JOB NO:	REDACTED FOR CLIENT FOR CONFIDENTIALITY
PROJECT:	REDACTED FOR CLIENT FOR CONFIDENTIALITY
CLIENT:	REDACTED FOR CLIENT FOR CONFIDENTIALITY

SOLAR SURVEYS LTD 24
POTTERHILL ROAD GLASGOW
G53 5RR
EMAIL:
INFO@SOLARSURVEYS.CO.UK
TELEPHONE:
0141 628 9009

TITLE: DESKTOP STRUCTURAL ROOF LOADING APPRAISAL

REVISION	PURPOSE OF ISSUE	DATE	ORIGINATOR	CHECKER	APPROVAL
0	ISSUED FOR REVIEW	03.11.25	NH	SGR	HGR

REVISION RECORD

WHERE applicable Current revisions are identified on the relevant page(s) by a vertical line in the right-hand margin adjacent to where the revision was made. All previous revision identification is removed.

REV.	DATE	REVISION DETAILS
0	03.11.25	Issued to client

TABLE OF CONTENTS

APPENDICES

INTRODUCTION:

SOLAR SURVEYS LTD. HAS BEEN APPOINTED [redacted] UNDERTAKE A DESKTOP-BASED STRUCTURAL ASSESSMENT OF THE AFOREMENTIONED PROPERTY TO EVALUATE ITS SUITABILITY FOR A PROPOSED SOLAR PV INSTALLATION.

THIS ASSESSMENT INVOLVED A COMPREHENSIVE REVIEW OF ALL AVAILABLE CLIENT-PROVIDED DOCUMENTATION, WHERE SUPPLIED, INCLUDING BUT NOT LIMITED TO ARCHITECTURAL AND STRUCTURAL DRAWINGS, SPECIFICATIONS, LOCATION MARK-UPS, DATASHEETS, AND OTHER RELEVANT BUILDING INFORMATION.

However, as this assessment is based on a desktop review, it is recommended that the contractor on-site verifies the actual condition of the roof to confirm its Integrity and suitability for the proposed Solar PV installation.

Based on our desktop evaluation and structural analysis, as detailed in the subsequent sections of this report, we conclude that the property's roof and its associated structural framework can accommodate the anticipated loads resulting from the proposed Solar PV installation, subject to on-site verification.

Fixings and connection details are to be designed by others and are outside the scope of this assessment.

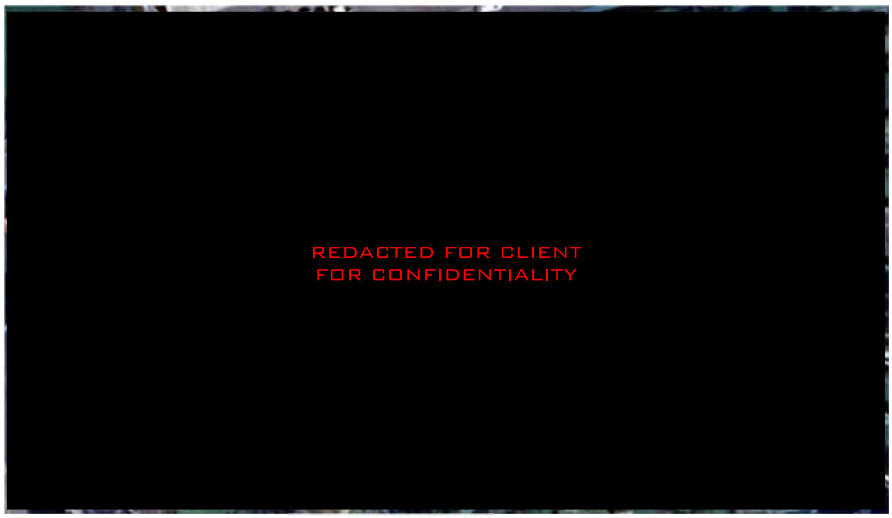

FIG 1A. SITE LOCATION PLAN AND BUILDING LAYOUT PLAN

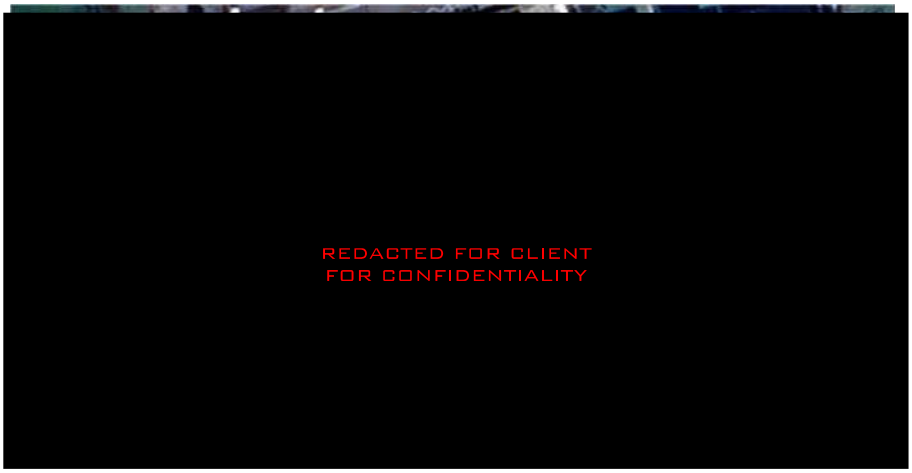

FIG 1B. ROOF LOCATION AND GEOMETRICAL PROPERTIES
ROOF GEOMETRY (PRELIM SIZES CONTRACTOR TO CONFIRM ON SITE)

SITE DATA: (ROOF)

- **SECTION 1** HIPPED/FLAT PITCH, EAVES 6.075M, APEX HEIGHT 9.795M, PURLIN SPACING 0.4M C/C, BAY SPACING N/A, SPAN 15.749M, LENGTH 31.091M.
- **SECTION 2** HIPPED/FLAT PITCH, EAVES 6.075M, APEX HEIGHT 10.794M, PURLIN SPACING 0.4M C/C, BAY SPACING N/A, SPAN 15.464M, LENGTH 13.952M.
- **SECTION 3** HIPPED/FLAT PITCH, EAVES 6.075M, APEX HEIGHT 10.794M, PURLIN SPACING 0.4M C/C, BAY SPACING N/A, SPAN 19.952M, LENGTH 14.737M.
- **SECTION 4** HIPPED/FLAT PITCH, EAVES 6.075M, APEX HEIGHT 10.794M, PURLIN SPACING 0.4M C/C, BAY SPACING N/A, SPAN 19.952M, LENGTH 16.660M.
- **SECTION 5** HIPPED/FLAT PITCH, EAVES 6.075M, APEX HEIGHT 10.794M, PURLIN SPACING 0.4M C/C, BAY SPACING N/A, SPAN 22.940M, LENGTH 15.740M.

APPLIED LOADING:

IN CONSIDERING THE APPLIED LOADING WE HAVE DESIGNED AS NOTED BELOW:
DEAD LOADS ARE BASED ON THE ACTUAL SPECIFIED MAKE UP FOR THE EXISTING ROOF.
IMPOSED FLOOR LOADS ARE BASED ON THE LOADINGS WITHIN BS 6399 & EUROCODE- 1 (BS EN 1991-1).

WIND LOADINGS ARE CALCULATED ON A SITE-SPECIFIC BASIS SEE SITE DATA USED IN WIND LOADING SECTION. APPLIED LOADS ARE AS FOLLOWS:

IT IS ASSUMED THE SERVICE LOADINGS HAS BEEN DESIGNED FOR PREVIOUSLY AT THE INSTALLATION STAGE OF THE VARIOUS SERVICES AND UTILITIES WITHIN THE BUILDING'S AREAS AND THAT THE MINIMUM IMPOSED LOAD CAPACITY OF **0.6KN/M²** HAS BEEN MAINTAINED.

This report has been prepared on the basis that the existing roof is in a sound condition. All associated timber elements, connections, and materials are assumed to be structurally adequate and performing in line with their original intended design.

It is the responsibility of the appointed contractor to carry out a thorough inspection of the roof prior to commencing any works, in order to confirm that its condition aligns with these assumptions. Should any defects, deterioration, or concerns be identified during inspection, the contractor must notify us immediately for further review and guidance before proceeding.

EXISTING ROOF MAKE UP:

DEAD LOAD

EXISTING BUILD UP SINGLE PLY ROOF = 0.25KN/M2
EXISTING TIMBER TRUSSES = 0.15KN/M2
SERVICES = 0.15KN/M2

TOTAL DL = 0.55KN/M

EXISTING BUILD UP SLATE ROOF TILES = 0.34KN/M2
EXISTING TIMBER TRUSSES = 0.15KN/M2
SERVICES = 0.15KN/M2

TOTAL DL = 0.64KN/M

IMPOSED LOADS

BS 6399:PT3:4.2 & EUROCODE- 1 (BS EN 1991-1)

ROOF LOAD = 0.60KN/M2

IT IS ASSUMED THE SERVICE LOADINGS HAS BEEN DESIGNED FOR PREVIOUSLY AT THE INSTALLATION STAGE OF THE VARIOUS SERVICES AND UTILITIES WITHIN THE BUILDING'S AREAS AND THAT THE MINIMUM IMPOSED LOAD CAPACITY OF 0.60KN/M2 HAS BEEN MAINTAINED.

EXISTING ROOF WIND LOADINGS:

CALCULATED USING TEDDS DESIGN SOFTWARE FOR BOTH POSITIVE AND NEGATIVE INTERNAL PRESSURE AND FOR WIND ACTING BOTH PERPENDICULAR AND PARALLEL TO THE FRONT ELEVATION OF THE BUILDING.

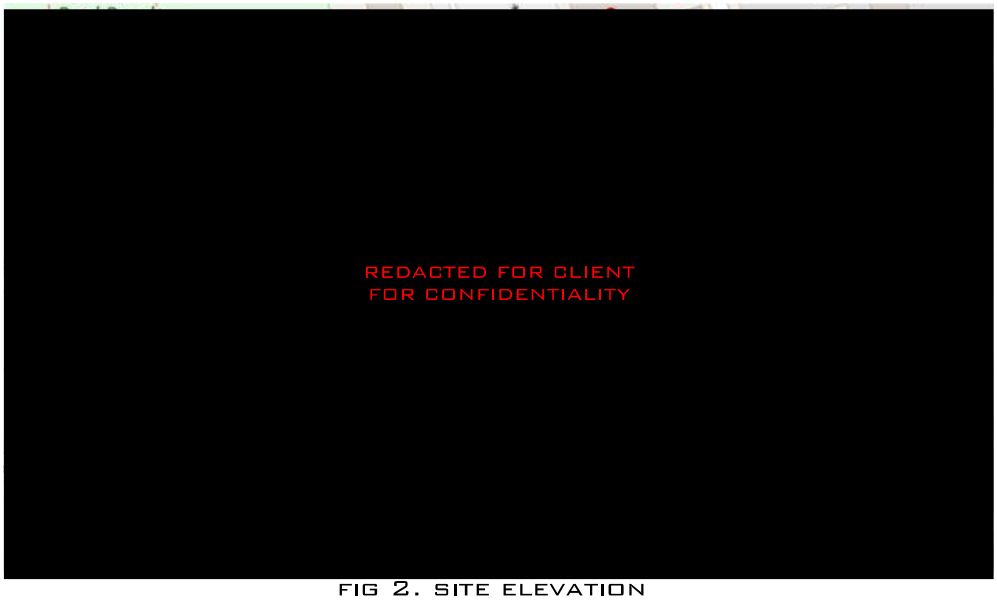

FIG 2. SITE ELEVATION

FIG 3. DISTANCE TO SEA

SITE DETAILS:

ELEVATION = 81.9M
DISTANCE TO SEA = 157.06KM "ANY WATER BODY AT LEAST 1.00 KM IN THE DIRECTION OF WIND TO BE TREATED AS THE SEA"
ENVIRONMENT = COUNTRY

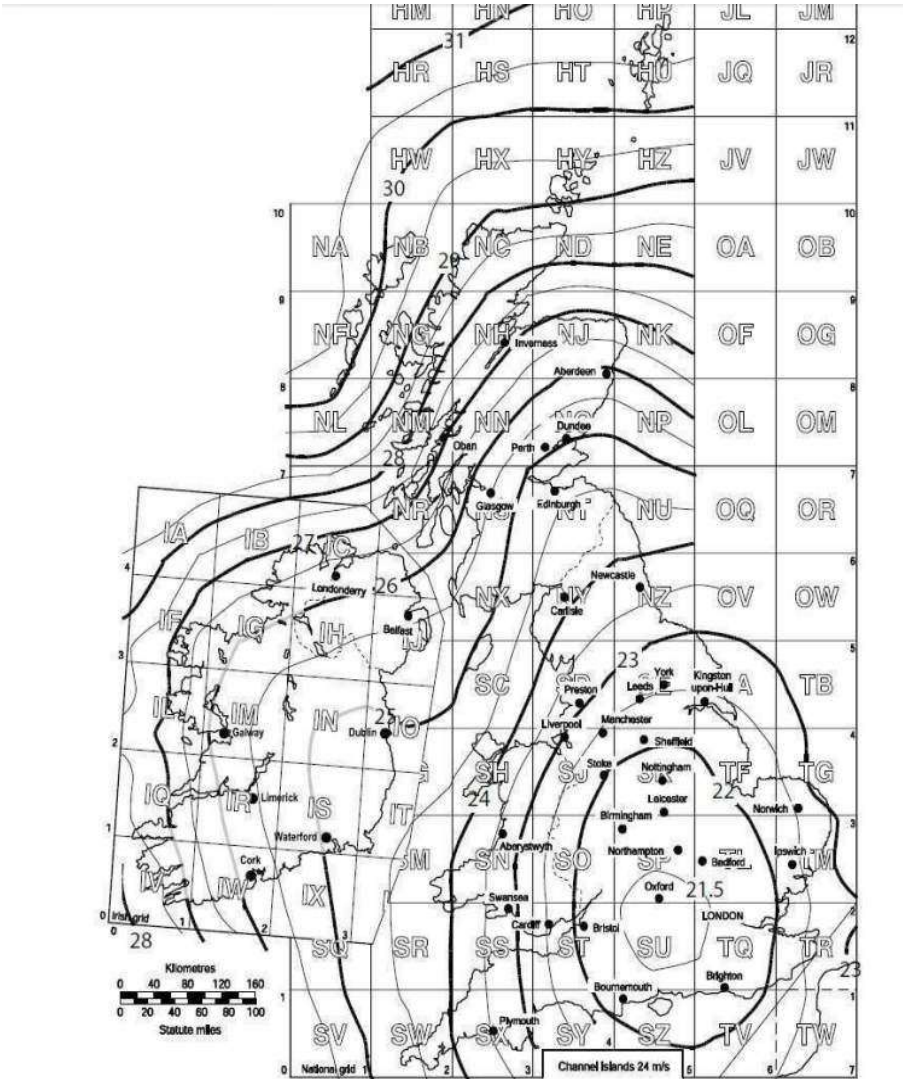

FIG 4. SITE LOCATION BASIC WIND VELOCITY TAKEN AS 21.7M/S (WIND MAP FROM BS EN1991-1-4)

SNOW LOADING ZONE 3

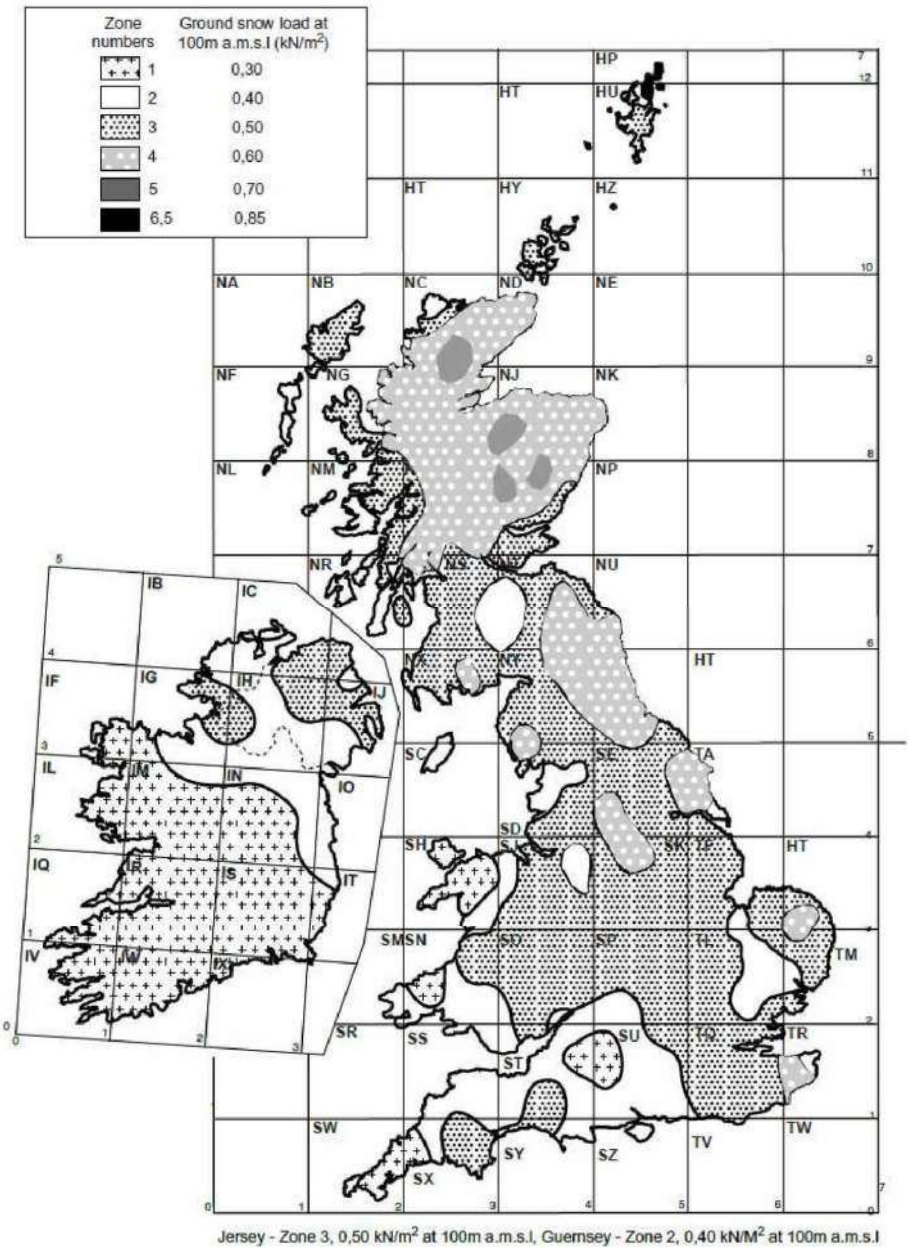

FIG 5. ZONE 3 EXISTING SITE (5,2: SP) REFERENCE SW, GROUND SNOW LOAD AT 0.50M (KN/M²)

WIND LOADING:

PLEASE REFER TO APPENDIX A FOR WIND LOADING TEDDS OUTPUT.

Summary Table

SECTION No.	TYPE	DIMENSIONS (M)	WIND LOAD(kN/m²) FLAT PITCH	WIND LOAD(kN/m²) HIPPED PITCH
1	HIPPED/FLAT PITCH	15.749m(W) x 31.091m(L)	0.50kN/m²	0.50kN/m²
2	HIPPED/FLAT PITCH	15.464m(W) x 13.952m(L)	0.52kN/m²	0.52kN/m²
3	HIPPED/FLAT PITCH	19.952m(W) x 14.737m(L)	0.52kN/m²	0.52kN/m²
4	HIPPED/FLAT PITCH	19.952m(W) x 16.660m(L)	0.52kN/m²	0.52kN/m²
5	HIPPED/FLAT PITCH	22.940m(W) x 15.740m(L)	0.52kN/m²	0.52kN/m²

MAX WORST WIND LOAD (FLAT PITCH): **0.52kN/m²**
MAX WORST WIND LOAD (HIPPED PITCH): **0.52kN/m²**

SNOW LOADING:

PLEASE REFER TO APPENDIX B FOR SNOW LOADING TEDDS OUTPUT.

