Notes to Accompany Consent Documents with particular emphasis on G12/AS2 for ICE Solar Products and Installation.

1.1 Structural Support:

- a. the weight is no more than 22kg/m^2. (18.8kg/m^2 for ICE solar panels)
- b there is no hot water tank on the roof
- c the storage cylinder is below 450L
- d the roof pitch is below 45º
- e the building is out of the wind zone where wind exceeds 55m/s as defined in NZS3604:2011
- f the solar collector has an area no greater than 4m^2
- g This area is out of the NZS3604 snow loading zone.
- h (i) the solar collectors are installed parallel to the roof cladding unless otherwise specified in the consent

  OR h (ii) Where the solar collectors are installed to a different pitch to the roof the solar collector is :
- not greater than 45º
- is in a wind zone where the wind does not exceed 44m/s 3604
- the solar collector faces the same compass direction as the roof (except in the instance the roof is a flat roof – ie. Flat or below 15 degree pitch in a southerly direction, then the collector can be pitched in the opposite direction to face a Northerly direction so Winter collection is not impeded).

2.1 Materials

- PRODUCT

ICE Solar products use a powdercoated aluminium frame, borosilicate glass, copper pipe, and EDPM and Butyl flashings - all with 50yr durability under NZS3604.

- COMPATIBILITY

Between the roof and the Solar Water heater there is always either an EDPM boot (dektite type) or Butyl rubber under the feet. – Both of these products are compatible with any roof type according to G12/AS2 table 2.

- COMPATIBILITY SUBJECT TO RUN OFF

As per compatibility table both the flashings (EDPM boots) and the Butyl rubber spacings under the feet are compatible with all roof types as listed in Table 3 of G12/AS2 (other than steel, galvanized – unpainted).
As per compatibility table the collector material of powdercoated aluminium, powdercoated stainless steel and glass are compatible with all roof types as listed in Table 3 of G12/AS2 (other than steel, galvanized – unpainted).

3.0 Solar Water Heater Requirements

- The product has been certified to AS/NZS2712:2007 (certifications attached)
- 3.2.1&2 Controller certified to AS/NZS2712:2007 as part of whole system and minimizes the use of auxiliary heating by it design (data available on request re AS/NZS4234 certification measuring system performance)
- 3.3.1 Solar Water Heaters must have a minimum of 50L per m2 of collector area

System Size	Std20	Std30	Std40	Std50	Std60	Std70	Std80
Collector Area (m^2)	2.0	3.0	4.0	5.0	6.0	7.0	8.0
Minimum Cylinder size (L)	100	150	200	250	300	350	400
Actual cylinder size (L)							

3.4.1&2 Storage Tanks are covered under the AS/NZS4692 which we attach to. Please refer to the System description (page 4) for a diagram of venting of over pressure and temperature.

3.5.1 Protection from Legionella Bacteria
To prevent the growth from Legionella bacteria the following controls are in place.

CHOOSE ONE OF THE FOLLOWING:

☐ Continuously energized element 55% off the bottom of the water tank and a thermostat set to 60ºC or higher. This is done through the third tank element.

☐ b be controlled so that the water above the element is heated to 60ºC once per day and the element is 150mm from the bottom of the tank

☐ c be controlled so that the water above the element is heated to 60ºC once per week including the water in the collector.

3.5.2 For Instantaneous or pre-heater systems NB SKIP THIS SECTION IF NOT

☐ a the storage water passes through a cylinder as per 3.5.1, OR,

☐ b the instantaneous heater passes the water through not less than 70ºC

3.6 Protection from Frosts

- ICE Solar collectors have passed AS/NZS2712:2007 for both level 1 and 2 tests therefore are applicable anywhere in New Zealand.

