01 March 2016

Project number: R119_03A

Xiamen Mibet New Energy Co., Ltd.
No. 69 Xintian Road
Jimei District Xiamen China

Attention: Cathy Xu.

Dear Madam,

RE: XIAMEN MIBET NEW ENERGY CO., LTD. SOLAR PANEL SUPPORT FRAME
ADJUSTABLE TRIPOD MOUNTING SYSTEM FOR CONCRETE AND METAL ROOF

As requested, we have reviewed the structural adequacy of the Aluminum support framing components as detailed in the drawings issued by Mibet (Xiamen) New Energy Co. Ltd. We have design investigated for the Aluminum Railing as shown below. The section of the railing is shown below.

The panels are supported by two rows of railing. The railings are fixed directly to Adjustable Tripod Mounting System, where is anchored into reinforced concrete roof.

The spacing of the tripods shall be limited as tabulated below in tables 1 and 2.
Terrain Category 2 (TC2) 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.

### Table 1. 1650 Long Panel

<table>
<thead>
<tr>
<th>Roof Height</th>
<th>Region A</th>
<th>Region B</th>
<th>Region C</th>
<th>Region D</th>
</tr>
</thead>
<tbody>
<tr>
<td>5m</td>
<td>1510</td>
<td>1040</td>
<td>670</td>
<td>440</td>
</tr>
<tr>
<td>10m</td>
<td>1240</td>
<td>860</td>
<td>550</td>
<td>370</td>
</tr>
<tr>
<td>15m</td>
<td>1140</td>
<td>760</td>
<td>510</td>
<td>330</td>
</tr>
<tr>
<td>20m</td>
<td>1090</td>
<td>740</td>
<td>480</td>
<td>320</td>
</tr>
</tbody>
</table>

### Table 2. 1970 Long Panel

<table>
<thead>
<tr>
<th>Roof Height</th>
<th>Region A</th>
<th>Region B</th>
<th>Region C</th>
<th>Region D</th>
</tr>
</thead>
<tbody>
<tr>
<td>5m</td>
<td>1420</td>
<td>980</td>
<td>630</td>
<td>410</td>
</tr>
<tr>
<td>10m</td>
<td>1170</td>
<td>810</td>
<td>520</td>
<td>340</td>
</tr>
<tr>
<td>15m</td>
<td>1070</td>
<td>730</td>
<td>480</td>
<td>310</td>
</tr>
<tr>
<td>20m</td>
<td>1030</td>
<td>700</td>
<td>450</td>
<td>300</td>
</tr>
</tbody>
</table>
Our design investigation is based on the following Australian Standards and sections of Building Code of Australia relevant to structural issues.

- AS 1170.0-2002 Structural design Actions Part 0: General principles
- AS 1170.2-2011 Structural design Actions Part 2: Wind actions
- AS 4673-2001 Cold Formed Stainless Steel
- AS 1684.1-1999 Residential timber-framed construction - Design criteria
- AS 1684.2-2010 Residential timber-framed construction - Non-cyclonic areas
- AS 1684.3-2010 Residential timber-framed construction - Cyclonic areas
- AS 1720.1-2010 Timber structures - Design methods.pdf
- AS 3566.1-2002 Self-drilling screws for the building and construction industries
- AS 3566.2-2002 Part 2: Corrosion resistance requirements

Following design criteria has been used for the structural verification.

- Design Life 25 years
- Importance Level Type 2: Ordinary
- Annual Probability of exceedance 1/200
- Terrain Category to AS1170.2 2
- Service Deflection Not limited
- Snow loading Not considered
- Earthquake Loading Not considered
- Maximum Roof Pitch 7 degrees
- Aluminum Rails 6005 - T5
- Maximum dimensions of Solar panels.
  - 16 Kg panel 1650X990
  - 23 Kg panel 1970X990
List of components related to this framing system that are as tabulated below have been design verified to AS1170.2