Summary Table

SECTION No.	TYPE	DIMENSIONS (M)	SNOW LOAD(kN/m²) FLAT PITCH	SNOW LOAD(kN/m²) HIPPED PITCH
1	HIPPED/FLAT PITCH	15.749m(W) x 31.091m(L)	0.37kN/m²	0.50kN/m²
2	HIPPED/FLAT PITCH	15.464m(W) x 13.952m(L)	0.37kN/m²	0.53kN/m²
3	HIPPED/FLAT PITCH	19.952m(W) x 14.737m(L)	0.37kN/m²	0.50kN/m²
4	HIPPED/FLAT PITCH	19.952m(W) x 16.660m(L)	0.37kN/m²	0.50kN/m²
5	HIPPED/FLAT PITCH	22.940m(W) x 15.740m(L)	0.37kN/m²	0.50kN/m²

MAX WORST SNOW LOAD (FLAT PITCH): **0.37kN/m²**
MAX WORST SNOW LOAD (HIPPED PITCH): **0.53kN/m²**

For flat roof

justification of panels for gravity loadings:

The client proposes to use 450-465W Aiko solar panels please refer to **appendix d** for data sheet for the specific panel model and requirements. from the manufacturers provided loads we see that each panel weighs 21.6kg and is 1722mm by 1134mm.

therefore, the weight per m2 = 11.06kg/m^2. or 0.1085kn/m^2

the renusol support frame weighs 2kg/m^2 or 0.019kn/m^2

the allowable vertical imposed load is 0.60kn/m^2 or 60kg/m^2 which is far more than the weight of the panels being placed on the roof. 0.14kn/m^2 vs 0.6kn/m^2.

once the solar panel is in place, this specific section of the roof will not be subjected to foot traffic. consequently, there is no necessity to factor in the actual weight of the panel as an additional imposed load on the roof structure. it should be noted that stepping on the panel would result in its destruction, and the property owner is committed to enforcing stringent measures to ensure that no one attempts to walk on the panel at any time. as such, this portion of the roof can be deemed to bear a load less than the design-imposed load specified in bs en 1991-1. consequently, there exists no imperative for structural reinforcement due to the combined effects of the imposed load and the presence of the solar panel.

the combined loadings on the roof during the installation of the solar panels are within the allowable loading limits and we consider these combined loads to be acceptable.

with regards to snow loading we see that the maximum snow load is 0.37kn/m^2. this load will be cumulative to the weight of the panel, with the panel and frame weighing 14.378kg/m^2 or 0.14kn/m2.

Taking into account FOS from Eurocodes and In accordance with EC1990:2002 Load Combinations.

Table A1.2(C) – Design values of actions (STR/GEO)(Set C)

The following assumptions are made:

- There is low variability in G_k and therefore that $G_{k,sup}$ and $G_{k,inf}$ need not be used.
- Variable actions include imposed loads, snow loads, wind loads, and temperature (non-fire) loads.

PERMANENT ACTIONS (UNFAVOURABLE)	PERMANENT ACTIONS (FAVOURABLE)	LEADING VARIABLE ACTION	ACCOMPANYING VARIABLE ACTIONS
$1.00G_{kj}$	$1.00G_{kj}$	$1.3Q_{k,1}$ (0 when favorable)	$1.3\psi_{0,i}Q_{k,i}$ (0 when favourable)

pv loads 1.0xGk + snow loading 1.3xQk = 1.0x0.14+1.3x0.37 = **0.621kn/m2** vs 1.5x0.6 imposed at existing = **0.9kn/m2**

however, this combined loading is 0.621kn/m^2 which must be equal to or less than the design-imposed load of 0.9kN/m2. Hence acceptable.
the combined snow and panel load would therefore require no additional strengthening works in order to carry this increase in dead load. the existing roof structure is therefore adequate as it stands at present.

in addition to this the frame for the solar panels and fixings thereof will be designed by others to take into consideration the findings of this report and any local effects as required by site constraints including service loadings or other finishes as required.

JUSTIFICATION OF PANELS FOR UPLIFT LOADINGS:

BASED ON OUR CALCULATIONS, IT IS ADVISABLE TO POSITION THE SOLAR PANELS WITHIN THE CENTRAL REGIONS OF THE ROOF, WHERE THERE IS MINIMAL OR NO SUSCEPTIBILITY TO WIND UPLIFT FORCES. SINCE THE PANEL FIXINGS WILL TRANSMIT THE LOAD INTO THE EXISTING ROOF, AND THE ROOF WAS ORIGINALLY DESIGNED TO WITHSTAND THESE WIND LOADS, NO ADDITIONAL STRENGTHENING MEASURES WILL BE NECESSARY FOR THE ROOF STRUCTURE.

TO COMPUTE THE ACTUAL WIND UPLIFT ON THE PV ARRAY, WE REFERENCE BRE DIGEST 489. AS PER OUR PREVIOUS CALCULATIONS, WE HAVE DETERMINED THAT Q (WIND LOAD) EQUALS 0.52KN/M². IN CASES WHERE A MODULE IS SITUATED AT A DISTANCE LESS THAN 0.3 METERS FROM THE ROOF SURFACE, THE WIND UPLIFT NET PRESSURE COEFFICIENT FOR PANELS LOCATED IN THE CENTRAL SECTION OF THE ROOF IS -1.50. MULTIPLYING THESE VALUES, WE GET:

$0.52\text{KN/M}^2 \times -1.50 = -1.17\text{KN/M}^2$

IT'S CRUCIAL TO NOTE THAT ALL ROOF FIXINGS MUST BE CAPABLE OF WITHSTANDING THIS WIND UPLIFT LOAD. FIXING SHOULD BE DESIGNED BY A SUITABILITY QUALIFIED ENGINEER.

Conclusions:

based on our calculations, the combined loadings on the roof during the installation of the solar panels are within the allowable loading limits and we consider these combined loads to be acceptable.

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provided compliance with noted points.

solar panels should be placed in such a way as to avoid solar panels in areas where snow drift buildup is possible leaving space between the differing heights of the roofs.

Using the above-mentioned Aiko solar Panel and solar mounting system by Renusol **appendix h** the installation is acceptable.

For hipped roof

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pv loads 1.0xGk + snow loading 1.3xQk = 1.0x0.14+1.3x0.53 = **0.829kn/m2** vs 1.5x0.6 imposed at existing = **0.9kn/m2**

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Using the above-mentioned Aiko solar Panel and solar mounting system by Renusol **appendix h** the installation is acceptable.

Calculations

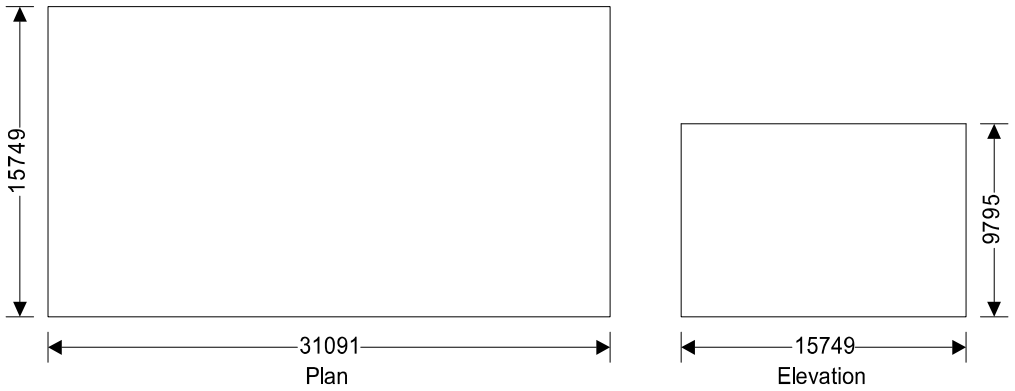
appendix a – wind loading

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 1) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Flat
Length of building	L = **31091** mm
Width of building	W = **15749** mm
Height to eaves	H = **9795** mm
Eaves type	Sharp
Total height	h = **9795** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg and roof

Reference height (at which q is sought)	z = **9795**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm

Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.75**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.3** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.287**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.50** kN/m^2

Structural factor

Structural factor	c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg and roof

Reference height (at which q is sought)	z = **9795**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.75**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.3** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.287**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.50** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.50** kN/m^2

Pressures and forces

Net pressure	$p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.50	-1.00	19.19	-19.15
G (-ve)	-1.20	0.50	-0.70	41.72	-29.15
H (-ve)	-0.70	0.50	-0.45	243.63	-109.43
I (-ve)	-0.20	0.50	-0.20	185.12	-36.95

Total vertical net force	$F_{w,v}$ = **-194.68** kN
Total horizontal net force	$F_{w,h}$ = **0.00** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.50	-0.70	38.38	-26.81
B	-0.80	0.50	-0.50	115.88	-57.83
D	0.75	0.50	0.27	304.54	83.53
E	-0.40	0.50	-0.30	304.54	-91.07

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-91.1** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **83.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.622

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **148.4** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	-1.80	0.50	-0.75	19.19	-14.36
G (+ve)	-1.20	0.50	-0.45	41.72	-18.74
H (+ve)	-0.70	0.50	-0.20	243.63	-48.63
I (+ve)	0.20	0.50	0.25	185.12	46.19

Total vertical net force $F_{w,v}$ = **-35.55** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.50	-0.45	38.38	-17.24
B	-0.80	0.50	-0.25	115.88	-28.92
D	0.75	0.50	0.52	304.54	159.52
E	-0.40	0.50	-0.05	304.54	-15.07

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-15.1** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **159.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.622

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **148.4** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.50	-1.00	12.40	-12.38
G (-ve)	-1.20	0.50	-0.70	12.40	-8.66
H (-ve)	-0.70	0.50	-0.45	99.21	-44.56
I (-ve)	-0.20	0.50	-0.20	365.64	-72.99

Total vertical net force $F_{w,v}$ = **-138.60** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.50	-0.70	30.85	-21.56
B	-0.80	0.50	-0.50	123.41	-61.59
C	-0.50	0.50	-0.35	150.27	-52.50
D	0.71	0.50	0.25	154.26	39.16
E	-0.32	0.50	-0.26	154.26	-39.83

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-39.8** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **39.2** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.315

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **67.1** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.50	-0.75	12.40	-9.28
G (-ve)	-1.20	0.50	-0.45	12.40	-5.57
H (-ve)	-0.70	0.50	-0.20	99.21	-19.81
I (-ve)	-0.20	0.50	0.05	365.64	18.25

Total vertical net force $F_{w,v}$ = **-16.41** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.50	-0.45	30.85	-13.86
B	-0.80	0.50	-0.25	123.41	-30.79
C	-0.50	0.50	-0.10	150.27	-15.00
D	0.71	0.50	0.50	154.26	77.65
E	-0.32	0.50	-0.01	154.26	-1.34

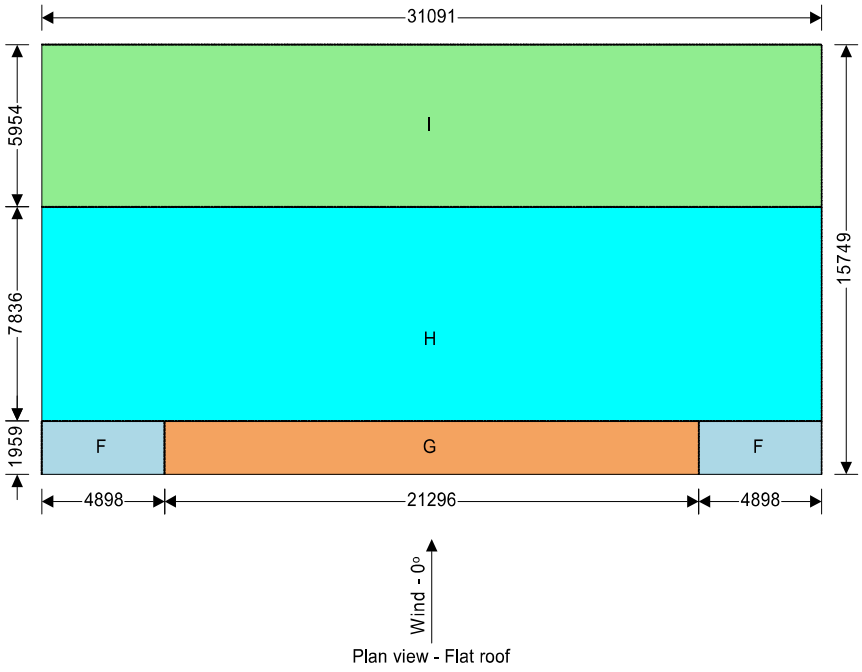
Overall loading

Equiv leeward net force for overall section $F_I = F_{w,wE} =$ **-1.3** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **77.7** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.315

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_I) + F_{w,h} =$ **67.1** kN



Plan view - Flat roof

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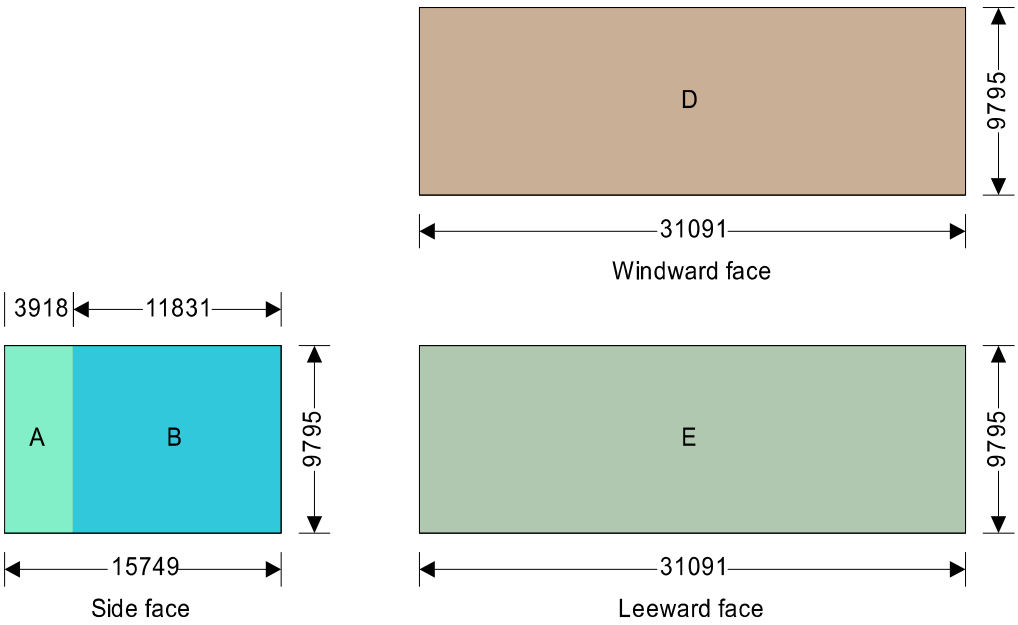
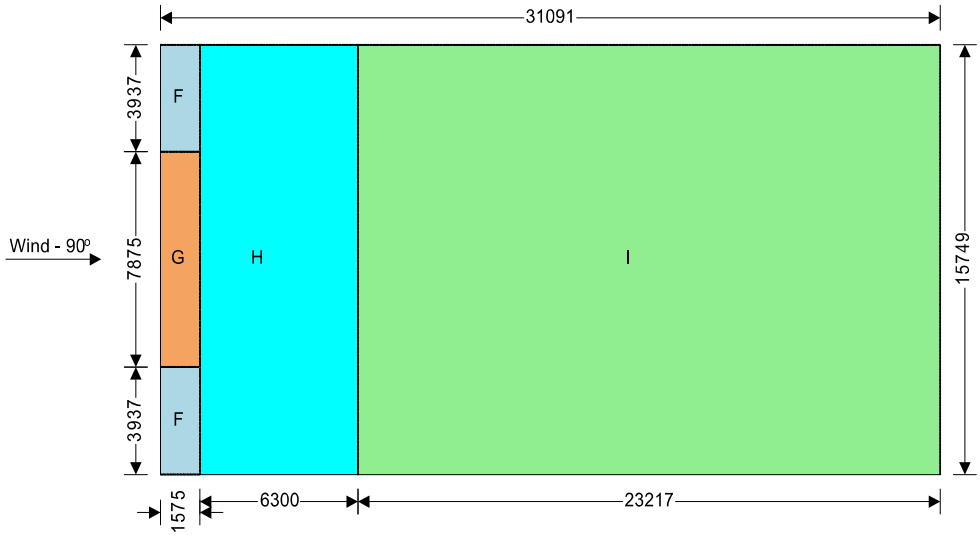
	Section: WIND LOADING (SECTION 1) Flat Pitch				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025





Plan view - Flat roof

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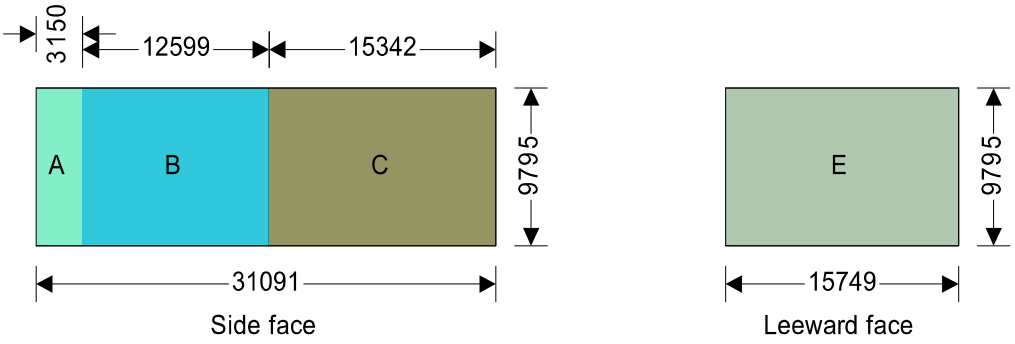
	Section: WIND LOADING (SECTION 1) Flat Pitch				Sheet no./rev.: 7	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



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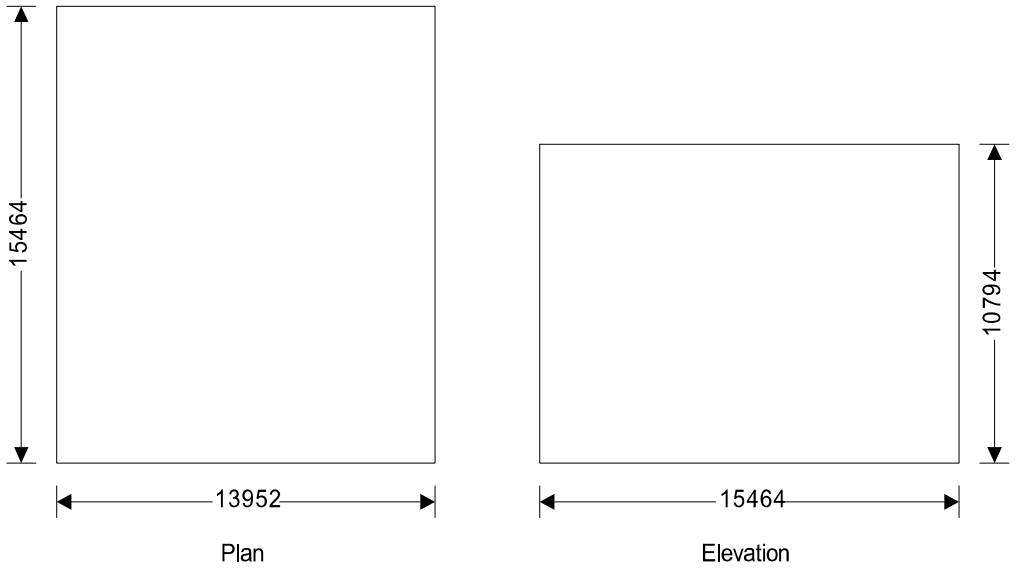
	Section: WIND LOADING (SECTION 2) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Flat
Length of building	L = **13952** mm
Width of building	W = **15464** mm
Height to eaves	H = **10794** mm
Eaves type	Sharp
Total height	h = **10794** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 2) Flat Pitch				Sheet no./rev.: 2	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg and roof

Reference height (at which q is sought)	z = **10794**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.7** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Structural factor

Structural factor	c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg and roof

Reference height (at which q is sought)	z = **10794**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.7** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	9.73	-10.08
G (-ve)	-1.20	0.52	-0.72	9.73	-7.05
H (-ve)	-0.70	0.52	-0.47	77.86	-36.28
I (-ve)	-0.20	0.52	-0.21	118.42	-24.52

Total vertical net force	$F_{w,v}$ = **-77.94** kN
Total horizontal net force	$F_{w,h}$ = **0.00** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	30.12	-21.83
B	-0.80	0.52	-0.52	120.48	-62.37
C	-0.50	0.52	-0.36	16.32	-5.91
D	0.76	0.52	0.29	150.60	43.64
E	-0.42	0.52	-0.32	150.60	-48.30

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-48.3** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **43.6** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/W is 0.698

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **78.1** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	-1.80	0.52	-0.78	9.73	-7.56
G (+ve)	-1.20	0.52	-0.47	9.73	-4.54
H (+ve)	-0.70	0.52	-0.21	77.86	-16.12
I (+ve)	0.20	0.52	0.26	118.42	30.66