4.0 Location of Solar Water Heaters

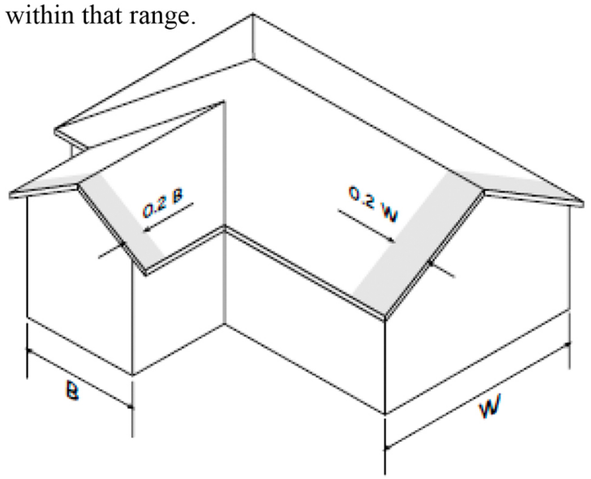
4.1 The solar water collector is located outside the high pressure wind zone as shown in Figure 2. This is shown in roof plan attached.

4.2.1 Solar Collectors are facing within 90º of geographic north as also shown in attached roof map.

4.2.2 Solar collectors must be inclined at an angle within 20º of latitude. In New Zealand that is Kaitaia is at 35º (15º – 55º) and Invercargill is at 46º. (ie 26º -66º), Christchurch is 43º (23º -63º).

This properties solar pitch is____º therefore within that range.

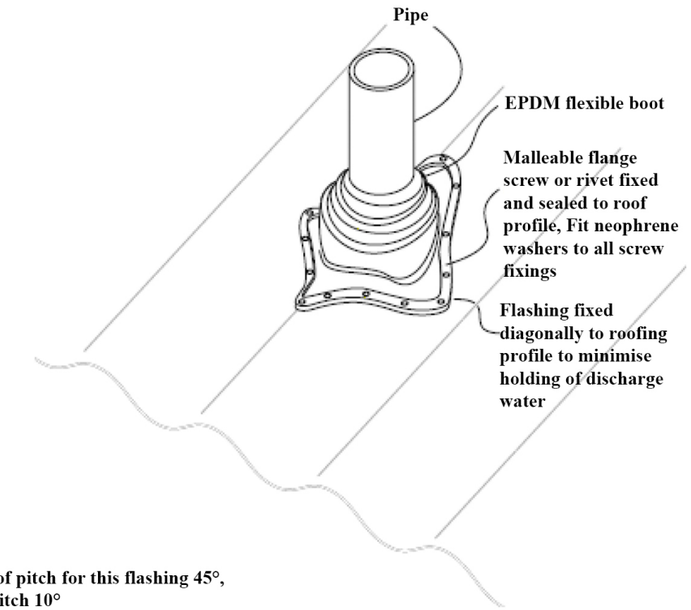
Figure 2: High pressure wind zone
Paragraph 4.1



5.0 Installation of Solar Water Heaters.

5.0.1 Solar water heaters to be installed to ASNZS3500 part 4

5.2 Weather Tightness



Note:
(1) Max, roof pitch for this flashing 45°, minimum pitch 10°
(2) For pipes up to 60mm diameter

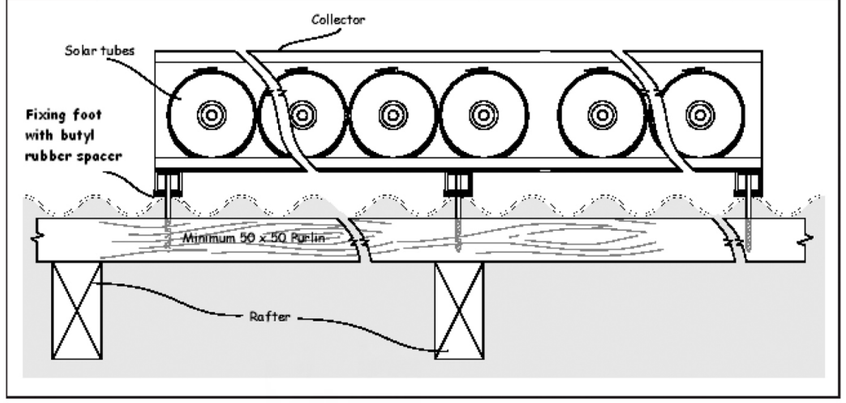
-Penetrations are all less than 60mm (pipe sizes are 9.7 – 12.5mm), they will be flashed using EDPM boots as shown.
Sealants used are in conjunction with mechanical fasteners,

