.

We find the Installation of Ground Mounted System PG4+MR Rail for Australian use to be structurally sufficient based on the following conditions:

- Wind loads to **AS/NZS1170.2:2021**
- Wind region **A**
- Wind terrain category **2**
- Wind average recurrence interval of **200 years (ultimate)**
- Regional wind speed **43 m/s**
- Md=1, Ms=1, Mt=1
- The PV panel dimensions to be **1700mm x 1000mm**, **2300mm x 1200mm**
- Tilt angle **15, 30 & 45** degrees for PV panel 1700x1000mm
- Tilt angle **15 & 30** degrees for PV panel 2300x1200mm
- Only **Portrait** installation has been assessed
- Maximum weight of the PV panel and array frame to be **15 kg/m²**
- Rails to be **MR** rails
- Material of rails and other components to be **AL/6005-T5** UNO
- Post material Steel Q235B
- Maximum nominal table length 4051mm for PV panel 1700x1000mm
- Maximum nominal table length 4851mm for PV panel 2300x1200mm
- Maximum overhang 40% of the frame span
- Refer to **Table 1a & 1b** for maximum frame spacing **(S)** and minimum post embedment
- Rail splice connection must be placed a quarter length of the spacing of the frames. No Splice should be placed at the centre of span or over the frame
- Installation of PV panels to be done in accordance with the PV panels installation manual
- The certification **excludes** assessment of the members durability/corrosion and PV panels

Table 1a – Maximum Frame Spacing for PV Panel 1700x1000mm with Post Embedment According to Soil Conditions

Tilt Angle (°)	Maximum Frame Spacing, S (mm)	Minimum Post Embedment (mm)			
		Hard	Very Firm	Firm	Soft
15	2700	900	1200	1400	1800
30	2700	1300	1700	2100	2900
45	1450	1400	1800	2300	3200

Table 1b – Maximum Frame Spacing for PV Panel 2300x1200mm with Post Embedment According to Soil Conditions

Tilt Angle (°)	Maximum Frame Spacing, S (mm)	Minimum Post Embedment (mm)			
		Hard	Very Firm	Firm	Soft
15	3000	1300	1600	2000	2600
30	1050	1400	1700	2100	2800

NOTES:

- **The footing recommendations have been calculated for the following soil conditions (AEBC indicates the soil allowable end bearing capacity):**
  - **Hard: Gravels; dry (hard) clays, AEBC = 240 kPa**
  - **Very Firm: Dry (stiff) clays; clayey sands; coarse sands; compact sands, AEBC = 150 kPa**
  - **Firm: Damp clays; sandy clays; damp sands, AEBC = 100 kPa**
  - **Soft: Wet clays; silty loams; wet or loose sands, AEBC = 60 kPa**
- **Site-specific soil report shall be made available to justify the soil conditions.**
- **This certificate is only valid as a whole. Any information extracted from this certificate is not valid if standing alone.**
- **If any of the above conditions cannot be met, the structural engineer must be notified immediately.**

Construction is to be carried out strictly in accordance with the manufacturer's instructions. This work was designed by **Ali Askari** in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles.

This certification is only valid till **01/09/2026**. Gamcorp should be contacted for future validation. Contact Gamcorp for a customised system or if the site conditions are not covered by this assessment.