Total vertical net force $F_{w,v} =$ **2.44** kN

Total horizontal net force $F_{w,h} =$ **0.00** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	30.12	-14.03
B	-0.80	0.52	-0.26	120.48	-31.19
C	-0.50	0.52	-0.10	16.32	-1.69
D	0.76	0.52	0.55	150.60	82.63
E	-0.42	0.52	-0.06	150.60	-9.31

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-9.3** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **82.6** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/W is 0.698

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **78.1** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	11.96	-12.38
G (-ve)	-1.20	0.52	-0.72	11.96	-8.67
H (-ve)	-0.70	0.52	-0.47	95.65	-44.57
I (-ve)	-0.20	0.52	-0.21	96.19	-19.92

Total vertical net force $F_{w,v}$ = **-85.54** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	33.38	-24.20
B	-0.80	0.52	-0.52	117.21	-60.68
D	0.77	0.52	0.30	166.92	49.24
E	-0.44	0.52	-0.33	166.92	-55.28

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-55.3** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **49.2** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.774

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **88.8** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-0.78	11.96	-9.29
G (-ve)	-1.20	0.52	-0.47	11.96	-5.57
H (-ve)	-0.70	0.52	-0.21	95.65	-19.81
I (-ve)	-0.20	0.52	0.05	96.19	4.98

Total vertical net force $F_{w,v}$ = **-29.69** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	33.38	-15.56
B	-0.80	0.52	-0.26	117.21	-30.34
D	0.77	0.52	0.55	166.92	92.45
E	-0.44	0.52	-0.07	166.92	-12.07

Overall loading

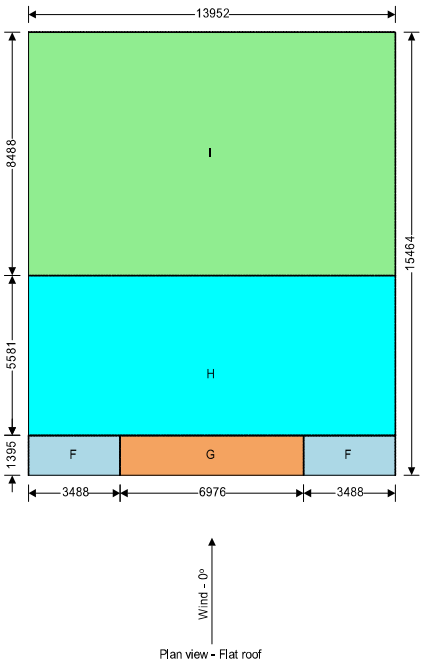
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-12.1** kN

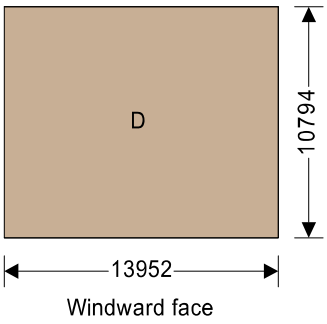
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 2) Flat Pitch				Sheet no./rev.: 5	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

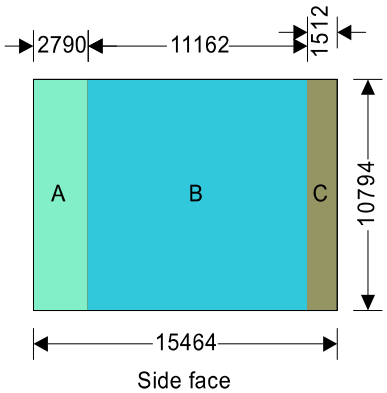
Net windward force for overall section — $F_w = F_{w,wD} =$ **92.5** kN

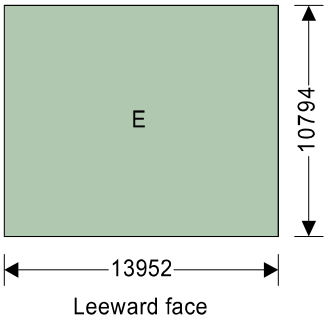
Lack of correlation (cl.7.2.2(3) – Note) — $f_{corr} =$ **0.85** as h/L is 0.774

Overall loading overall section — $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **88.8** kN









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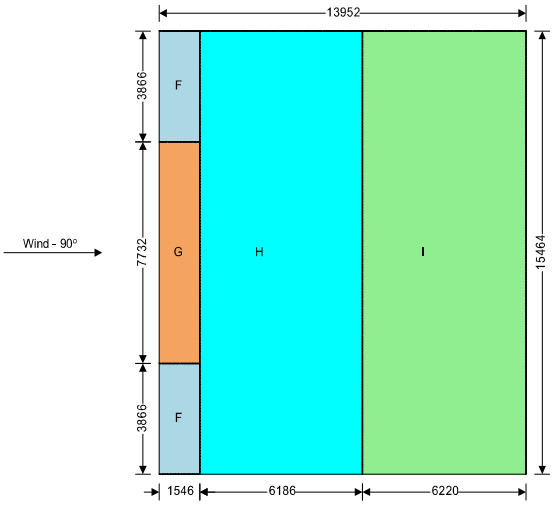
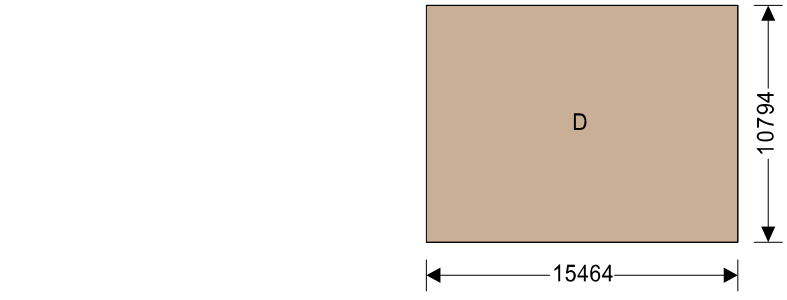
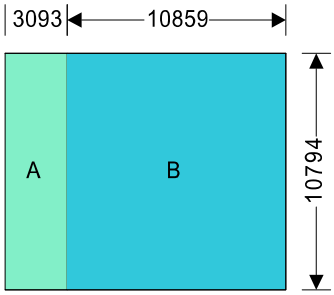
	Section: WIND LOADING (SECTION 2) Flat Pitch				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



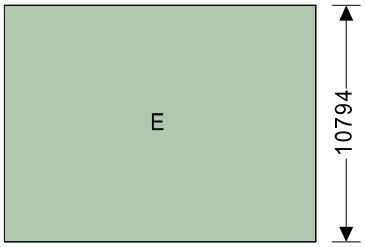
Plan view - Flat roof



Windward face



Side face



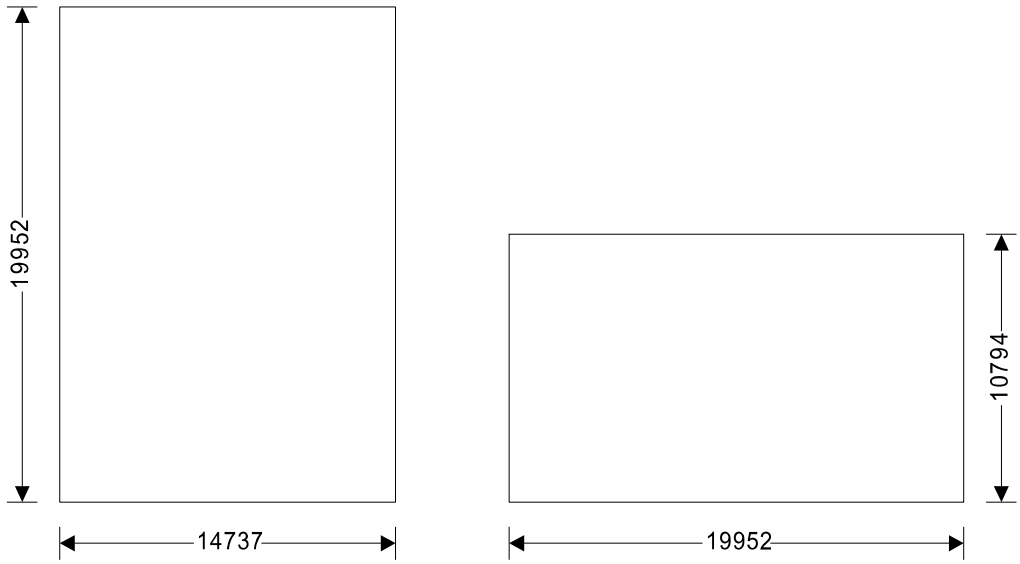
Leeward face

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 3) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Flat
Length of building	L = **14737** mm
Width of building	W = **19952** mm
Height to eaves	H = **10794** mm
Eaves type	Sharp
Total height	h = **10794** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

SOLAR SURVEYS	Project [redacted]				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 3) Flat Pitch				Sheet no./rev. 2	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg and roof

Reference height (at which q is sought) z = **10794**mm

Displacement height (sheltering effects excluded) h_{dis} = **0** mm

Roughness length (Table 4.1) z_0 = **300** mm

Roughness length (Category II) $z_{0,II}$ = **50** mm

Minimum height (Table 4.1) z_{min} = **5000** mm

Maximum height z_{max} = **200000** mm

Terrain factor $k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**

Roughness factor $c_r = k_r \times \ln(z / z_0)$ = **0.77**

Mean wind $v_m = c_r \times c_o \times v_b$ = **16.7** m/s

Turbulence factor k_I = **1.0**

Turbulence intensity $I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**

Peak velocity pressure $q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Structural factor

Structural factor c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg and roof

Reference height (at which q is sought) z = **10794**mm

Displacement height (sheltering effects excluded) h_{dis} = **0** mm

Terrain factor $k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**

Roughness factor $c_r = k_r \times \ln(z / z_0)$ = **0.77**

Mean wind $v_m = c_r \times c_o \times v_b$ = **16.7** m/s

Turbulence factor k_I = **1.0**

Turbulence intensity $I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**

Peak velocity pressure $q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.) $q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure $p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$

Net force $F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	10.86	-11.24
G (-ve)	-1.20	0.52	-0.72	10.86	-7.87
H (-ve)	-0.70	0.52	-0.47	86.87	-40.48
I (-ve)	-0.20	0.52	-0.21	185.44	-38.40

Total vertical net force $F_{w,v}$ = **-98.00** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	31.81	-23.06
B	-0.80	0.52	-0.52	127.26	-65.88
C	-0.50	0.52	-0.36	56.29	-20.40
D	0.74	0.52	0.28	159.07	44.37
E	-0.38	0.52	-0.30	159.07	-47.57

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-47.6** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **44.4** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.541

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **78.1** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	-1.80	0.52	-0.78	10.86	-8.43
G (+ve)	-1.20	0.52	-0.47	10.86	-5.06
H (+ve)	-0.70	0.52	-0.21	86.87	-17.99
I (+ve)	0.20	0.52	0.26	185.44	48.00

Total vertical net force $F_{w,v}$ = **16.52** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	31.81	-14.82
B	-0.80	0.52	-0.26	127.26	-32.94
C	-0.50	0.52	-0.10	56.29	-5.83
D	0.74	0.52	0.54	159.07	85.55
E	-0.38	0.52	-0.04	159.07	-6.39

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-6.4** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **85.6** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.541

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **78.1** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	19.90	-20.61
G (-ve)	-1.20	0.52	-0.72	19.90	-14.43
H (-ve)	-0.70	0.52	-0.47	159.23	-74.19
I (-ve)	-0.20	0.52	-0.21	94.99	-19.67

Total vertical net force $F_{w,v}$ = **-128.90** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	43.07	-31.22
B	-0.80	0.52	-0.52	116.00	-60.06
D	0.76	0.52	0.29	215.36	62.92
E	-0.43	0.52	-0.33	215.36	-70.09

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-70.1** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **62.9** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.732

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **113.1** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-0.78	19.90	-15.46
G (-ve)	-1.20	0.52	-0.47	19.90	-9.27
H (-ve)	-0.70	0.52	-0.21	159.23	-32.98
I (-ve)	-0.20	0.52	0.05	94.99	4.92

Total vertical net force $F_{w,v}$ = **-52.79** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	43.07	-20.07
B	-0.80	0.52	-0.26	116.00	-30.03
D	0.76	0.52	0.55	215.36	118.67
E	-0.43	0.52	-0.07	215.36	-14.34

Overall loading

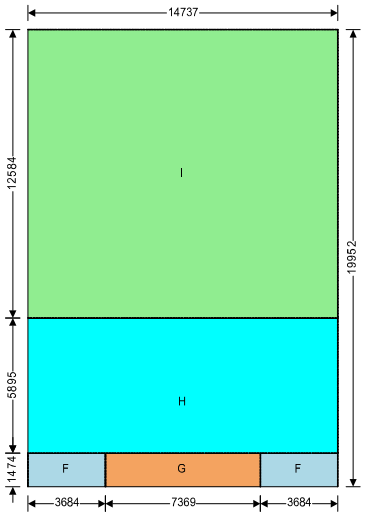
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-14.3** kN

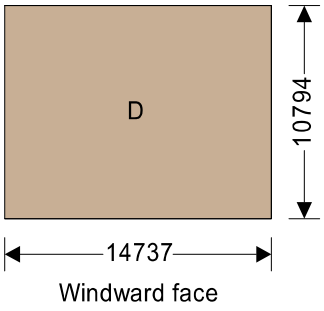
SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 3) Flat Pitch				Sheet no./rev. 5	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

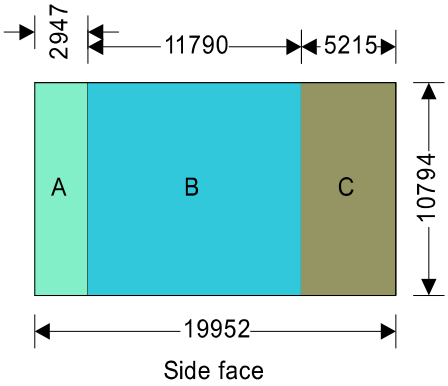
Net windward force for overall section $F_w = F_{w,wD} =$ **118.7** kN

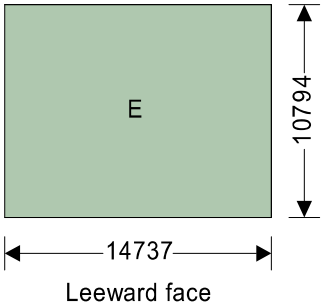
Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.732

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **113.1** kN

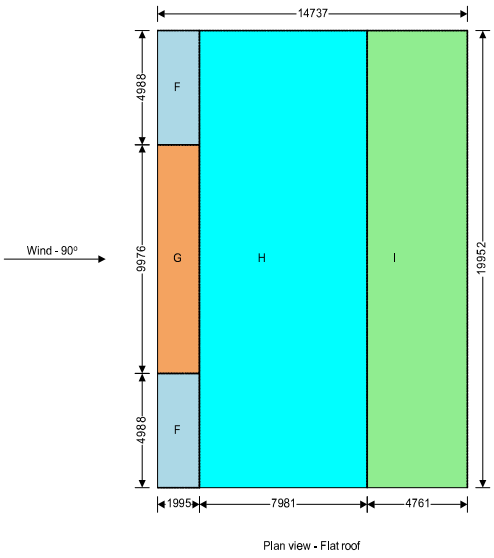




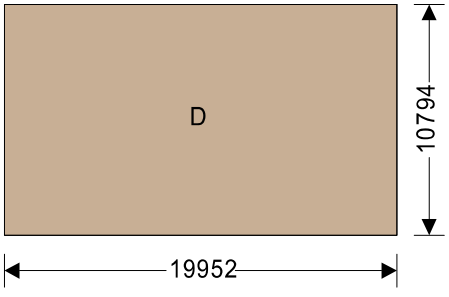




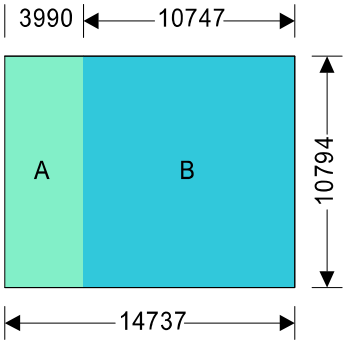
SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 3) Flat Pitch				Sheet no./rev. 6	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025



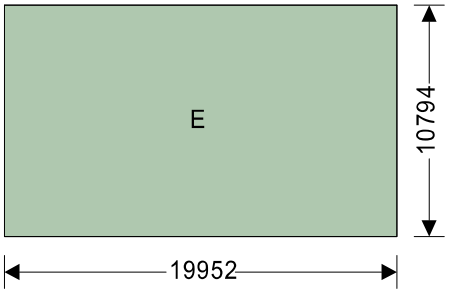
Plan view - Flat roof



Windward face



Side face



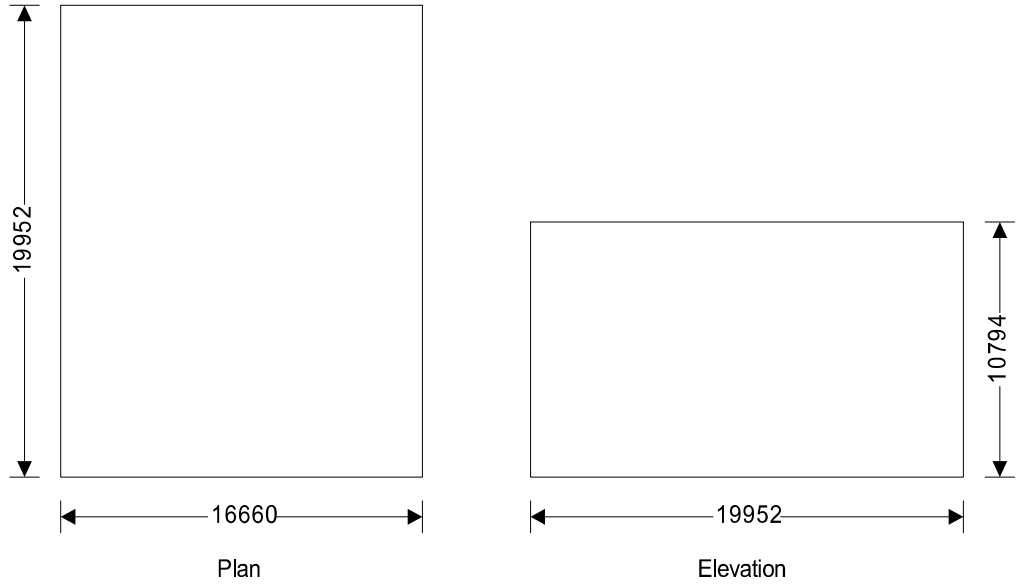
Leeward face

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 4) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Flat
Length of building	L = **16660** mm
Width of building	W = **19952** mm
Height to eaves	H = **10794** mm
Eaves type	Sharp
Total height	h = **10794** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg and roof

Reference height (at which q is sought) z = **10794**mm

Displacement height (sheltering effects excluded) h_{dis} = **0** mm

Roughness length (Table 4.1) z_0 = **300** mm

Roughness length (Category II) $z_{0,II}$ = **50** mm

Minimum height (Table 4.1) z_{min} = **5000** mm

Maximum height z_{max} = **200000** mm

Terrain factor $k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**

Roughness factor $c_r = k_r \times \ln(z / z_0)$ = **0.77**

Mean wind $v_m = c_r \times c_o \times v_b$ = **16.7** m/s

Turbulence factor k_I = **1.0**

Turbulence intensity $I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**

Peak velocity pressure $q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Structural factor

Structural factor c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg and roof

Reference height (at which q is sought) z = **10794**mm

Displacement height (sheltering effects excluded) h_{dis} = **0** mm

Terrain factor $k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**

Roughness factor $c_r = k_r \times \ln(z / z_0)$ = **0.77**

Mean wind $v_m = c_r \times c_o \times v_b$ = **16.7** m/s

Turbulence factor k_I = **1.0**

Turbulence intensity $I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**

Peak velocity pressure $q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.) $q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure $p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$

Net force $F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	13.88	-14.37
G (-ve)	-1.20	0.52	-0.72	13.88	-10.06
H (-ve)	-0.70	0.52	-0.47	111.02	-51.73
I (-ve)	-0.20	0.52	-0.21	193.62	-40.10

Total vertical net force $F_{w,v}$ = **-116.26** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	35.97	-26.07
B	-0.80	0.52	-0.52	143.86	-74.48
C	-0.50	0.52	-0.36	35.53	-12.88
D	0.74	0.52	0.28	179.83	50.16
E	-0.38	0.52	-0.30	179.83	-53.78

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-53.8** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **50.2** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.541

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **88.3** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	-1.80	0.52	-0.78	13.88	-10.78
G (+ve)	-1.20	0.52	-0.47	13.88	-6.47
H (+ve)	-0.70	0.52	-0.21	111.02	-22.99
I (+ve)	0.20	0.52	0.26	193.62	50.12