5.4 Pipe Insulation - all pipes are insulated at all times. **Exterior pipework is UV protected with UV stable tape.**

6.0 Structural Support for Solar Water Heaters

6.1 General requirements - Collectors will be fixed as per fig12 and fig 13.

Figure 12: Direct fixed channel – section
Paragraph 6.3.1

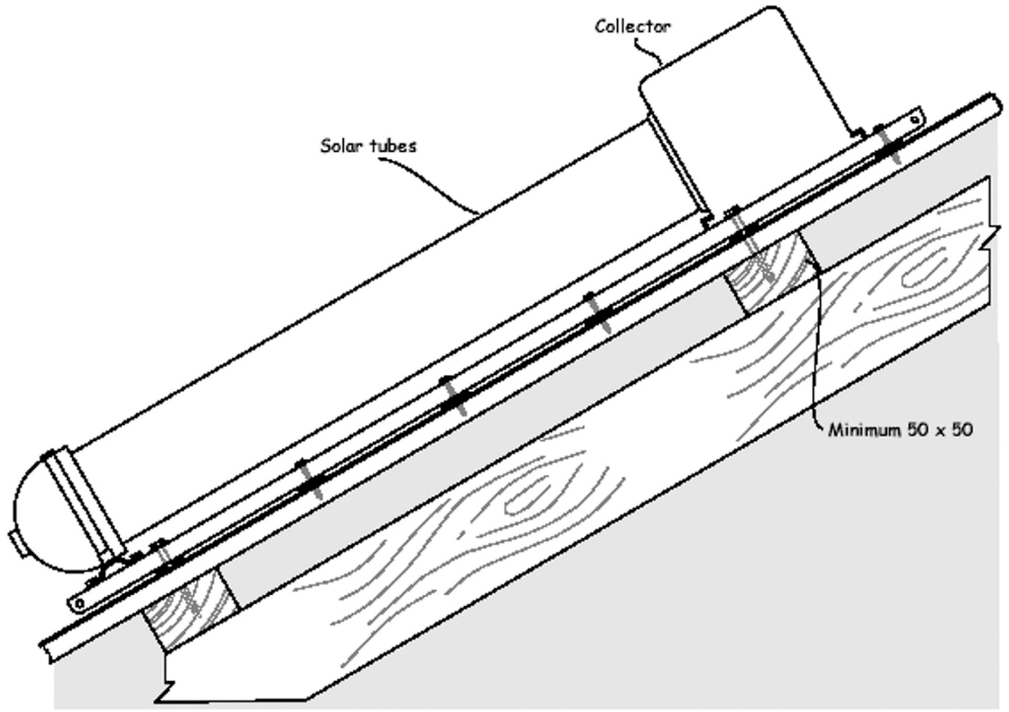


6.2 Where a frame stand is required to elevate the thermal solar collection panel to a higher pitch of the roof. This is to be achieved by the following:-
6.2.1 2 x 50mm x 50mm x 3mm Stainless steel or aluminium rails are to be installed with a minimum of 8 fixing points. These fixings must be minimum 50mm x 6mm tek screws with a roofing washer placed between the angle and roof sheeting. These washers must be compatible with the roof sheeting and set in place with silicone at each fixing point. The tek screw must be firmly screwed down so that the tek screw washer firmly seals between the head of the screw and the surface of the angle.
6.2.2 2 x 100mm x 50mm (nominal) H3 treated timber rails are to be installed with a minimum of 8 fixing points. These fixings must be minimum 100mm x 6mm tek screws with a roofing washer placed between the timber and roof sheeting. These washers must be compatible with the roof sheeting and set in place with silicone at each fixing point. The tek screw must be firmly screwed down so that the tek screw washer firmly seals between the head of the screw and the surface of the timber.

