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14 October 2013

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SUNLOCK SOLAR PV MOUNTING SYSTEM

SEISMIC LOADS IN NEW ZEALAND

We have reviewed the documentation provided by Sunlock for their system for attaching PV modules to roofs.

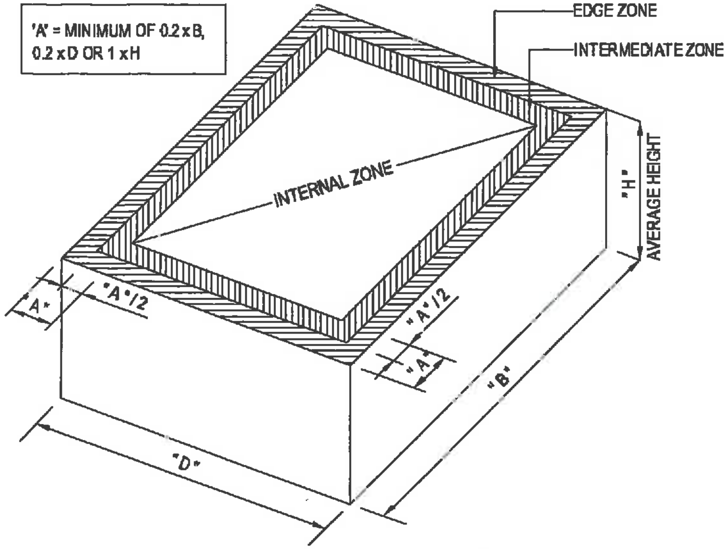
We believe on reasonable grounds that the system, if constructed in accordance with the Sunlock installation manual V4.5, will sustain the seismic loads required by NZS 4219 2009, Seismic Performance of engineering systems in buildings.

Note that additional legs are required for the Tiltup up System as shown on the attached drawings 11034 S8, Rev SDL A

Similarly, we believe on reasonable grounds that the SunLock commercial roof bracket system, if constructed in accordance with the SunLock technical bulletin Commercial Roof Brackets v2.0, will sustain the seismic loads required by NZS 4219 2009, Seismic Performance of engineering systems in buildings.

Yours faithfully
STRUCTURE DESIGN LTD

Peter Boardman



METAL SHEETED ROOF - INSTALLATION ZONES

TERRAIN CATEGORY 3 (20 - 40 DEG. TILT UP SYSTEM)					
MAXIMUM L-FOOT SPACING IN mm FOR STEEL BATTENS/PURLINS					
WIND REGIONS		A	B	C	D
INTERNAL ZONE	SHORT LEG	1800	1800	1330	810
	LONG LEG	1620	1130	665	405
INTERMEDIATE ZONE	SHORT LEG	1800	1500	880	530
	LONG LEG	1080	750	440	265
EDGE ZONE	SHORT LEG	1620	1130	650	410
	LONG LEG	810	565	325	205

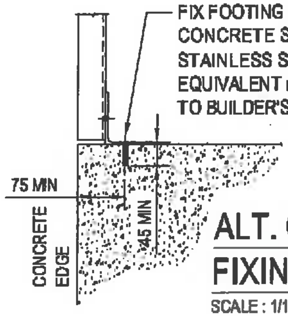
PRODUCT NAME
SUNLOCK SOLAR PANEL MOUNTING SYSTEM

PRODUCT DESCRIPTION
- SOLAR PANEL SUPPORT FRAME AND FIXINGS FOR SUNLOCK FOR
- FOR 20° - 40° FRAME TILT ANGLES
- PORTRAIT MOUNTED PANELS

MANUFACTURER'S NAME
ENERGY MATTERS PTY LTD

DESIGN CRITERIA
- WIND SPEEDS AND PRESSURES ARE CALCULATED IN ACCORDANCE WITH AS/NZS 1170.2 : 2011 AMDT No.2 Dec 2012
- IMPORTANCE LEVEL 2
- ANNUAL PROBABILITY OF EXCEEDANCE 1:500
- TOPOGRAPHIC MULTIPLIER M = 1.0 (FLAT)
- TERRAIN CATEGORY = 3; Mz, CAT = 0.83
- REGION A: VR = 45 m/s
- REGION B; VR = 57 m/s
- REGION C; VR = 69 m/s
- REGION D; VR = 88 m/s

LIMITATIONS
- THE EXISTING ROOF CONSTRUCTION SHALL BE VERIFIED TO ENSURE ITS SUITABILITY FOR THIS PRODUCT AND THAT IT IS CAPABLE OF SUPPORTING THE ADDITIONAL LOADS.
- IF THE BUILDING IS SITUATED ANYWHERE OTHER THAN ON A FLAT AREA (IE. A SLOPE, A HILL ETC) DO NOT USE THIS DRAWING. CONTACT A STRUCTURAL ENGINEER FOR A CUSTOM DESIGN.
- MAXIMUM ROOF HEIGHT = 10 m
- MAXIMUM 10° ROOF PITCH
- SOLAR PANELS TO BE CERTIFIED SEPARATELY
- MAXIMUM SOLAR PANEL 1680 mm x 1000 mm
- FOR RAIL AND RAIL FIXING ONLY.
- MINIMUM STEEL BATTEN OR PURLIN THICKNESS 0.75mm GRADE 550
- MAX. ULTIMATE UP-LIFT FORCE PER L-FOOT = 1.92 kN