Total vertical net force $F_{w,v}$ = **9.89** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	35.97	-16.76
B	-0.80	0.52	-0.26	143.86	-37.24
C	-0.50	0.52	-0.10	35.53	-3.68
D	0.74	0.52	0.54	179.83	96.71
E	-0.38	0.52	-0.04	179.83	-7.22

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-7.2** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **96.7** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.541

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **88.3** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	19.90	-20.61
G (-ve)	-1.20	0.52	-0.72	19.90	-14.43
H (-ve)	-0.70	0.52	-0.47	159.23	-74.19
I (-ve)	-0.20	0.52	-0.21	133.36	-27.62

Total vertical net force $F_{w,v}$ = **-136.85** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	43.07	-31.22
B	-0.80	0.52	-0.52	136.76	-70.80
D	0.75	0.52	0.29	215.36	61.66
E	-0.41	0.52	-0.31	215.36	-67.58

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-67.6** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **61.7** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.648

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **109.9** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-0.78	19.90	-15.46
G (-ve)	-1.20	0.52	-0.47	19.90	-9.27
H (-ve)	-0.70	0.52	-0.21	159.23	-32.98
I (-ve)	-0.20	0.52	0.05	133.36	6.90

Total vertical net force $F_{w,v}$ = **-50.80** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	43.07	-20.07
B	-0.80	0.52	-0.26	136.76	-35.40
D	0.75	0.52	0.55	215.36	117.41
E	-0.41	0.52	-0.05	215.36	-11.83

Overall loading

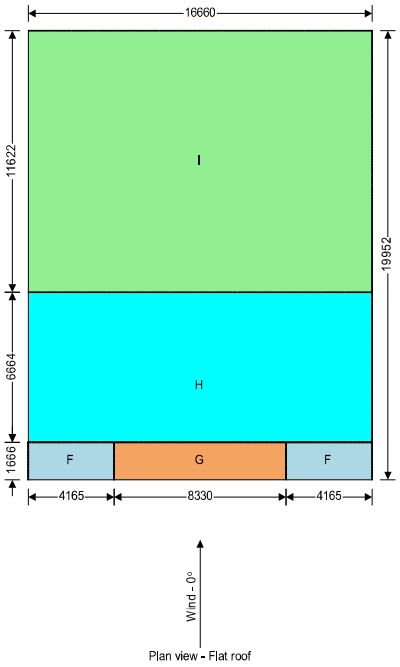
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-11.8** kN

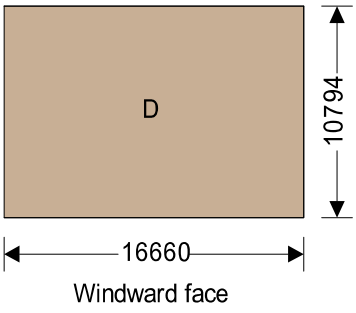
SOLAR SURVEYS	Project [redacted]				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 4) Flat Pitch				Sheet no./rev. 5	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

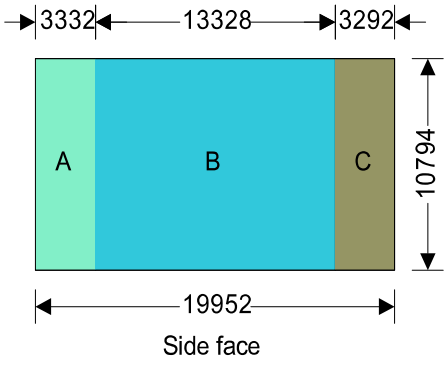
Net windward force for overall section $F_w = F_{w,wD} =$ **117.4** kN

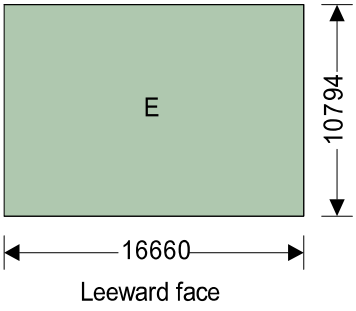
Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.648

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **109.9** kN









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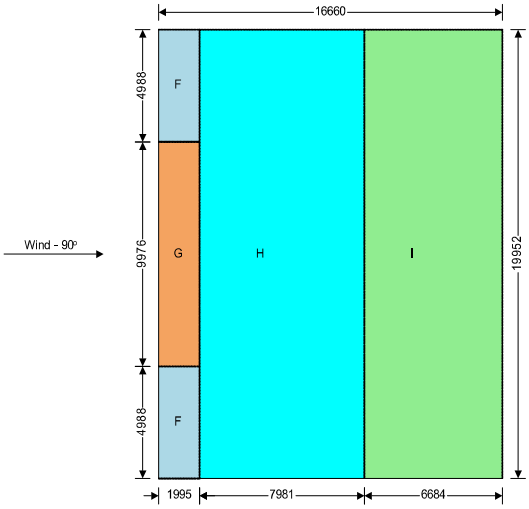
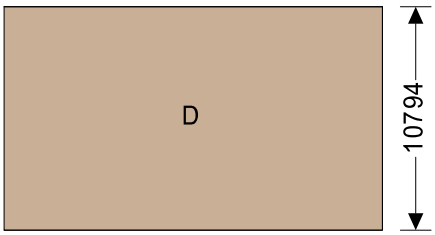
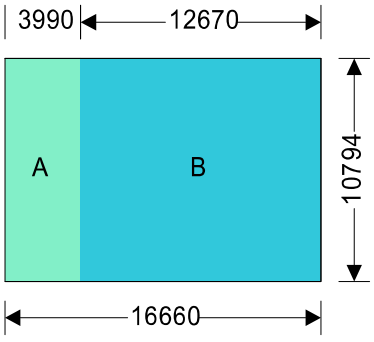
	Section WIND LOADING (SECTION 4) Flat Pitch				Sheet no./rev. 6	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025



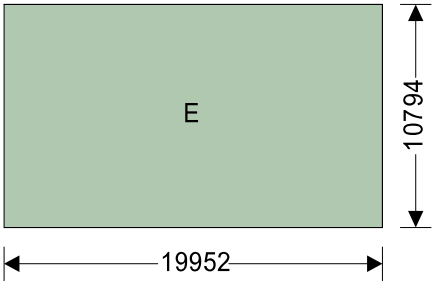
Plan view - Flat roof



Windward face



Side face



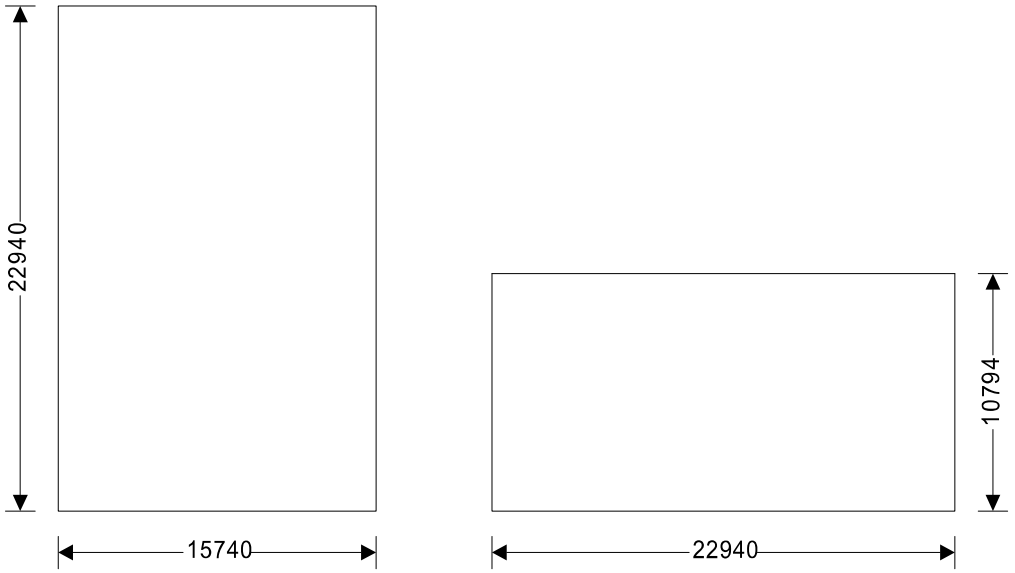
Leeward face

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 5) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Flat
Length of building	L = **15740** mm
Width of building	W = **22940** mm
Height to eaves	H = **10794** mm
Eaves type	Sharp
Total height	h = **10794** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 5) Flat Pitch				Sheet no./rev. 2	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg and roof

Reference height (at which q is sought)	z = **10794**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.7** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Structural factor

Structural factor	c_sC_d = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg and roof

Reference height (at which q is sought)	z = **10794**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.7** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_sC_d \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	12.39	-12.83
G (-ve)	-1.20	0.52	-0.72	12.39	-8.98
H (-ve)	-0.70	0.52	-0.47	99.10	-46.18
I (-ve)	-0.20	0.52	-0.21	237.20	-49.12

Total vertical net force	$F_{w,v}$ = **-117.10** kN
Total horizontal net force	$F_{w,h}$ = **0.00** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	33.98	-24.63
B	-0.80	0.52	-0.52	135.92	-70.37
C	-0.50	0.52	-0.36	77.72	-28.17
D	0.73	0.52	0.27	169.90	46.57
E	-0.36	0.52	-0.29	169.90	-49.15

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-49.2** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **46.6** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/W is 0.471

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **81.4** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	-1.80	0.52	-0.78	12.39	-9.62
G (+ve)	-1.20	0.52	-0.47	12.39	-5.77
H (+ve)	-0.70	0.52	-0.21	99.10	-20.52
I (+ve)	0.20	0.52	0.26	237.20	61.40

Total vertical net force $F_{w,v} =$ **25.49** kN

Total horizontal net force $F_{w,h} =$ **0.00** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	33.98	-15.83
B	-0.80	0.52	-0.26	135.92	-35.18
C	-0.50	0.52	-0.10	77.72	-8.05
D	0.73	0.52	0.53	169.90	90.55
E	-0.36	0.52	-0.03	169.90	-5.17

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-5.2** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **90.5** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/W is 0.471

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **81.4** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-1.04	23.30	-24.13
G (-ve)	-1.20	0.52	-0.72	26.22	-19.01
H (-ve)	-0.70	0.52	-0.47	198.09	-92.30
I (-ve)	-0.20	0.52	-0.21	113.46	-23.50

Total vertical net force $F_{w,v}$ = **-158.93** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.72	46.60	-33.78
B	-0.80	0.52	-0.52	123.29	-63.83
D	0.76	0.52	0.29	247.61	71.55
E	-0.42	0.52	-0.32	247.61	-78.99

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-79.0** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **71.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.686

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **128.0** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-1.80	0.52	-0.78	23.30	-18.10
G (-ve)	-1.20	0.52	-0.47	26.22	-12.22
H (-ve)	-0.70	0.52	-0.21	198.09	-41.02
I (-ve)	-0.20	0.52	0.05	113.46	5.87

Total vertical net force $F_{w,v}$ = **-65.46** kN

Total horizontal net force $F_{w,h}$ = **0.00** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.52	-0.47	46.60	-21.72
B	-0.80	0.52	-0.26	123.29	-31.92
D	0.76	0.52	0.55	247.61	135.64
E	-0.42	0.52	-0.06	247.61	-14.90

Overall loading

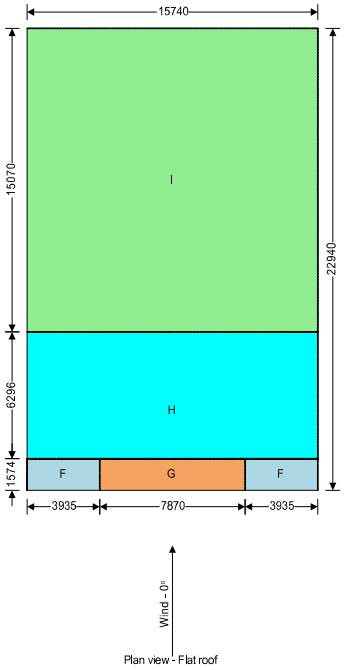
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-14.9** kN

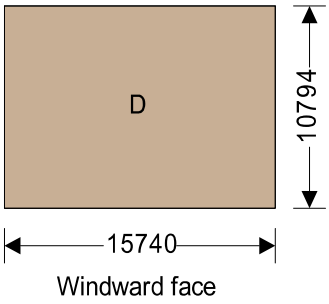
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 5) Flat Pitch				Sheet no./rev.: 5	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

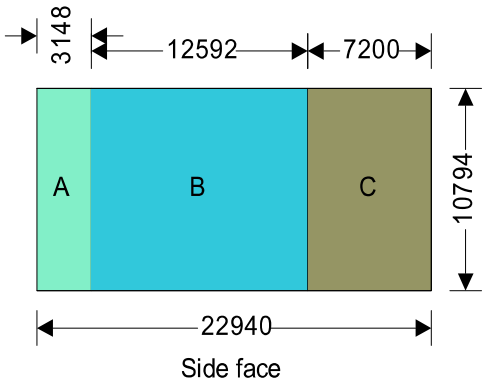
Net windward force for overall section — $F_w = F_{w,wD} =$ **135.6** kN

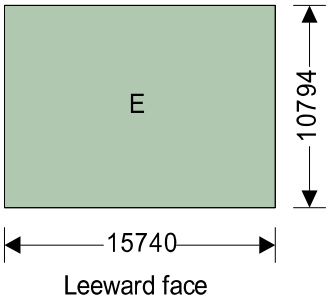
Lack of correlation (cl.7.2.2(3) – Note) — $f_{corr} =$ **0.85** as h/L is 0.686

Overall loading overall section — $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **128.0** kN









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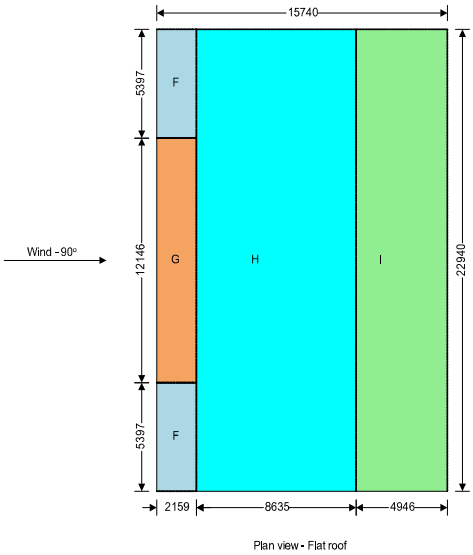
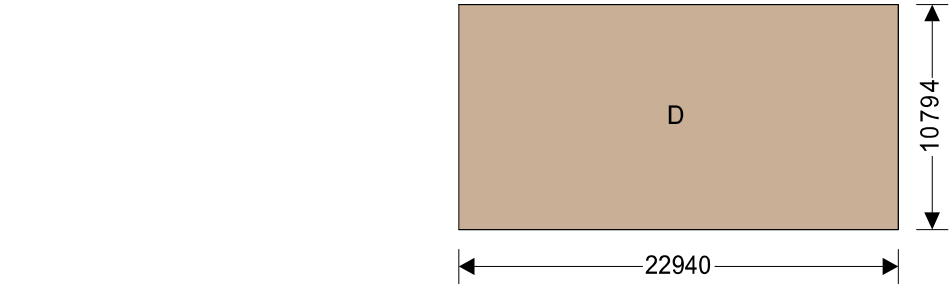
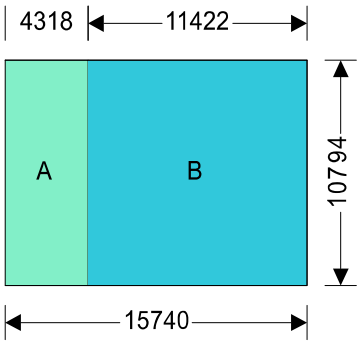
	Section: WIND LOADING (SECTION 5) Flat Pitch			Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



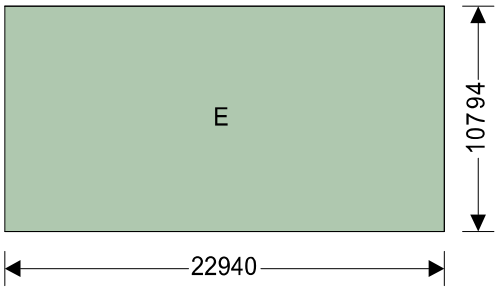
Plan view - Flat roof



Windward face



Side face



Leeward face

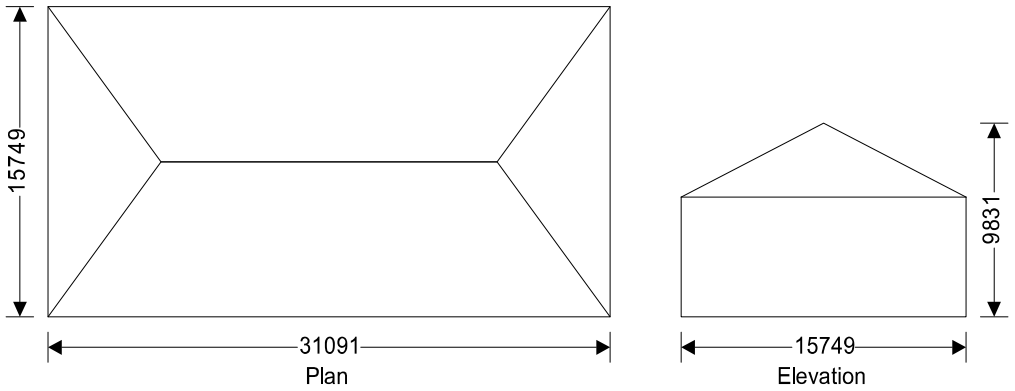
APPENDIX B – SNOW LOADING

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 1) HIPPED PITCH				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Hipped
Length of building	L = **31091** mm
Width of building	W = **15749** mm
Height to eaves	H = **6075** mm
Pitch of main slope	α_0 = **25.5** deg
Pitch of gable slope	α_{90} = **31.0** deg
Total height	h = **9831** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm

Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Structural factor

Structural factor	c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Peak velocity pressure - roof

Reference height (at which q is sought)	z = **9831**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.75**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.3** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.287**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.50** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.50** kN/m^2

Pressures and forces

Net pressure	$p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.62	0.50	-0.41	18.02	-7.38
G (-ve)	-0.59	0.50	-0.39	46.31	-18.29
H (-ve)	-0.23	0.50	-0.21	152.39	-32.75
I (-ve)	-0.43	0.50	-0.31	165.59	-52.14
J (-ve)	-0.79	0.50	-0.49	30.02	-14.86
K (-ve)	-0.71	0.50	-0.45	21.10	-9.59
L (-ve)	-1.40	0.50	-0.80	26.89	-21.50
M (-ve)	-0.74	0.50	-0.47	87.96	-41.32

Total vertical net force $F_{w,v}$ = **-178.55** kN

Total horizontal net force $F_{w,h}$ = **7.82** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.59	23.89	-14.17
B	-0.80	0.41	-0.43	71.79	-30.78
D	0.75	0.41	0.21	188.88	39.34
E	-0.40	0.41	-0.26	188.88	-49.92

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-49.9** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **39.3** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.624

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **83.7** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	0.41	0.50	0.35	18.02	6.39
G (+ve)	0.55	0.50	0.42	46.31	19.67
H (+ve)	0.34	0.50	0.32	152.39	48.74
I (+ve)	-0.43	0.50	-0.06	165.59	-10.76
J (+ve)	-0.79	0.50	-0.24	30.02	-7.35
K (+ve)	-0.71	0.50	-0.20	21.10	-4.32
L (+ve)	-1.40	0.50	-0.55	26.89	-14.78
M (+ve)	-0.74	0.50	-0.22	87.96	-19.34

Total vertical net force $F_{w,v}$ = **16.47** kN

Total horizontal net force $F_{w,h}$ = **41.86** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	23.89	-8.20
B	-0.80	0.41	-0.18	71.79	-12.84
D	0.75	0.41	0.46	188.88	86.54
E	-0.40	0.41	-0.01	188.88	-2.72

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-2.7** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **86.5** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/W is 0.624

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **117.7** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.47	0.50	-0.33	10.82	-3.61
G (-ve)	-0.47	0.50	-0.33	14.47	-4.82
H (-ve)	-0.19	0.50	-0.19	32.13	-6.21
I (-ve)	-0.39	0.50	-0.30	36.75	-10.90
J (-ve)	-0.69	0.50	-0.45	20.67	-9.23
L (-ve)	-1.39	0.50	-0.80	27.48	-21.88
M (-ve)	-0.80	0.50	-0.50	55.38	-27.68
N (-ve)	-0.20	0.50	-0.20	350.56	-70.08

Total vertical net force $F_{w,v} =$ **-139.36** kN

Total horizontal net force $F_{w,h} =$ **2.36** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.59	19.14	-11.35
B	-0.80	0.41	-0.43	76.54	-32.82
C	-0.50	0.41	-0.31	93.20	-28.47
D	0.71	0.41	0.19	95.68	18.31
E	-0.32	0.41	-0.23	95.68	-22.06