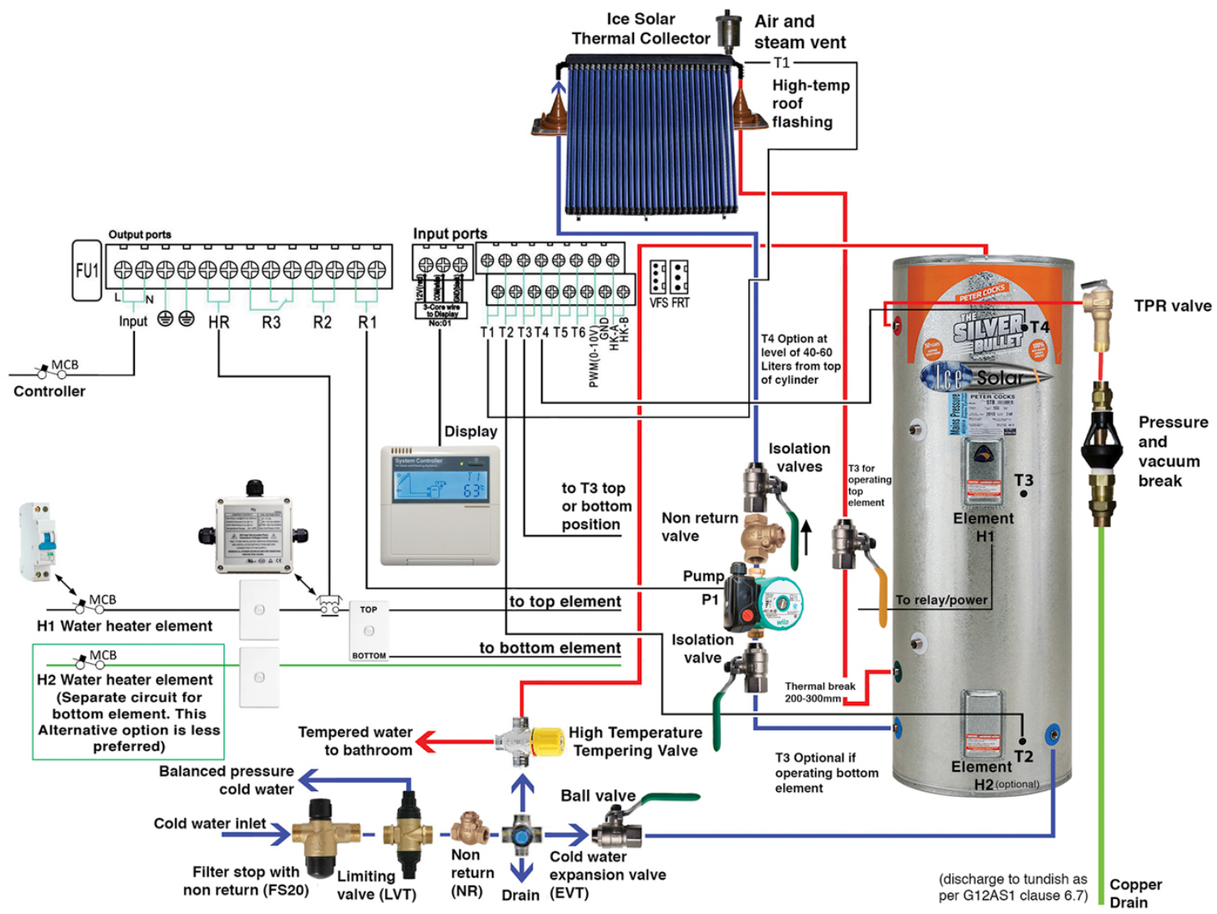
7.0 **Maintenance and Durability**

The durability requirements are 15yrs, from the materials as listed in section 2 of AS2 the components have a life of beyond 50 years