<table>
<thead>
<tr>
<th>Components</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>End Clamp Kit</td>
<td>MR-EC-ST</td>
<td>Fastening parts</td>
</tr>
<tr>
<td>Inter Clamp Kit</td>
<td>MR-IC-ST</td>
<td>Fastening parts</td>
</tr>
<tr>
<td>C Clamp Kit</td>
<td>MR-CC-T</td>
<td>Fastening parts</td>
</tr>
<tr>
<td>Adjustable Tripod</td>
<td>MR-RM2-SPT</td>
<td>Fixed on roofs</td>
</tr>
<tr>
<td>Rail 45</td>
<td>MR-R-45</td>
<td>Rail L3100mm</td>
</tr>
<tr>
<td>Splice for rail 45</td>
<td>MR-SP-45</td>
<td>Expanding rail length</td>
</tr>
<tr>
<td>L Feet Hook</td>
<td>MR-VI-01</td>
<td>Fixed on roofs</td>
</tr>
</tbody>
</table>

Subject to the following qualifications we certify that the above mentioned frames are structurally adequate and conform to the above Australian standards.

1. Each row of 1650/1970 long solar panels shall have a minimum of two rows of railing to support the panels. The upper railing is supported with back legs (struts). The struts shall be directly fixed to the purlins. The lower railing shall be fixed to the roof purlins with shorter legs of with a use of a base bracket.

2. The connections between the solar panels shall be flexible to accommodate deflection of the railing.

3. The panel edge that is supported by the longer leg shall not be located within the edge zone, minimum of 0.2b, or 0.2d, or h, as defined in Clause 5.4.4 of AS1170.2.

4. The panel edge that is supported by the short leg shall have a clearance of 300 from the roof edge.

5. The deflection of the railing has not been controlled in the design. If deflection has to be limited then spacing shall be reduced as advised by a practicing structural engineer.

6. The roofing to which the panels are to be installed shall conform to the relevant Australian Standards including AS4100 and AS3600.

7. The buildings to which the panels are to be installed shall be of approved construction and conform to BCA and the relevant Australian Standards. The roof framing and the building shall be regularly maintained as required.

8. The installation of the framing shall conform to relevant Australian Standards, Manufacturer’s specifications and good building practice.
9. The spacing of the rail fixings shall not exceed the recommended spacing, and shall be reduced to match the location of the roof rafters.

10. The cantilever span of the panel shall not exceed 25% of panel length (ex 400mm for 1600 long).

11. The cantilever span of the railing shall not exceed 50% of the adjacent spacing of the installed fixings.

12. The panels shall not be located within the edge zone as per AS1170.2

13. Use 2M12 Chemset anchors or similar. The water proof membrane shall be reinstated. Use tungsten carbide bobs for drilling. Slab reinforcement shall not be damaged.

14. For light framed roofing each fixing shall have a minimum 2 gauge 14 screws.

15. The screws used to attach the railing to the roof framing shall conform to AS3566, ISO 3506.1.

16. The cold formed steel purlins shall have a minimum base material thickness of 1.2mm in Regions A & B and 1.9mm in Regions C & D.

17. Timber with Joint Type classification J4 to J6 are excluded unless tested for Screw capacity. i.e. minimum joint strength requirement shall be J3.

18. Predrilled holes shall be used for all screw fixings into timber. The width of Timber purlins shall not be less than 35mm. The minimum embedment for each screw shall be 50mm.

19. Dissimilar metals shall be separated with a suitable inert material to prevent galvanic corrosion.

20. The installation and fixings shall be periodically inspected and maintained.

21. We have relied upon the test certificates issued by TUV Rheinland and material properties; of the components; supplied by Xiamen Mibet New Energy Co., Ltd

22. The following are excluded from this certification.

x Framing of the PV Cell.

Should you have any queries, please feel free to call Paheer on 9565-5558.

Yours faithfully,
SPAD PTY LTD

Paheer C Paheerathan
BScEng, MEngSc, FIE Aust, CEng, NPER (Civil & Structural) 142156; RPPQ-09066; NTBPB 216724ES
Director