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-22.1** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **18.3** kN

Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.316

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **36.7** kN

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 1) HIPPED PITCH				Sheet no./rev.: 5	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.47	0.50	-0.08	10.82	-0.90
G (-ve)	-0.47	0.50	-0.08	14.47	-1.21
H (-ve)	-0.19	0.50	0.06	32.13	1.82
I (-ve)	-0.39	0.50	-0.05	36.75	-1.71
J (-ve)	-0.69	0.50	-0.20	20.67	-4.06
L (-ve)	-1.39	0.50	-0.55	27.48	-15.02
M (-ve)	-0.80	0.50	-0.25	55.38	-13.84
N (-ve)	-0.20	0.50	0.05	350.56	17.52

Total vertical net force $F_{w,v}$ = **-15.70** kN

Total horizontal net force $F_{w,h}$ = **2.36** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	19.14	-6.57
B	-0.80	0.41	-0.18	76.54	-13.69
C	-0.50	0.41	-0.06	93.20	-5.18
D	0.71	0.41	0.44	95.68	42.22
E	-0.32	0.41	0.02	95.68	1.85

Overall loading

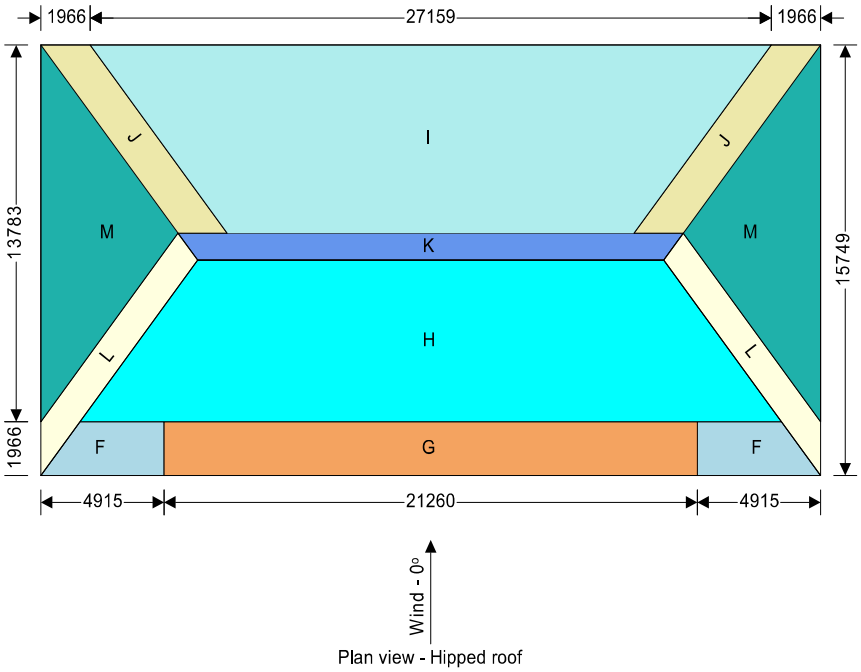
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **1.9** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **42.2** kN

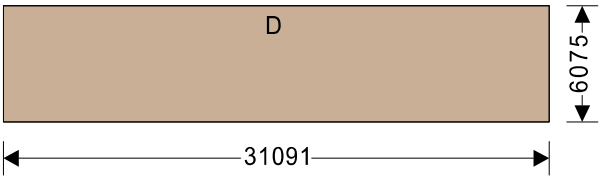
Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.316

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **36.7** kN

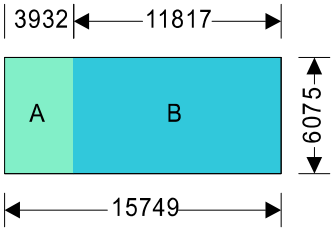
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 1) HIPPED PITCH				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



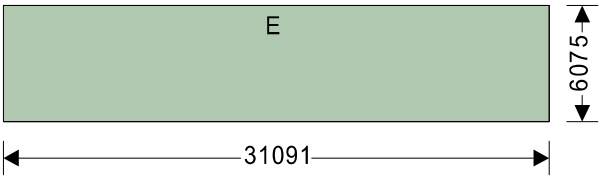
Plan view - Hipped roof



Windward face

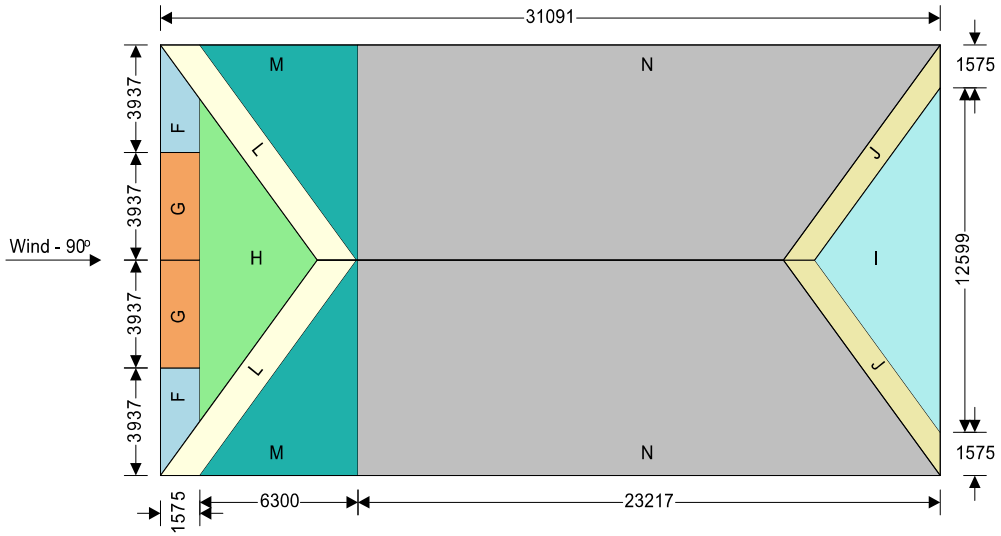


Side face

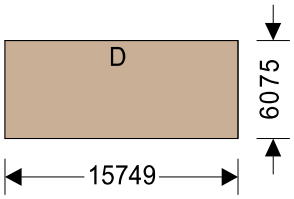


Leeward face

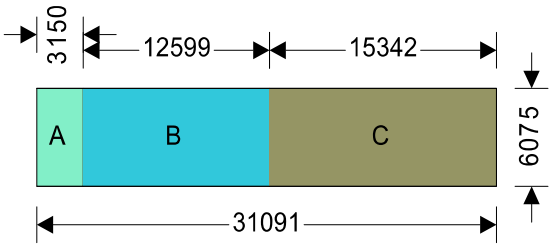
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 1) HIPPED PITCH				Sheet no./rev.: 7	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



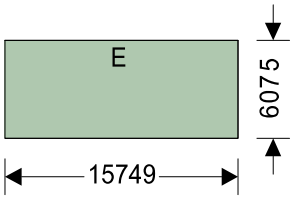
Plan view - Hipped roof



Windward face



Side face



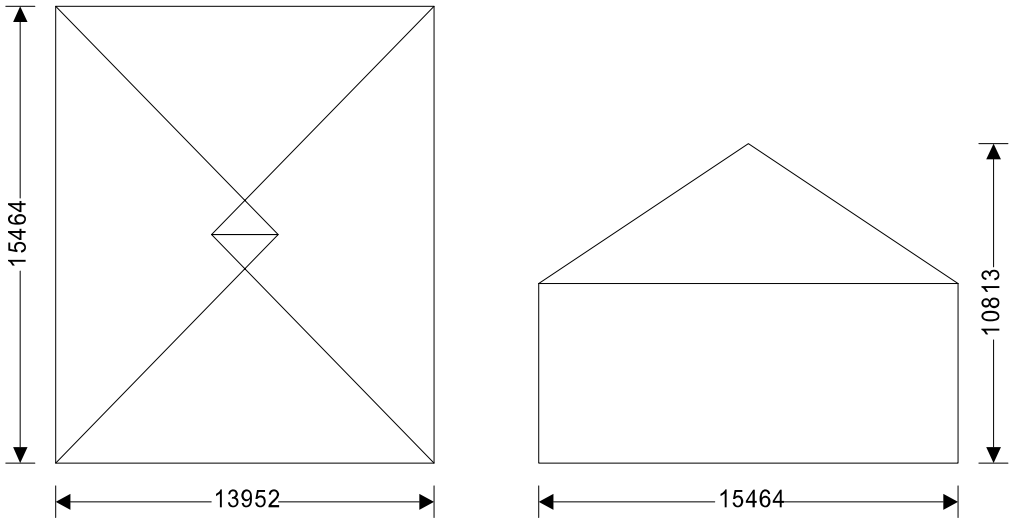
Leeward face

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 2) HIPPED PITCH				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Hipped
Length of building	L = **13952** mm
Width of building	W = **15464** mm
Height to eaves	H = **6075** mm
Pitch of main slope	α_0 = **31.5** deg
Pitch of gable slope	α_{90} = **30.0** deg
Total height	h = **10813** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 2) HIPPED PITCH				Sheet no./rev.: 2	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Structural factor

Structural factor	c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Peak velocity pressure - roof

Reference height (at which q is sought)	z = **10813**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.8** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 2) HIPPED PITCH				Sheet no./rev. 3	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

Roof load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.45	0.52	-0.34	8.99	-3.03
G (-ve)	-0.45	0.52	-0.34	11.42	-3.84
H (-ve)	-0.18	0.52	-0.20	31.69	-6.24
I (-ve)	-0.39	0.52	-0.31	30.49	-9.32
J (-ve)	-0.69	0.52	-0.46	23.02	-10.61
K (-ve)	-0.48	0.52	-0.35	-1.41	0.50
L (-ve)	-1.39	0.52	-0.82	25.25	-20.80
M (-ve)	-0.80	0.52	-0.52	121.29	-62.84

Total vertical net force $F_{w,v}$ = **-99.06** kN

Total horizontal net force $F_{w,h}$ = **3.30** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	16.95	-10.12
B	-0.80	0.41	-0.43	67.81	-29.32
C	-0.50	0.41	-0.31	9.19	-2.84
D	0.76	0.41	0.21	84.76	17.69
E	-0.42	0.41	-0.28	84.76	-23.41

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-23.4** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **17.7** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.699

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **38.2** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	0.52	0.52	0.42	8.99	3.82
G (+ve)	0.70	0.52	0.52	11.42	5.91
H (+ve)	0.42	0.52	0.37	31.69	11.82
I (+ve)	-0.39	0.52	-0.05	30.49	-1.42
J (+ve)	-0.69	0.52	-0.20	23.02	-4.65
K (+ve)	-0.48	0.52	-0.09	-1.41	0.13
L (+ve)	-1.39	0.52	-0.56	25.25	-14.26
M (+ve)	-0.80	0.52	-0.26	121.29	-31.42

Total vertical net force $F_{w,v}$ = **-25.63** kN

Total horizontal net force $F_{w,h}$ = **14.36** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	16.95	-5.73
B	-0.80	0.41	-0.17	67.81	-11.76
C	-0.50	0.41	-0.05	9.19	-0.46
D	0.76	0.41	0.47	84.76	39.65
E	-0.42	0.41	-0.02	84.76	-1.45

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-1.5** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **39.6** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.699

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **49.3** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.36	11.20	-4.06
G (-ve)	-0.50	0.52	-0.36	13.81	-5.01
H (-ve)	-0.20	0.52	-0.21	48.26	-10.00
I (-ve)	-0.40	0.52	-0.31	46.89	-14.58
J (-ve)	-0.70	0.52	-0.47	26.38	-12.30
L (-ve)	-1.40	0.52	-0.83	28.05	-23.25
M (-ve)	-0.80	0.52	-0.52	42.28	-21.90
N (-ve)	-0.20	0.52	-0.21	33.87	-7.02

Total vertical net force $F_{w,v}$ = **-83.66** kN

Total horizontal net force $F_{w,h}$ = **4.08** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	18.79	-11.21
B	-0.80	0.41	-0.43	65.97	-28.53
D	0.77	0.41	0.21	93.94	20.00
E	-0.44	0.41	-0.28	93.94	-26.73

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-26.7** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **20.0** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.775

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **43.8** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.10	11.20	-1.16
G (-ve)	-0.50	0.52	-0.10	13.81	-1.43
H (-ve)	-0.20	0.52	0.05	48.26	2.50
I (-ve)	-0.40	0.52	-0.05	46.89	-2.43
J (-ve)	-0.70	0.52	-0.21	26.38	-5.47
L (-ve)	-1.40	0.52	-0.57	28.05	-15.98
M (-ve)	-0.80	0.52	-0.26	42.28	-10.95
N (-ve)	-0.20	0.52	0.05	33.87	1.75

Total vertical net force $F_{w,v} =$ **-28.28** kN

Total horizontal net force $F_{w,h} =$ **4.08** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	18.79	-6.35
B	-0.80	0.41	-0.17	65.97	-11.44
D	0.77	0.41	0.47	93.94	44.34
E	-0.44	0.41	-0.03	93.94	-2.39

Overall loading

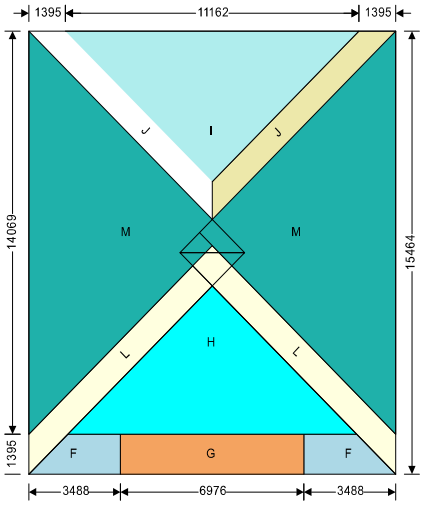
Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-2.4** kN

Net windward force for overall section $F_w = F_{w,wD} =$ **44.3** kN

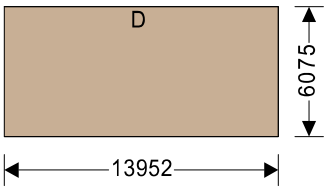
Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.775

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **43.8** kN

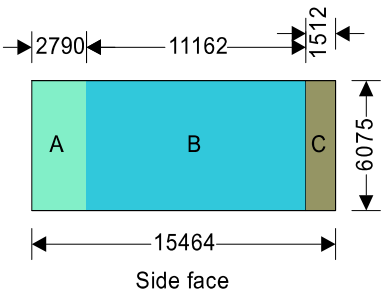
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 2) HIPPED PITCH				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



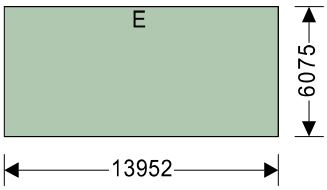
Plan view - Hipped roof



Windward face

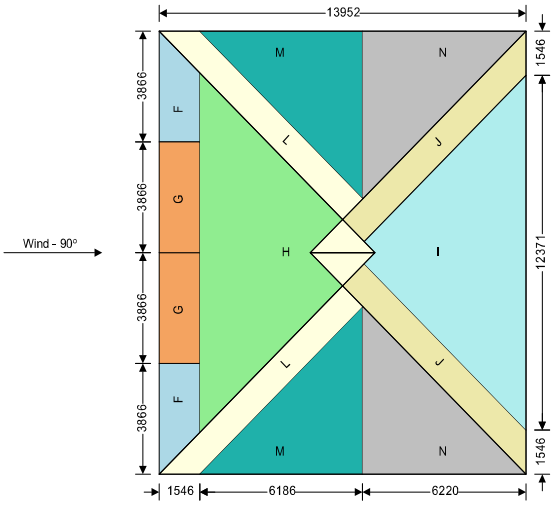


Side face

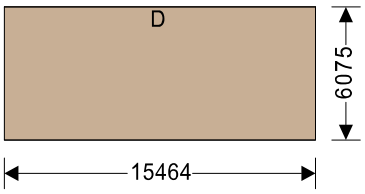


Leeward face

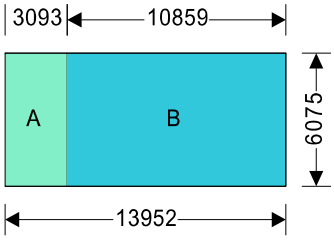
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 2) HIPPED PITCH				Sheet no./rev.: 7	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



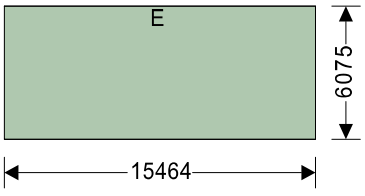
Plan view - Hipped roof



Windward face



Side face



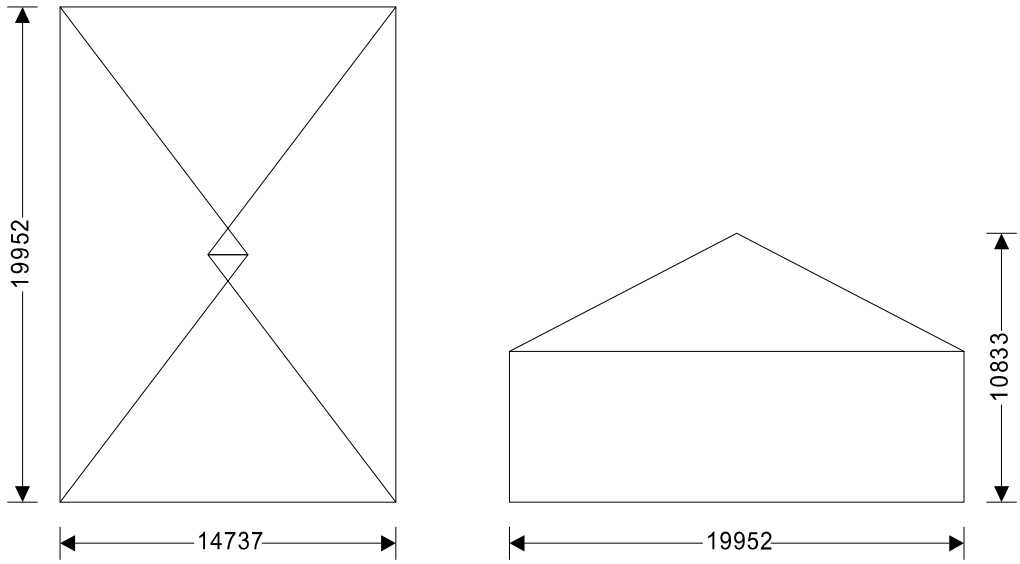
Leeward face

SOLAR SURVEYS	Project [redacted]				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 3) HIPPED PITCH				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Hipped
Length of building	L = **14737** mm
Width of building	W = **19952** mm
Height to eaves	H = **6075** mm
Pitch of main slope	α_0 = **25.5** deg
Pitch of gable slope	α_{90} = **30.0** deg
Total height	h = **10833** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Structural factor

Structural factor	c_{sCd} = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Peak velocity pressure - roof

Reference height (at which q is sought)	z = **10833**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.8** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_{sCd} \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 3) HIPPED PITCH				Sheet no./rev.: 3	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

Roof load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.62	0.52	-0.43	10.04	-4.27
G (-ve)	-0.59	0.52	-0.41	12.03	-4.93
H (-ve)	-0.23	0.52	-0.22	49.72	-11.08
I (-ve)	-0.43	0.52	-0.33	42.55	-13.90
J (-ve)	-0.79	0.52	-0.51	30.17	-15.48
K (-ve)	-0.71	0.52	-0.47	-0.93	0.44
L (-ve)	-1.40	0.52	-0.83	27.01	-22.41
M (-ve)	-0.74	0.52	-0.49	162.86	-79.37

Total vertical net force $F_{w,v}$ = **-136.29** kN

Total horizontal net force $F_{w,h}$ = **3.73** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	17.91	-10.69
B	-0.80	0.41	-0.43	71.62	-30.98
C	-0.50	0.41	-0.31	31.68	-9.80
D	0.74	0.41	0.20	89.53	17.92
E	-0.38	0.41	-0.26	89.53	-23.20

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-23.2** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **17.9** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.543

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **38.7** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	0.41	0.52	0.37	10.04	3.70
G (+ve)	0.55	0.52	0.44	12.03	5.30
H (+ve)	0.34	0.52	0.33	49.72	16.50
I (+ve)	-0.43	0.52	-0.07	42.55	-2.87
J (+ve)	-0.79	0.52	-0.25	30.17	-7.66
K (+ve)	-0.71	0.52	-0.21	-0.93	0.20
L (+ve)	-1.40	0.52	-0.57	27.01	-15.40
M (+ve)	-0.74	0.52	-0.23	162.86	-37.15