Figure 13: **Direct fixed channel – elevation**
Paragraph 6.3.1

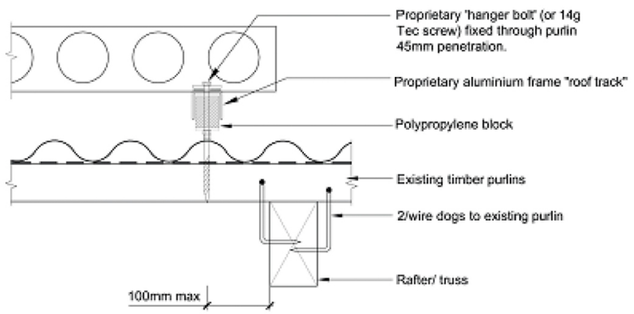


Mains Pressure Open Loop Solar System With Electricity



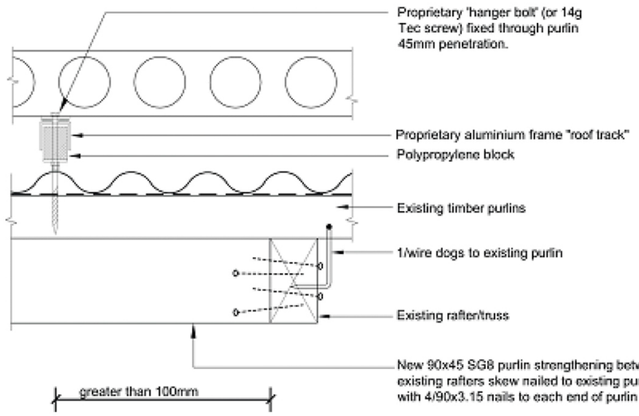
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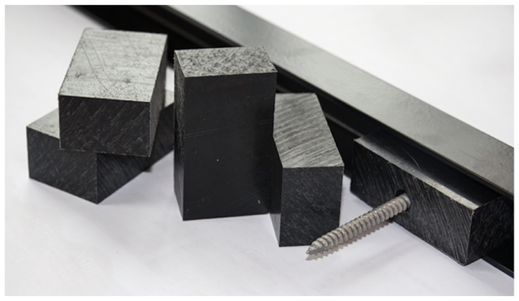
Fixing detail to corrugate—Polypropylene block





Additional purlin support



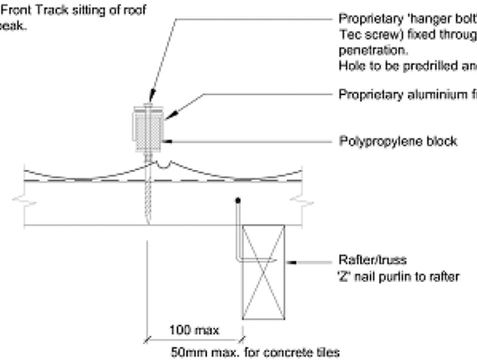


Roof fixing methods
SELECT METHOD FROM THE FOLLOWING (delete non applicable)

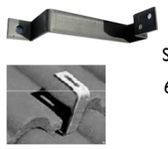
Fixing detail to metal/concrete tiles

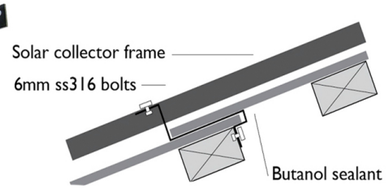
NOTE:
Vary position of bottom track to ensure Front Track sitting of roof profile peak.