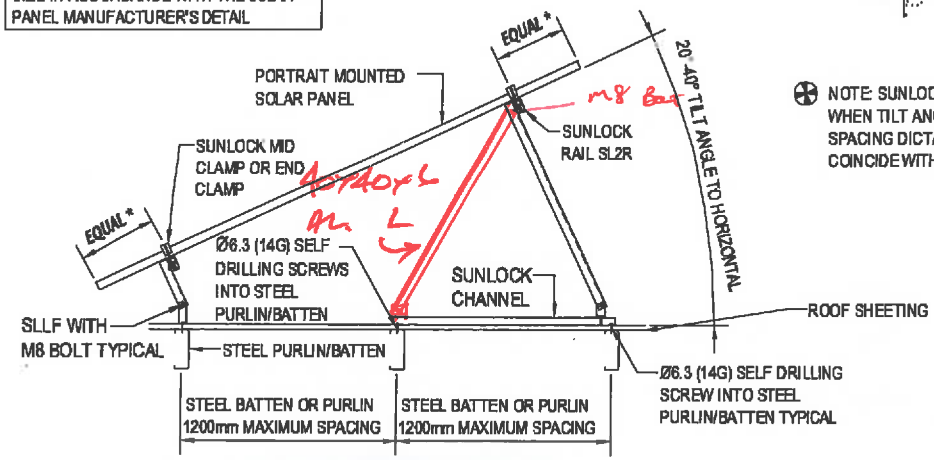


ALT. CONCRETE FIXING DETAIL

SCALE : 1/10

NOTE: SUNLOCK CHANNEL TO BE EMPLOYED WHEN TILT ANGLE AND EXISTING PURLIN SPACING DICTATE THAT REAR LEG DOES NOT COINCIDE WITH A PURLIN

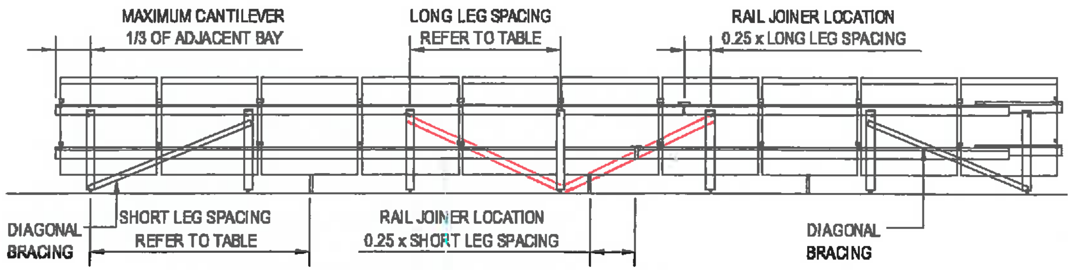
* CANTILEVER 10% TO 25% OF PANEL SIZE IN ACCORDANCE WITH THE SOLAR PANEL MANUFACTURER'S DETAIL



EQUAL *
PORTRAIT MOUNTED SOLAR PANEL
M8 Bolt
SUNLOCK RAIL SL2R
20°- 40° TILT ANGLE TO HORIZONTAL
SUNLOCK MID CLAMP OR END CLAMP
40x40x6 AL L
EQUAL *
Ø6.3 (14G) SELF DRILLING SCREWS INTO STEEL PURLIN/BATTEN
SUNLOCK CHANNEL
ROOF SHEETING
SLLF WITH M8 BOLT TYPICAL
STEEL PURLIN/BATTEN
Ø6.3 (14G) SELF DRILLING SCREW INTO STEEL PURLIN/BATTEN TYPICAL
STEEL BATTEN OR PURLIN 1200mm MAXIMUM SPACING
STEEL BATTEN OR PURLIN 1200mm MAXIMUM SPACING

PANEL FIXING DETAIL

SCALE : 1/20



SUNLOCK REAR FRAMING ELEVATION

NOTE: PROVIDE SLDB1200 40x3 FLAT; ALUMINIUM DIAGONAL BRACE TO EACH END BAY AND EVERY 3RD INTERMEDIATE BAY.

NOT TO SCALE

SEISMIC RESTRAINT SYSTEM FOR N.Z

Rev.	Init	Description	Date

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Project
SUNLOCK
(20°- 40° TILT-UP SYSTEM)
STEEL ROOF STRUCTURE
TERRAIN CATEGORY 3

Status	FOR CONSTRUCTION		
Drawn	VPC	Designed	KL
Scale	AS NOTED	Date	Mar 13
Project No	11034	Drawing No	S8
Rev	00		SDL/A.