Total vertical net force $F_{w,v}$ = **-33.75** kN

Total horizontal net force $F_{w,h}$ = **15.43** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	17.91	-6.05
B	-0.80	0.41	-0.17	71.62	-12.41
C	-0.50	0.41	-0.05	31.68	-1.58
D	0.74	0.41	0.46	89.53	41.12
E	-0.38	0.41	0.00	89.53	0.01

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **0.0** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **41.1** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.543

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **50.4** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.36	17.42	-6.32
G (-ve)	-0.50	0.52	-0.36	22.98	-8.34
H (-ve)	-0.20	0.52	-0.21	54.54	-11.31
I (-ve)	-0.40	0.52	-0.31	60.76	-18.90
J (-ve)	-0.70	0.52	-0.47	34.18	-15.95
L (-ve)	-1.40	0.52	-0.83	44.10	-36.58
M (-ve)	-0.80	0.52	-0.52	85.42	-44.28
N (-ve)	-0.20	0.52	-0.21	14.06	-2.92

Total vertical net force $F_{w,v}$ = **-130.51** kN

Total horizontal net force $F_{w,h}$ = **3.82** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	24.24	-14.47
B	-0.80	0.41	-0.43	65.29	-28.24
D	0.76	0.41	0.21	121.21	25.53
E	-0.43	0.41	-0.28	121.21	-33.96

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-34.0** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **25.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.735

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **54.4** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.10	17.42	-1.81
G (-ve)	-0.50	0.52	-0.10	22.98	-2.38
H (-ve)	-0.20	0.52	0.05	54.54	2.83
I (-ve)	-0.40	0.52	-0.05	60.76	-3.15
J (-ve)	-0.70	0.52	-0.21	34.18	-7.09
L (-ve)	-1.40	0.52	-0.57	44.10	-25.15
M (-ve)	-0.80	0.52	-0.26	85.42	-22.14
N (-ve)	-0.20	0.52	0.05	14.06	0.73

Total vertical net force $F_{w,v} =$ **-52.50** kN

Total horizontal net force $F_{w,h} =$ **3.82** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	24.24	-8.19
B	-0.80	0.41	-0.17	65.29	-11.32
D	0.76	0.41	0.47	121.21	56.95
E	-0.43	0.41	-0.02	121.21	-2.54

Overall loading

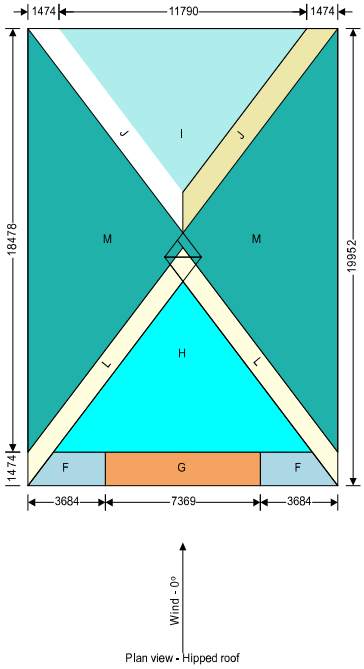
Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-2.5** kN

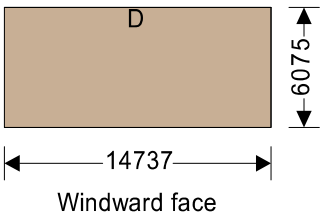
Net windward force for overall section $F_w = F_{w,wD} =$ **57.0** kN

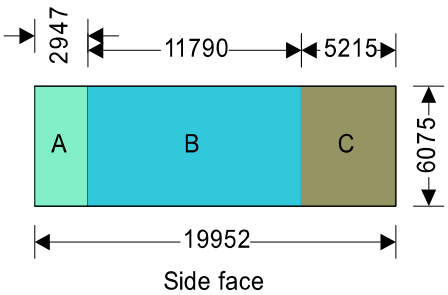
Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.735

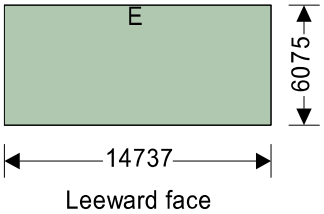
Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **54.4** kN

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 3) HIPPED PITCH				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025









SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 3) HIPPED PITCH				Sheet no./rev.: 7	
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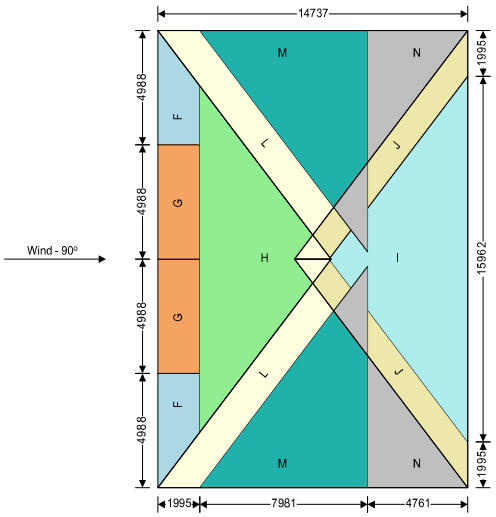
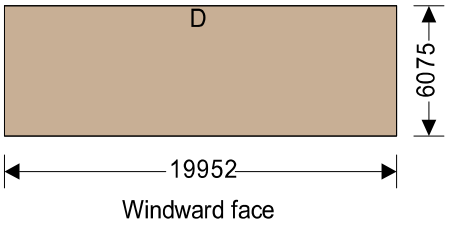
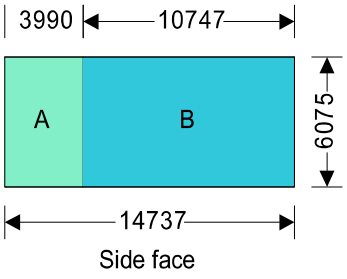


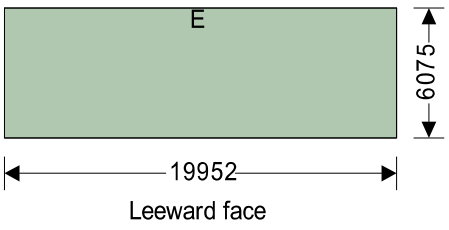
Plan view - Hipped roof



Windward face



Side face



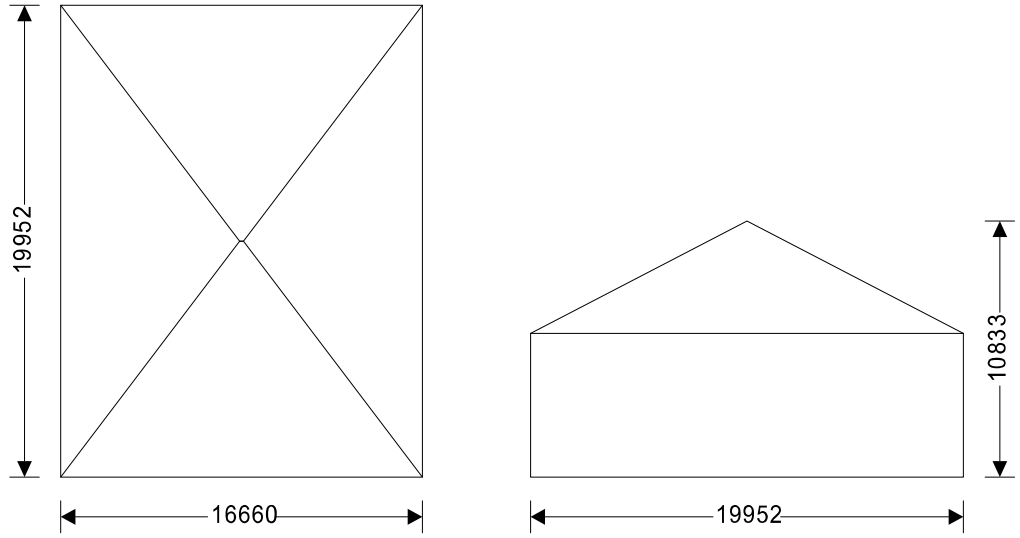
Leeward face

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 4) HIPPED PITCH				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Hipped
Length of building	L = **16660** mm
Width of building	W = **19952** mm
Height to eaves	H = **6075** mm
Pitch of main slope	α_0 = **25.5** deg
Pitch of gable slope	α_{90} = **30.0** deg
Total height	h = **10833** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 4) HIPPED PITCH				Sheet no./rev.: 2	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Structural factor

Structural factor	c_sC_d = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Peak velocity pressure - roof

Reference height (at which q is sought)	z = **10833**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.8** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_sC_d \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.62	0.52	-0.43	12.84	-5.46
G (-ve)	-0.59	0.52	-0.41	15.38	-6.30
H (-ve)	-0.23	0.52	-0.22	64.83	-14.45
I (-ve)	-0.43	0.52	-0.33	58.49	-19.10
J (-ve)	-0.79	0.52	-0.51	33.75	-17.32
K (-ve)	-0.71	0.52	-0.47	0.80	-0.38
L (-ve)	-1.40	0.52	-0.83	30.39	-25.20
M (-ve)	-0.74	0.52	-0.49	159.49	-77.72

Total vertical net force $F_{w,v}$ = **-149.77** kN

Total horizontal net force $F_{w,h}$ = **4.56** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	20.24	-12.08
B	-0.80	0.41	-0.43	80.97	-35.02
C	-0.50	0.41	-0.31	20.00	-6.18
D	0.74	0.41	0.20	101.21	20.25
E	-0.38	0.41	-0.26	101.21	-26.23

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-26.2** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **20.3** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.543

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **44.1** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	0.41	0.52	0.37	12.84	4.72
G (+ve)	0.55	0.52	0.44	15.38	6.78
H (+ve)	0.34	0.52	0.33	64.83	21.51
I (+ve)	-0.43	0.52	-0.07	58.49	-3.94
J (+ve)	-0.79	0.52	-0.25	33.75	-8.57
K (+ve)	-0.71	0.52	-0.21	0.80	-0.17
L (+ve)	-1.40	0.52	-0.57	30.39	-17.33
M (+ve)	-0.74	0.52	-0.23	159.49	-36.38

Total vertical net force $F_{w,v}$ = **-30.13** kN

Total horizontal net force $F_{w,h}$ = **19.67** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	20.24	-6.84
B	-0.80	0.41	-0.17	80.97	-14.03
C	-0.50	0.41	-0.05	20.00	-1.00
D	0.74	0.41	0.46	101.21	46.49
E	-0.38	0.41	0.00	101.21	0.01

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **0.0** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **46.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.543

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **59.2** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.36	17.42	-6.32
G (-ve)	-0.50	0.52	-0.36	22.98	-8.34
H (-ve)	-0.20	0.52	-0.21	54.54	-11.31
I (-ve)	-0.40	0.52	-0.31	60.76	-18.90
J (-ve)	-0.70	0.52	-0.47	34.18	-15.95
L (-ve)	-1.40	0.52	-0.83	44.10	-36.58
M (-ve)	-0.80	0.52	-0.52	85.42	-44.28
N (-ve)	-0.20	0.52	-0.21	56.57	-11.73

Total vertical net force $F_{w,v}$ = **-138.47** kN

Total horizontal net force $F_{w,h}$ = **3.82** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	24.24	-14.47
B	-0.80	0.41	-0.43	76.97	-33.29
D	0.75	0.41	0.21	121.21	24.97
E	-0.41	0.41	-0.27	121.21	-32.83

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-32.8** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **25.0** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.650

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **53.0** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.10	17.42	-1.81
G (-ve)	-0.50	0.52	-0.10	22.98	-2.38
H (-ve)	-0.20	0.52	0.05	54.54	2.83
I (-ve)	-0.40	0.52	-0.05	60.76	-3.15
J (-ve)	-0.70	0.52	-0.21	34.18	-7.09
L (-ve)	-1.40	0.52	-0.57	44.10	-25.15
M (-ve)	-0.80	0.52	-0.26	85.42	-22.14
N (-ve)	-0.20	0.52	0.05	56.57	2.93

Total vertical net force $F_{w,v} =$ **-50.51** kN

Total horizontal net force $F_{w,h} =$ **3.82** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	24.24	-8.19
B	-0.80	0.41	-0.17	76.97	-13.34
D	0.75	0.41	0.47	121.21	56.39
E	-0.41	0.41	-0.01	121.21	-1.41

Overall loading

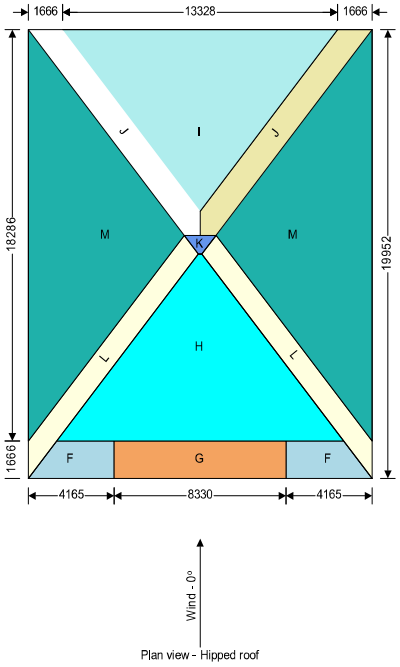
Equiv leeward net force for overall section $F_l = F_{w,wE} =$ **-1.4** kN

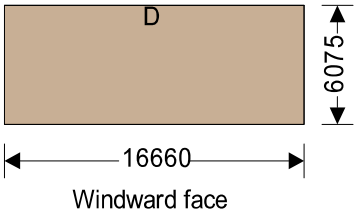
Net windward force for overall section $F_w = F_{w,wD} =$ **56.4** kN

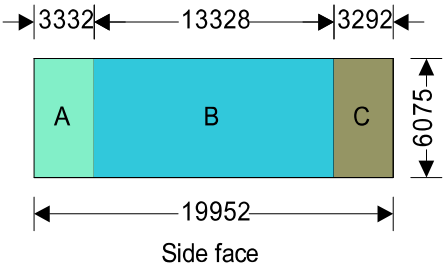
Lack of correlation (cl.7.2.2(3) – Note) $f_{corr} =$ **0.85** as h/L is 0.650

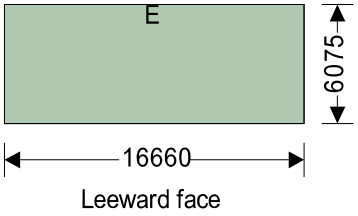
Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h} =$ **53.0** kN

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 4) HIPPED PITCH				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

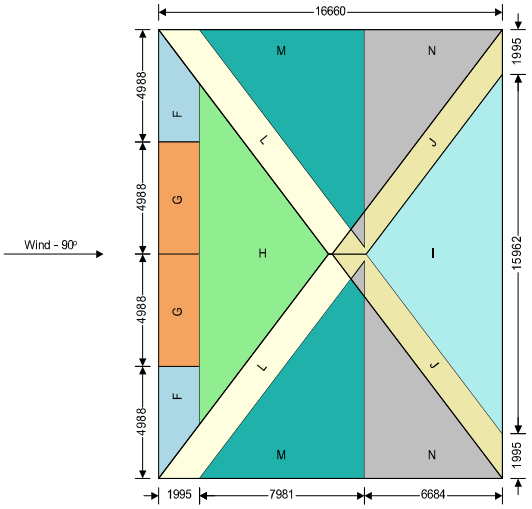




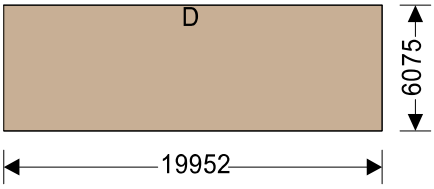




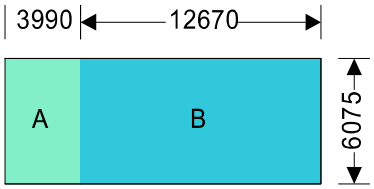
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 4) HIPPED PITCH				Sheet no./rev.: 7	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



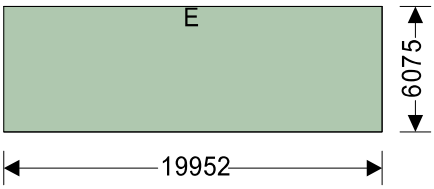
Plan view - Hipped roof



Windward face



Side face



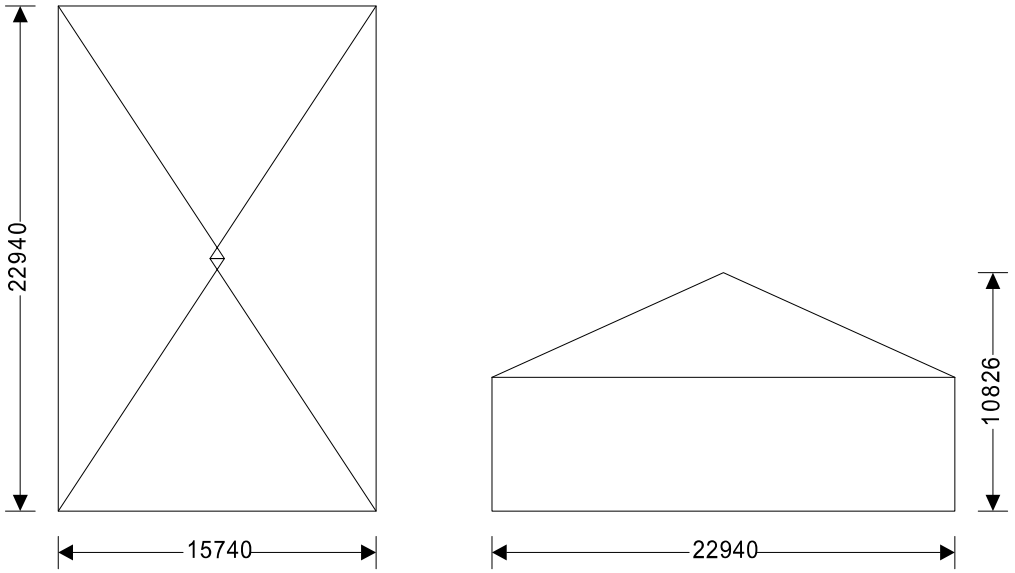
Leeward face

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 5) HIPPED PITCH				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

WIND LOADING (EN1991-1-4)

In accordance with EN1991-1-3:2005+A1:2010 and the recommended values

TEDDS calculation version 3.0.19



Building data

Type of roof	Hipped
Length of building	L = **15740** mm
Width of building	W = **22940** mm
Height to eaves	H = **6075** mm
Pitch of main slope	α_0 = **22.5** deg
Pitch of gable slope	α_{90} = **30.0** deg
Total height	h = **10826** mm

Basic values

Fundamental basic wind velocity	$v_{b,0}$ = **21.7** m/s
Season factor	c_{season} = **1.00**
Direction factor	c_{dir} = **1.00**
Shape parameter K	K = **0.2**
Exponent n	n = **0.5**
Air density	ρ = **1.250** kg/m^3
Probability factor	$c_{prob} = [(1 - K \times \ln(-\ln(1-p)))/(1 - K \times \ln(-\ln(0.98)))]^n$ = **1.00**
Basic wind velocity (Exp. 4.1)	$v_b = c_{dir} \times c_{season} \times v_{b,0} \times c_{prob}$ = **21.7** m/s
Reference mean velocity pressure	$q_b = 0.5 \times \rho \times v_b^2$ = **0.294** kN/m^2

Orography

Orography factor not significant	c_o = 1.0
Terrain category	III
Displacement height (sheltering effect excluded)	h_{dis} = 0mm

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section WIND LOADING (SECTION 5) HIPPED PITCH				Sheet no./rev. 2	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

The velocity pressure for the windward face of the building with a 0 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

The velocity pressure for the windward face of the building with a 90 degree wind is to be considered as 1 part as the height h is less than b (cl.7.2.2)

Peak velocity pressure - windward wall - Wind 0 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Roughness length (Table 4.1)	z_0 = **300** mm
Roughness length (Category II)	$z_{0,II}$ = **50** mm
Minimum height (Table 4.1)	z_{min} = **5000** mm
Maximum height	z_{max} = **200000** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Structural factor

Structural factor	c_sC_d = **1.000**

Peak velocity pressure - windward wall - Wind 90 deg

Reference height (at which q is sought)	z = **6075**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.65**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **14.1** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.332**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.41** kN/m^2

Peak velocity pressure - roof

Reference height (at which q is sought)	z = **10826**mm
Displacement height (sheltering effects excluded)	h_{dis} = **0** mm
Terrain factor	$k_r = 0.19 \times (z_0 / z_{0,II})^{0.07}$ = **0.215**
Roughness factor	$c_r = k_r \times \ln(z / z_0)$ = **0.77**
Mean wind	$v_m = c_r \times c_o \times v_b$ = **16.8** m/s
Turbulence factor	k_I = **1.0**
Turbulence intensity	$I_v = k_I / (c_o \times \ln(z / z_0))$ = **0.279**
Peak velocity pressure	$q_p = (1 + 7 \times I_v) \times 0.5 \times \rho \times v_m^2$ = **0.52** kN/m^2