NOTE:
ALL ROOF SEALING DETAILS ARE TO BE IN ACCORDANCE WITH G12/AS2

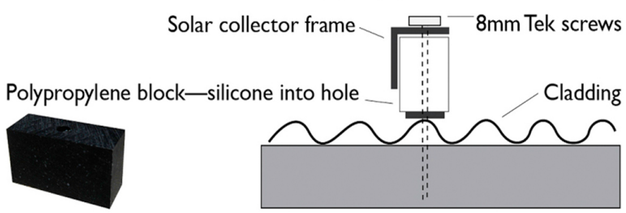


Tile roof fixing

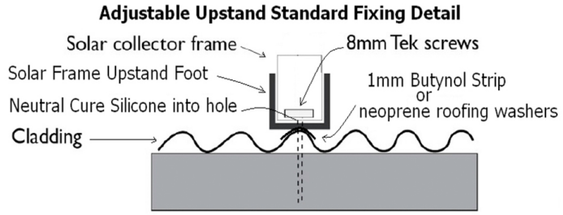




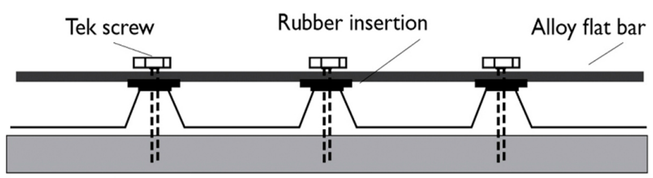
Polypropylene block



Adjustable Upstand Standard Fixing Detail



Highhat/trapezoidal—alternate to method 2



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Technical Specifications

Model	Solar Thermal Collector Size						
# of tubes	20	30	40*	50*	60*	70*	80*
width	1440	2100	2880	3540	4200	4980	5640
height	2040	2040	2040	2040	2040	2040	2040
full stand height (if required)	1450	1450	1450	1450	1450	1450	1450
collector area (m^2)	2.1	3.1	4.2	5.2	6.2	7.3	8.3
gross area (m^2)	2.9	4.2	5.8	7.2	8.5	9.9	11.4
Total weight (kg)	61.2	90.6	122.3	151.80	181.20	213.00	242.40
Average daily power** (kWhr)	5.3	7.9	10.6	13.2	15.8	18.5	21.1

* two or more panels together
** assumes solar pitch within 20 degrees of same angle as geographic latitude facing due north

APPLIED RESEARCH SERVICES LIMITED

P.O. Box 687, Nelson,
New Zealand

Phone (03) 547 7347
Email: info@appliedresearch.co.nz
Web: www.appliedresearch.co.nz

Report 14/2715 **August 28th, 2014** **Page 1/1**

Customer: **Ice Solar Ltd.**
PO Box 27168
CHRISTCHURCH 8640

P1969/8

Compliance Certificate

Appliance: Ice Solar Ltd Solar Water Heating Systems

Standard Applied: AS/NZS 2712:2007

Full Report Ref.: 14/2695

Based on the information and results obtained during testing and assessment based on EECA/SIA Guidelines, the Ice Solar Ltd Solar Water Heating Systems listed below comply with the type testing requirements of AS/NZS 2712:2007. Note that testing for clause 4.6 has not been conducted.

This compliance certificate relates only to the systems as assessed. Any modifications to any of the systems may invalidate the compliance results.

Our report 14/2695 gives details of the systems, the assessment and the results obtained.

Solar Hot Water Systems That Meet The Relevant Requirements of AS/NZS 2712:2007

System name	Heat exchange circuit type	fluid	Collector model and quantity		HWC manufacturer, model and volume (litres)	Controller make and model.	Pump make and model.
STD20/180	Open	Water	STD20	1	Peter Cocks, SDB 180	SR868C8Q	Wilo RS 15/6
STD20/200	Open	Water	STD20	1	Peter Cocks, SDB 200	SR868C8Q	Wilo RS 15/6
STD30/200	Open	Water	STD30	1	Peter Cocks, SDB 200	SR868C8Q	Wilo RS 15/6
STD20/250	Open	Water	STD20	1	Peter Cocks, SDB 250	SR868C8Q	Wilo RS 15/6
STD30/250	Open	Water	STD30	1	Peter Cocks, SDB 250	SR868C8Q	Wilo RS 15/6
STD30/300	Open	Water	STD30	1	Peter Cocks, SDB 300	SR868C8Q	Wilo RS 15/6
STD40/300	Open	Water	STD20	2	Peter Cocks, SDB 300	SR868C8Q	Wilo RS 15/6
STD30/350	Open	Water	STD30	1	Peter Cocks, SDB 350	SR868C8Q	Wilo RS 15/6
STD40/350	Open	Water	STD20	2	Peter Cocks, SDB 350	SR868C8Q	Wilo RS 15/6
STD50/400	Open	Water	STD20 STD30	1 1	Metro Solar, 400	SR868C8Q	Wilo RS 15/6