Yours faithfully,
Gamcorp Pty Ltd

L. Van Spaandonk

Principal Engineer
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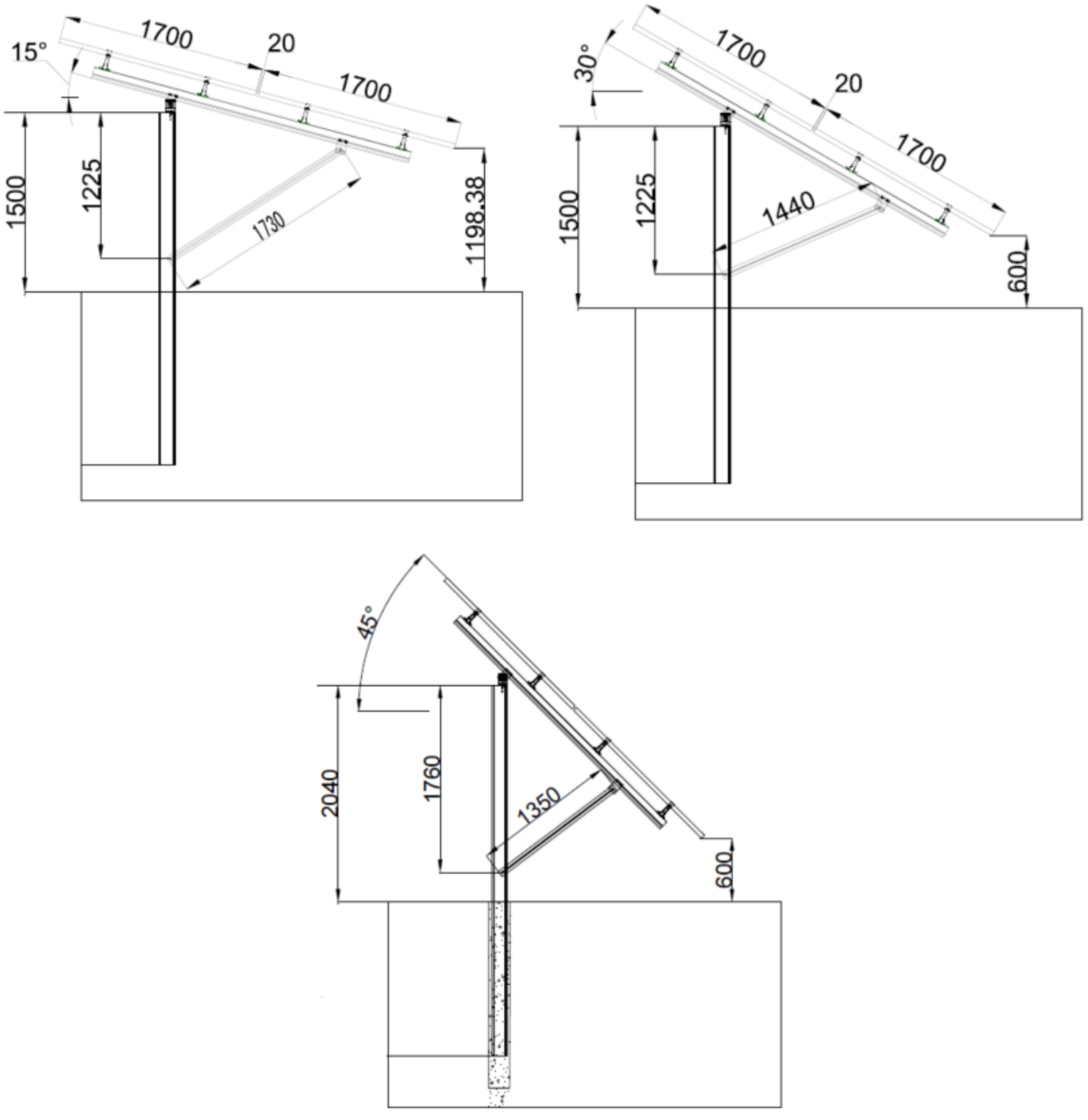

Figure 1 – PV Panel 1700x1000mm Frame Details

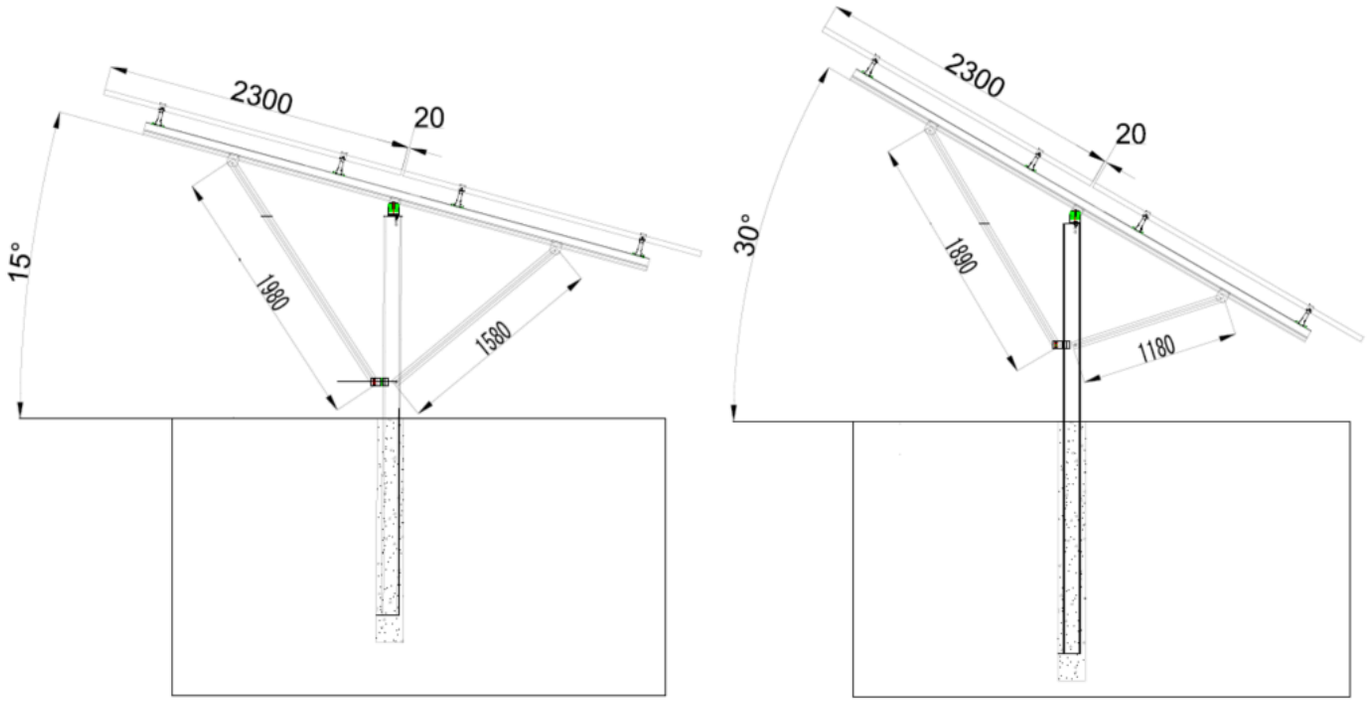

Figure 2 – PV Panel 2300x1200mm Frame Details