Peak velocity pressure for internal pressure

Peak velocity pressure – internal (as roof press.)	$q_{p,i}$ = **0.52** kN/m^2

Pressures and forces

Net pressure	$p = c_sC_d \times q_p \times c_{pe} - q_{p,i} \times c_{pi}$
Net force	$F_w = p_w \times A_{ref}$

Roof load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.70	0.52	-0.47	11.48	-5.36
G (-ve)	-0.65	0.52	-0.44	13.41	-5.91
H (-ve)	-0.25	0.52	-0.23	68.36	-15.94
I (-ve)	-0.45	0.52	-0.34	56.98	-19.20
J (-ve)	-0.85	0.52	-0.54	36.40	-19.81
K (-ve)	-0.85	0.52	-0.54	-0.13	0.07
L (-ve)	-1.40	0.52	-0.83	28.89	-23.95
M (-ve)	-0.70	0.52	-0.47	189.09	-88.20

Total vertical net force $F_{w,v}$ = **-164.73** kN

Total horizontal net force $F_{w,h}$ = **4.49** kN

Walls load case 1 - Wind 0, c_{pi} 0.20, $-c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	19.12	-11.42
B	-0.80	0.41	-0.43	76.50	-33.09
C	-0.50	0.41	-0.31	43.74	-13.52
D	0.73	0.41	0.20	95.62	18.76
E	-0.36	0.41	-0.25	95.62	-24.03

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-24.0** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **18.8** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.472

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **40.9** kN

Roof load case 2 - Wind 0, c_{pi} -0.3, $+c_{pe}$

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (+ve)	0.35	0.52	0.34	11.48	3.87
G (+ve)	0.45	0.52	0.39	13.41	5.21
H (+ve)	0.30	0.52	0.31	68.36	21.26
I (+ve)	-0.45	0.52	-0.08	56.98	-4.43
J (+ve)	-0.85	0.52	-0.29	36.40	-10.38
K (+ve)	-0.85	0.52	-0.29	-0.13	0.04
L (+ve)	-1.40	0.52	-0.57	28.89	-16.47
M (+ve)	-0.70	0.52	-0.21	189.09	-39.20

Total vertical net force $F_{w,v}$ = **-37.05** kN

Total horizontal net force $F_{w,h}$ = **17.26** kN

Walls load case 2 - Wind 0, c_{pi} -0.3, +c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	19.12	-6.46
B	-0.80	0.41	-0.17	76.50	-13.26
C	-0.50	0.41	-0.05	43.74	-2.19
D	0.73	0.41	0.46	95.62	43.54
E	-0.36	0.41	0.01	95.62	0.75

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **0.8** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **43.5** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/W is 0.472

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **53.6** kN

Roof load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.36	19.52	-7.08
G (-ve)	-0.50	0.52	-0.36	30.29	-10.99
H (-ve)	-0.20	0.52	-0.21	59.18	-12.27
I (-ve)	-0.40	0.52	-0.31	71.72	-22.30
J (-ve)	-0.70	0.52	-0.47	37.26	-17.38
L (-ve)	-1.40	0.52	-0.83	53.76	-44.58
M (-ve)	-0.80	0.52	-0.52	112.89	-58.51
N (-ve)	-0.20	0.52	-0.21	19.57	-4.06

Total vertical net force $F_{w,v}$ = **-163.69** kN

Total horizontal net force $F_{w,h}$ = **3.57** kN

Walls load case 3 - Wind 90, c_{pi} 0.20, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.60	26.31	-15.70
B	-0.80	0.41	-0.43	69.31	-29.98
D	0.76	0.41	0.21	139.36	29.00
E	-0.42	0.41	-0.27	139.36	-38.32

Overall loading

Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-38.3** kN

Net windward force for overall section $F_w = F_{w,wD}$ = **29.0** kN

Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.688

Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **60.8** kN

Roof load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
F (-ve)	-0.50	0.52	-0.10	19.52	-2.02
G (-ve)	-0.50	0.52	-0.10	30.29	-3.14
H (-ve)	-0.20	0.52	0.05	59.18	3.07
I (-ve)	-0.40	0.52	-0.05	71.72	-3.72
J (-ve)	-0.70	0.52	-0.21	37.26	-7.73
L (-ve)	-1.40	0.52	-0.57	53.76	-30.65
M (-ve)	-0.80	0.52	-0.26	112.89	-29.25
N (-ve)	-0.20	0.52	0.05	19.57	1.01

Total vertical net force $F_{w,v}$ = **-66.92** kN

Total horizontal net force $F_{w,h}$ = **3.58** kN

Walls load case 4 - Wind 90, c_{pi} -0.3, -c_{pe}

Zone	Ext pressure coefficient c_{pe}	Peak velocity pressure q_p, (kN/m^2)	Net pressure p (kN/m^2)	Area A_{ref} (m^2)	Net force F_w (kN)
A	-1.20	0.41	-0.34	26.31	-8.89
B	-0.80	0.41	-0.17	69.31	-12.02
D	0.76	0.41	0.47	139.36	65.11
E	-0.42	0.41	-0.02	139.36	-2.20

Overall loading

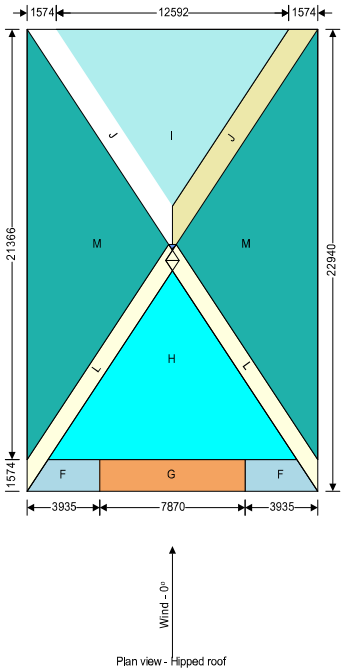
Equiv leeward net force for overall section $F_l = F_{w,wE}$ = **-2.2** kN

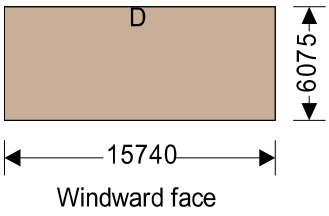
Net windward force for overall section $F_w = F_{w,wD}$ = **65.1** kN

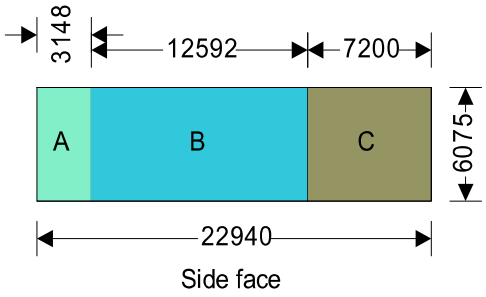
Lack of correlation (cl.7.2.2(3) – Note) f_{corr} = **0.85** as h/L is 0.688

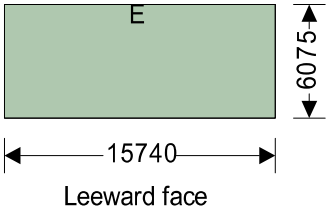
Overall loading overall section $F_{w,D} = f_{corr} \times (F_w - F_l) + F_{w,h}$ = **60.8** kN

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 5) HIPPED PITCH				Sheet no./rev.: 6	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

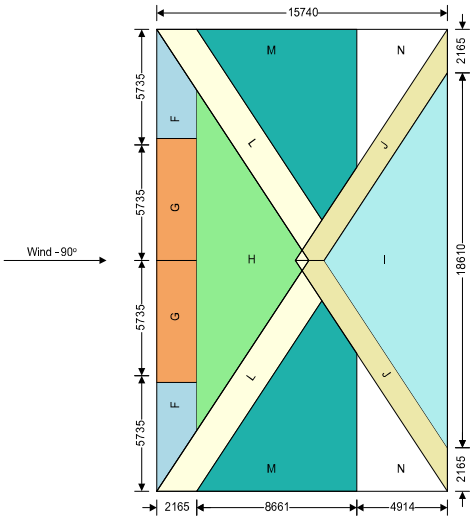




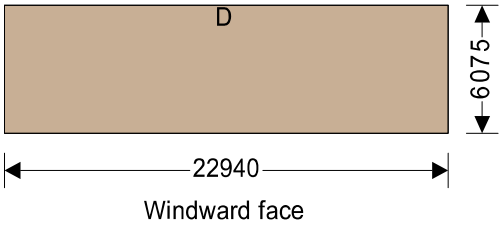




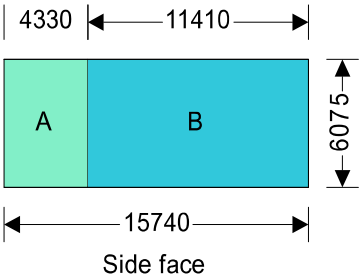
SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: WIND LOADING (SECTION 5) HIPPED PITCH				Sheet no./rev.: 7	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025



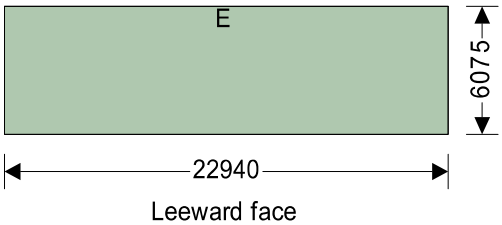
Plan view - Hipped roof



Windward face



Side face



Leeward face

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 1) Flat Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

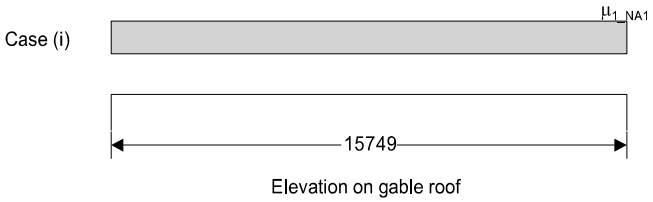
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

Roof type	Flat
Width of roof	b = **15.75** m

Shape coefficients

Shape coefficient roof (Table UK NA.1) μ_{1_NA1} = **0.80**



Shape coef	Coef	Loading (kN/m^2)
μ_{1_NA1}	0.800	0.37

Loadcase 1 Table 5.2

Loading to roof 1 $s_{1\_1} = \mu_{1\_NA1} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: SNOW LOADING (SECTION 2) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

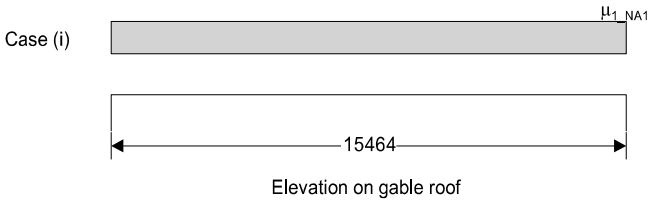
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

Roof type	Flat
Width of roof	b = **15.46** m

Shape coefficients

Shape coefficient roof (Table UK NA.1) μ_{1_NA1} = **0.80**



Shape coef	Coef	Loading (kN/m^2)
μ_{1_NA1}	0.800	0.37

Loading to roof 1 $s_{1\_1} = \mu_{1\_NA1} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: SNOW LOADING (SECTION 3) Flat Pitch				Sheet no./rev.: 1	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

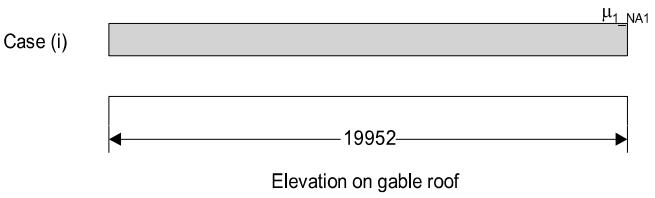
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

Roof type	Flat
Width of roof	b = **19.95** m

Shape coefficients

Shape coefficient roof (Table UK NA.1) μ_{1_NA1} = **0.80**



Shape coef	Coef	Loading (kN/m^2)
μ_{1_NA1}	0.800	0.37

Loading to roof 1 $s_{1\_1} = \mu_{1\_NA1} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 4) Flat Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

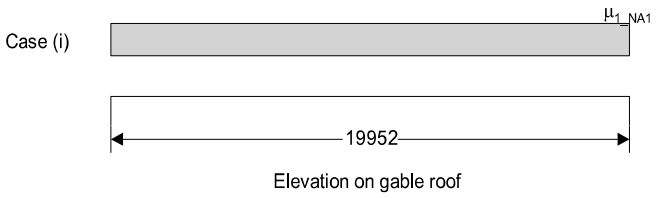
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

Roof type	Flat
Width of roof	b = **19.95** m

Shape coefficients

Shape coefficient roof (Table UK NA.1) μ_{1_NA1} = **0.80**



Shape coef	Coef	Loading (kN/m^2)
μ_{1_NA1}	0.800	0.37

Loading to roof 1 $s_{1\_1} = \mu_{1\_NA1} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 5) Flat Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

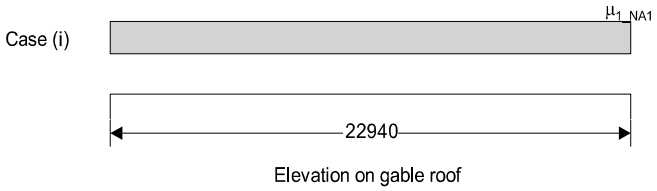
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

Roof type	Flat
Width of roof	b = **22.94** m

Shape coefficients

Shape coefficient roof (Table UK NA.1) μ_{1_NA1} = **0.80**



Elevation on gable roof

Shape coef	Coef	Loading (kN/m^2)
μ_{1_NA1}	0.800	0.37

Loading to roof 1 $s_{1\_1} = \mu_{1\_NA1} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 1) Hipped Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

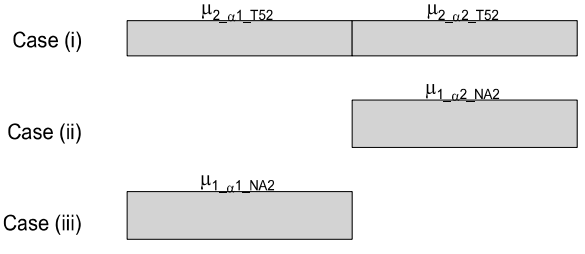
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

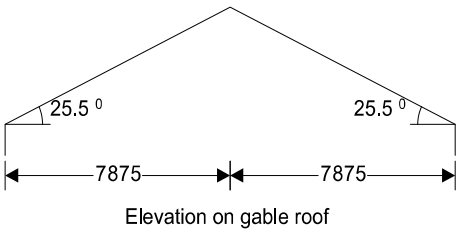
Roof type	Duopitch
Width of roof (left on elevation)	b_1 = **7.87** m
Width of roof (right on elevation)	b_2 = **7.87** m
Slope of roof (left on elevation)	α_1 = **25.50** deg
Slope of roof (right on elevation)	α_2 = **25.50** deg

Shape coefficients

Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha1\_T52}$ = **0.80**
Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha2\_T52}$ = **0.80**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha1\_NA2}$ = **1.08**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha2\_NA2}$ = **1.08**



Shape coef	Coef	Loading (kN/m^2)
$\mu_{2\_\alpha1\_T52}$	0.800	0.37
$\mu_{2\_\alpha2\_T52}$	0.800	0.37
$\mu_{1\_\alpha1\_NA2}$	1.080	0.50
$\mu_{1\_\alpha2\_NA2}$	1.080	0.50



Elevation on gable roof

Loadcase 1 Table 5.2

Loading to roof 1 (LHS)	s_{1_1} = $\mu_{2\_\alpha1\_T52}$ × C_e × C_t × s_k = **0.37** kN/m^2
Loading to roof 2 (RHS)	s_{2_1} = $\mu_{2\_\alpha2\_T52}$ × C_e × C_t × s_k = **0.37** kN/m^2

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: SNOW LOADING (SECTION 1) Hipped Pitch				Sheet no./rev.: 2	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

Loadcase 2 UK NA.2

Loading to roof 1 (LHS) $s_{1\_2} = 0 \times C_e \times C_t \times s_k = \mathbf{0.00}$ kN/m^2

Loading to roof 2 (RHS) $s_{2\_2} = \mu_{1\_\alpha2\_NA2} \times C_e \times C_t \times s_k = \mathbf{0.50}$ kN/m^2

Loadcase 3 UK NA.2

Loading to roof 1 (LHS) $s_{1\_3} = \mu_{1\_\alpha1\_NA2} \times C_e \times C_t \times s_k = \mathbf{0.50}$ kN/m^2

Loading to roof 2 (RHS) $s_{2\_3} = 0 \times C_e \times C_t \times s_k = \mathbf{0.00}$ kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 2) Hipped Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

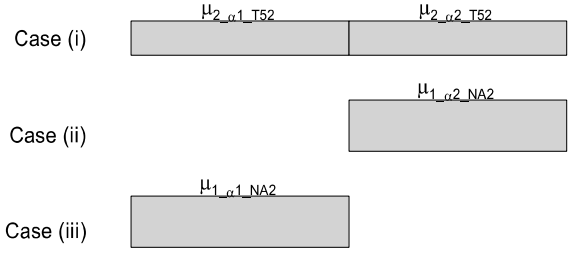
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

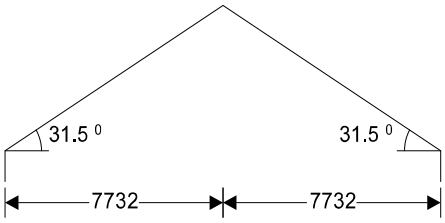
Roof type	Duopitch
Width of roof (left on elevation)	b_1 = **7.73** m
Width of roof (right on elevation)	b_2 = **7.73** m
Slope of roof (left on elevation)	α_1 = **31.50** deg
Slope of roof (right on elevation)	α_2 = **31.50** deg

Shape coefficients

Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha1\_T52}$ = **0.76**
Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha2\_T52}$ = **0.76**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha1\_NA2}$ = **1.14**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha2\_NA2}$ = **1.14**



Shape coef	Coef	Loading (kN/m^2)
$\mu_{2\_\alpha1\_T52}$	0.760	0.35
$\mu_{2\_\alpha2\_T52}$	0.760	0.35
$\mu_{1\_\alpha1\_NA2}$	1.140	0.53
$\mu_{1\_\alpha2\_NA2}$	1.140	0.53



Elevation on gable roof

Loadcase 1 Table 5.2

Loading to roof 1 (LHS)	$s_{1\_1} = \mu_{2\_\alpha1\_T52} \times C_e \times C_t \times s_k$ = **0.35** kN/m^2
Loading to roof 2 (RHS)	$s_{2\_1} = \mu_{2\_\alpha2\_T52} \times C_e \times C_t \times s_k$ = **0.35** kN/m^2

SOLAR SURVEYS	Project: REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref.: SS25 - PEDR - 011	
	Section: SNOW LOADING (SECTION 2) Hipped Pitch				Sheet no./rev.: 2	
	Calc. by: NH	Date: 11/3/2025	Chk'd by: SGR	Date: 11/3/2025	App'd by: HGR	Date: 11/3/2025

Loadcase 2 UK NA.2

Loading to roof 1 (LHS) $s_{1\_2} = 0 \times C_e \times C_t \times s_k = \mathbf{0.00}$ kN/m^2

Loading to roof 2 (RHS) $s_{2\_2} = \mu_{1\_\alpha2\_NA2} \times C_e \times C_t \times s_k = \mathbf{0.53}$ kN/m^2

Loadcase 3 UK NA.2

Loading to roof 1 (LHS) $s_{1\_3} = \mu_{1\_\alpha1\_NA2} \times C_e \times C_t \times s_k = \mathbf{0.53}$ kN/m^2

Loading to roof 2 (RHS) $s_{2\_3} = 0 \times C_e \times C_t \times s_k = \mathbf{0.00}$ kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 3 & 4) Hipped Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

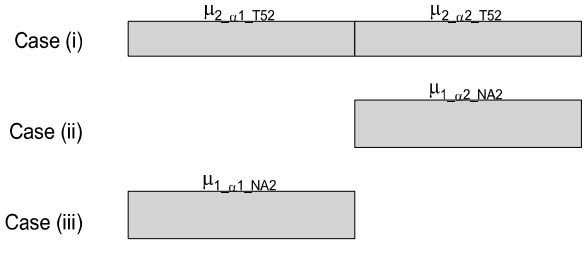
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