This Report:

Prepared by: G. Looman

Approved by: W.S. Webley

Release Date: 25-9-14

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New Zealand Institute of Architects Incorporated

ACENZ

Building Code Clause(s) B1&G12

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: The Engineering Company Ltd (ENGCO)
(Design Firm)

TO: ICE Solar
(Owner/Developer)

TO BE SUPPLIED TO: Applicable Building Consent Authority
(Building Consent Authority)

IN RESPECT OF: Fixings of ICE Solar Collector Frames to New or Existing Roofs
(Description of Building Work)

AT: Various Locations
(Address)

Town/City:..... **LOT**..... **DP**..... **SO**.....
(Address)

We have been engaged by the owner/developer referred to above to provide:

Structural verification of the fixings details of the solar collector frames shown in the ICE SOLAR INSTALLATION INSTRUCTION MANUAL (May 2021 Edition)
(Extent of Engagement)

services in respect of the requirements of Clause(s). B1 /VM1 & G12/AS2 of the Building Code for:

☐ All or ■ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

■ Compliance Documents issued by the Ministry of Business, Innovation & Employment. B1 / VM1 & G12 / AS2 or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule.....

The proposed building work covered by this producer statement is described on the drawings titled:

ICE SOLAR INSTALLATION INSTRUCTION MANUAL May 2021 and numbered Details STD20 & STD30;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions Please see attached addendum
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ■ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, Matthew Cusiel (Name of Design Professional) am: ■ CPEng 161509 # ☐ Reg Arch ..... #

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE(hons),CMEngNZ,CPEng
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Design Firm is a member of ACENZ: ☐

SIGNED BY Matthew Cusiel (Name of Design Professional) (Signature)...

ON BEHALF OF The Engineering Company Ltd (ENGCO) (Design Firm) Date 19 May 2021

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, ENGINEERING NEW ZEALAND AND NZIA

Ice Solar
Green technology in search of renewable energy

ENGCO
Consulting Engineers

ADDENDUM TO PRODUCER STATEMENT – PS1 – DESIGN

ISSUED BY: The Engineering Company Ltd
(Design Firm)

TO BE SUPPLIED TO: Applicable Building Consent Authority
(Building Consent Authority)

IN RESPECT OF: Fixings of Ice Solar Collector Frames to New or Existing Roofs
(Description of Building Work)

The design has been verified in accordance with **B1/VM1** and **G12/AS2** of the approved Compliance Documents issued by the Department of Building & Housing and subject to:

(i) The site verification that the building the collectors are fixed to comply with the requirements of G12/AS2 in terms of snow load, wind speed and position on roof restrictions.
(ii) Durability requirements of all fixing shall comply with NZS3604:2011
(iii) All proprietary products meeting their performance specification requirements;
(iv) All installations shall be inspected by the Building Consent Authority

(*signature*) Date: 19 May 2021

PRODUCER STATEMENT PS1

Ice Solar
Green technology in search of renewable energy

SOLAR THERMAL WATER SYSTEM MAINTENANCE RECORD SHEET

Date System Installed _____ **Customer Name** _____

Site Address _____

Survey Undertaken By: **Name** _____

Company _____

		Notes and observations (Including set points, details of work undertaken)	Recommended actions
6 Monthly Maintenance			
Open TPR and check flow is unobstructed	☐		
12 Monthly Maintenance			
Clean solar panel glass	☐		
Check solar panels for shading	☐		
Check controller is set as per install/ owners manual	☐		
Check water pressure adequate for system operation	☐		
Check tempering valve for correct water temperature	☐		
Check and clean strainer	☐		
Check roof penetrations for water tightness	☐		
Check temperature sensor reading correct temperature	☐		
Check to ensure cable and sensor locations are correct	☐		
Check the water pressure downstream of pressure reducing/ limiting valve is within the manufactures limits	☐		
Check electrical water boost and relay function	☐		
Check pump and differential pump operation	☐		
Check solar AAV for correct operation	☐		