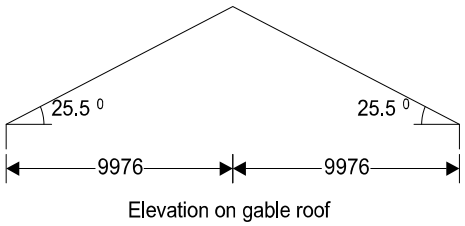
Roof type	Duopitch
Width of roof (left on elevation)	b_1 = **9.98** m
Width of roof (right on elevation)	b_2 = **9.98** m
Slope of roof (left on elevation)	α_1 = **25.50** deg
Slope of roof (right on elevation)	α_2 = **25.50** deg

Shape coefficients

Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha1\_T52}$ = **0.80**
Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha2\_T52}$ = **0.80**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha1\_NA2}$ = **1.08**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha2\_NA2}$ = **1.08**



Shape coef	Coef	Loading (kN/m^2)
$\mu_{2\_\alpha1\_T52}$	0.800	0.37
$\mu_{2\_\alpha2\_T52}$	0.800	0.37
$\mu_{1\_\alpha1\_NA2}$	1.080	0.50
$\mu_{1\_\alpha2\_NA2}$	1.080	0.50



Elevation on gable roof

Loadcase 1 Table 5.2

Loading to roof 1 (LHS)	$s_{1\_1} = \mu_{2\_\alpha1\_T52} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2
Loading to roof 2 (RHS)	$s_{2\_1} = \mu_{2\_\alpha2\_T52} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

Loadcase 2 UK NA.2

Loading to roof 1 (LHS)	$s_{1\_2} = 0 \times C_e \times C_t \times s_k$ = **0.00** kN/m^2

Loading to roof 2 (RHS) $s_{2\_2} = \mu_{1\_\alpha2\_NA2} \times C_e \times C_t \times s_k =$ **0.50** kN/m^2

Loadcase 3 UK NA.2

Loading to roof 1 (LHS) $s_{1\_3} = \mu_{1\_\alpha1\_NA2} \times C_e \times C_t \times s_k =$ **0.50** kN/m^2

Loading to roof 2 (RHS) $s_{2\_3} = 0 \times C_e \times C_t \times s_k =$ **0.00** kN/m^2

SOLAR SURVEYS	Project [redacted] REDACTED FOR CLIENT FOR CONFIDENTIALITY				Job Ref. SS25 - PEDR - 011	
	Section SNOW LOADING (SECTION 5) Hipped Pitch				Sheet no./rev. 1	
	Calc. by NH	Date 11/3/2025	Chk'd by SGR	Date 11/3/2025	App'd by HGR	Date 11/3/2025

SNOW LOADING (EN1991-1-3)

In accordance with EN1991-1-3:2003+A1:2015 incorporating corrigenda dated December 2004 and March 2009 and the UK national annex NA+A1:2015 to BS EN 1991-1-3:2003+A1:2015 incorporating Corrigendum No.1

TEDDS calculation version 1.0.08

Characteristic ground snow load

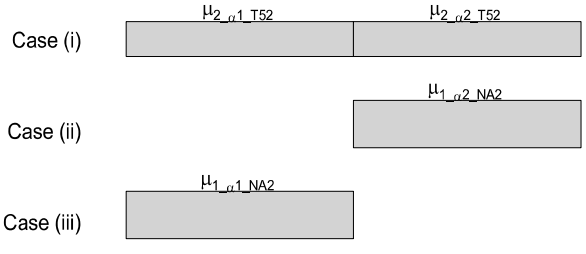
Location	STUDLEY
Site altitude above sea level (user modified value)	A = **82** m
Zone number	Z = **3.0**
Density of snow	γ = **2.00** kN/m^3
Characteristic ground snow load	s_k = ((0.15 + (0.1 × Z + 0.05)) + ((A - 100m) / 525m)) × 1kN/m^2 = **0.47** kN/m^2
Exposure coefficient (Normal)	C_e = **1.0**
Thermal coefficient	C_t = **1.0**

Building details

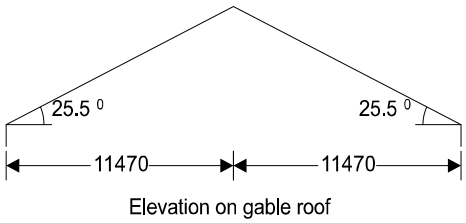
Roof type	Duopitch
Width of roof (left on elevation)	b_1 = **11.47** m
Width of roof (right on elevation)	b_2 = **11.47** m
Slope of roof (left on elevation)	α_1 = **25.50** deg
Slope of roof (right on elevation)	α_2 = **25.50** deg

Shape coefficients

Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha1\_T52}$ = **0.80**
Shape coefficient roof (Table 5.2)	$\mu_{2\_\alpha2\_T52}$ = **0.80**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha1\_NA2}$ = **1.08**
Shape coefficient roof (Table UK NA.2)	$\mu_{1\_\alpha2\_NA2}$ = **1.08**



Shape coef	Coef	Loading (kN/m^2)
$\mu_{2\_\alpha1\_T52}$	0.800	0.37
$\mu_{2\_\alpha2\_T52}$	0.800	0.37
$\mu_{1\_\alpha1\_NA2}$	1.080	0.50
$\mu_{1\_\alpha2\_NA2}$	1.080	0.50



Elevation on gable roof

Loadcase 1 Table 5.2

Loading to roof 1 (LHS)	$s_{1\_1} = \mu_{2\_\alpha1\_T52} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2
Loading to roof 2 (RHS)	$s_{2\_1} = \mu_{2\_\alpha2\_T52} \times C_e \times C_t \times s_k$ = **0.37** kN/m^2

Loadcase 2 UK NA.2

Loading to roof 1 (LHS)	$s_{1\_2} = 0 \times C_e \times C_t \times s_k$ = **0.00** kN/m^2

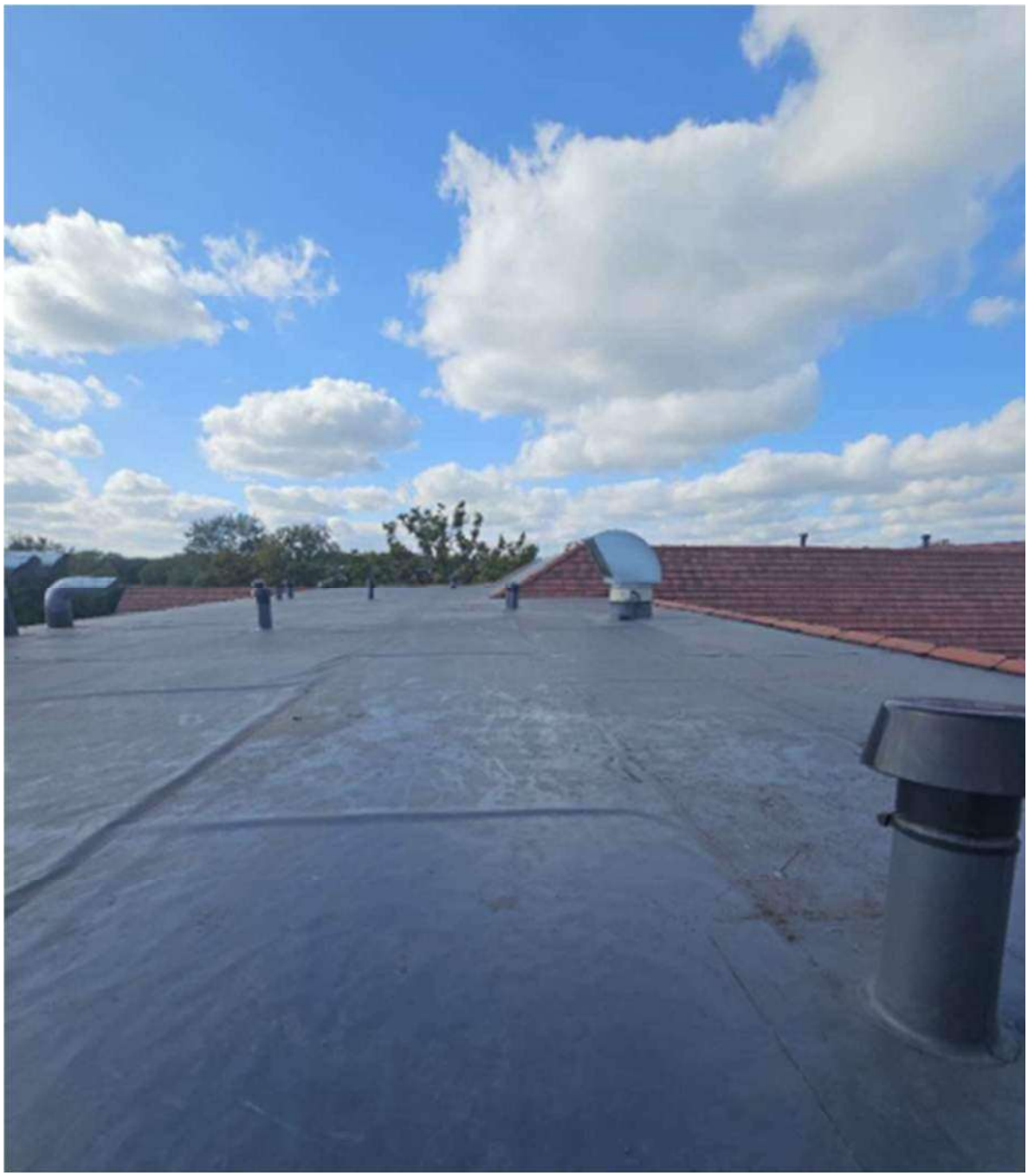
Loading to roof 2 (RHS) $s_{2\_2} = \mu_{1\_\alpha2\_NA2} \times C_e \times C_t \times s_k =$ **0.50** kN/m^2

Loadcase 3 UK NA.2

Loading to roof 1 (LHS) $s_{1\_3} = \mu_{1\_\alpha1\_NA2} \times C_e \times C_t \times s_k =$ **0.50** kN/m^2

Loading to roof 2 (RHS) $s_{2\_3} = 0 \times C_e \times C_t \times s_k =$ **0.00** kN/m^2

APPENDIX C – RECORDED PHOTOS



APPENDIX D – AIKO SOLAR PANEL DATA SHEET

AIKO

N-Type ABC

Neostar Series

AIKO-A-MAH54Mw

Up to 23.8%
450W-465W

15 year Product Warranty

30 year Performance Warranty

inter solar award 2023 WINNER

reddot winner 2023

Premium Appearance

No grid lines on the front

Higher Power Output

Higher efficiency: 23.8%
Lower degradation: 1 year≤1.0%, 2 -30 year≤0.35%
Better temperature coefficient: -0.26%/ ℃

Optimized Balance of System (BOS)

Significant savings on mounting structure, cabling, and labour cost

Complete Set of Quality Management System

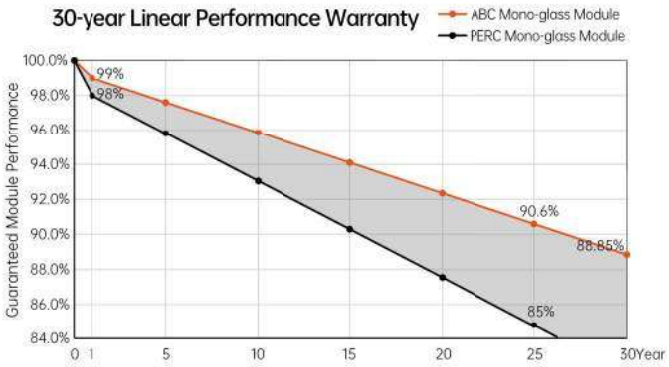
IEC 61730 (2016) IEC 61215 (2021)
ISO 9001:2015 Quality Management System
ISO 14001:2015 Environmental Management System
ISO 45001:2018 Occupational Safety and Management System

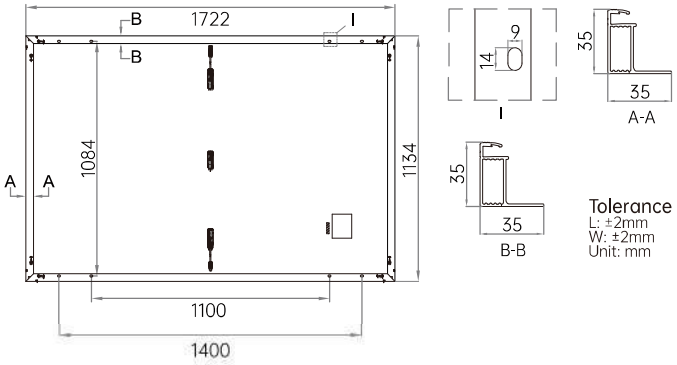
Munich RE CE TÜVRheinland CEC

N-Type ABC Neostar Series

AIKO-A-MAH54Mw

465W	23.8%	⩽1%	⩽0.35%
Output	Efficiency	First-year Degradation	Annual Degradation from Year 2-30





Electrical Characteristics (STC: AM1.5 1000W/m² 25℃ NOCT: AM1.5 800W/m² 20℃ 1m/s) Power Tolerance:0~ + 3%

Model	AIKO-A450-MAH54Mw		AIKO-A455-MAH54Mw		AIKO-A460-MAH54Mw		AIKO-A465-MAH54Mw	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
P_{max} [W]	450	339	455	343	460	346	465	350
V_{oc} [V]	40.50	38.25	40.60	38.34	40.70	38.44	40.80	38.53
V_{mp} [V]	33.50	31.65	33.60	31.75	33.70	31.82	33.80	31.92
I_{sc} [A]	14.13	11.43	14.19	11.48	14.25	11.53	14.31	11.57
I_{mp} [A]	13.44	10.73	13.55	10.81	13.66	10.90	13.77	10.98
Module Efficiency	**23.0%**		**23.3%**		**23.6%**		**23.8%**	

Mechanical Specification

Cell Type	N-Type ABC
Front Cover Mono glass	3.2 mm tempered glass
Frame	Anodized aluminum
Cable	4mm²(IEC) 12AWG(UL) 1200mm or Customized Length
No. of Cells	108(6*18)
Junction Box	IP68, three bypass diodes
Connector	MC4 compatible/MC4 EVO2
Weight	21.6kg±3%
Dimension	1722*1134*35mm
Package Detail	31pcs per pallet/186 pcs per 20' GP/806pcs per 40' HQ

Temeprature Ratings (STC)

Temperature Coefficient of I_{sc}	+ 0.05%/ °C
Temperature Coefficient of V_{oc}	- 0.22%/ °C
Temperature Coefficient of P_{max}	- 0.26%/ °C

Installation Guide

Operation Temperature	- 40℃-+85℃
Maximum Series Fuse Rating	25A
Protection Class	Class II
V_{oc} and I_{sc} Tolerance	±3%
Maximum System Voltage	DC1500V
Maximum Static Loading	Front 5400Pa Back 2400Pa
Hail Test	25 mm diameter hail at 23 m/s
Fire Rating	IEC Class C

AIKO

www.aikosolar.com
marketing@aikosolar.com

AEWHS_EN_202310_V5.3

APPENDIX E – CLIENTS COMPLETED TEMPLATE FORM

SOLAR SURVEYS

Solar Surveys Limited
Renewable Enery Counsling Engineering Services
info@solarsurveys.co.uk
0141-628-9001

Desktop Structural Roof Appraisal Information Request Form
(Sheet 1 of 4)

Specify roof type(flat/duo-pitch/hipped or monopitch): use extra forms for multiple/different roofs	Flat
Roof reference number(for e.g: roof 1/ roof 2 etc)	Roof 1

Full Site Address Including post code and Business Name(for commercial/industrial premises)

REDACTED FOR CLIENT FOR CONFIDENTIALITY

Property type: for example (residential/ industrial/ commercial/ warehouses/ educational

REDACTED FOR CLIENT FOR CONFIDENTIALITY

Roof Construction - please tick or specify

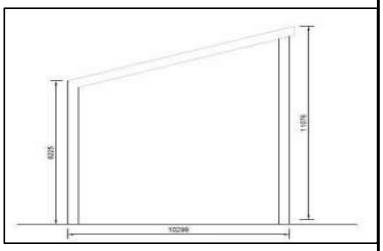
Concrete Tiles/slate/battons etc over timber trusses or rafters	
trapezoidal sheet	
corrugated metal sheet	
Cement Fibre or Asbestos Sheets	
(flat) felt/bitumen, sarking, Timber or Steel truss/rafters	x
(flat) trapezoidal sheets, Timber or Steel truss/rafters	
other: (please specify)	

visual inspection by client (please send photo if applicable)

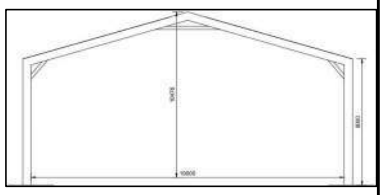
any additional plant equipment or modification which may change the intended design load?	no
general condition(any corrosion/rot/damage) visible?	good
any additional supports to the underside of structure visible? Such as walls or propping or temporary works?	no
Any previous repair work on the roof visible?	no
are the steel or timber frame connections in good condition check for corrosion/damage/cracking/ buckling etc?	new
any roof panels missing? Mismatch? Damaged? Any other causes for concern? Please explain below:	no
area intended for client comments	

Roof type examples

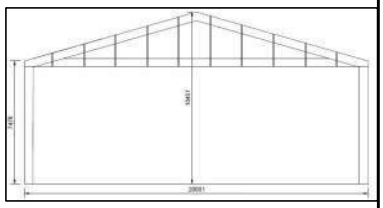
Mono Pitch



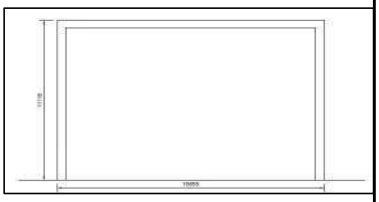
Duo Pitch



Hipped



Flat



SOLAR SURVEYS

Solar Surveys Limited
Renewable Enery Counsling Engineering Services
info@solarsurveys.co.uk
0141-628-9001

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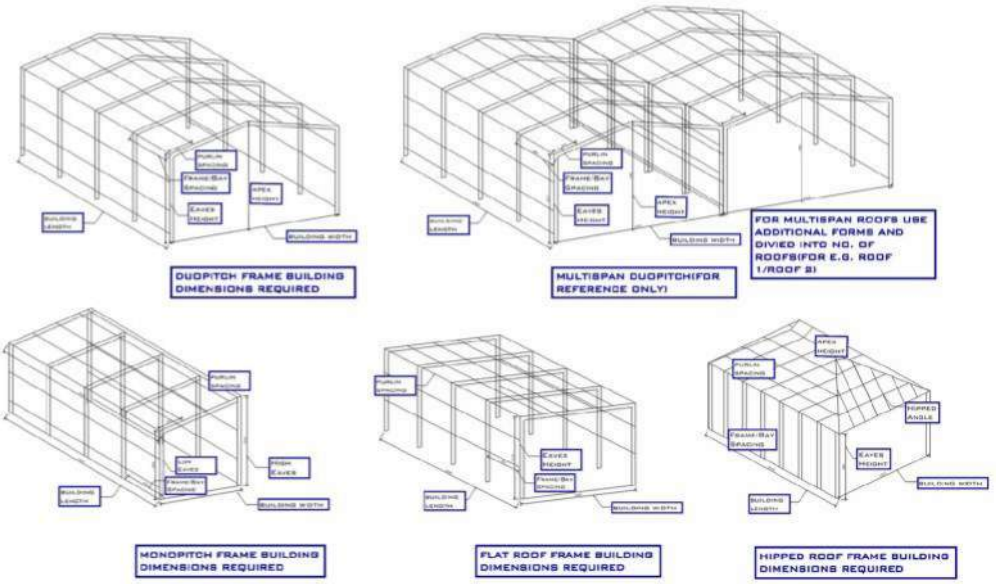
(Sheet 2 of 4)

Dimensions Required as Per Building Type



BUILDING LENGTH	47	(M)
BUILDING WIDTH	38	(M)
HEIGHT TO EAVES (DUO-PITCH OR HIPPED)		(M)
HEIGHT TO LOWER EAVES (MONO-PITCH ONLY)		(M)
HEIGHT TO HIGHER EAVES (MONO-PITCH ONLY)		(M)
HEIGHT TO APEX (DUO-PITCH OR HIPPED)	9	(M)
PARAPET HEIGHT IF APPLICABLE	n/a	(M)

WHERE A BUILDING RIDGE LINE DOES NOT RUN THROUGH THE MIDDLE OF THE BUILDING WE WOULD ASK THAT YOU REFER TO REF B AND COMPLETE THE SECTION BELOW			
ROOF PITCH A	(DEG)	ROOF PITCH B	(DEG)
BUILDING HALF WIDTH A	(M)	BUILDING HALF WIDTH B	(M)

BAY/FRAME SPACING		(M)
PURLIN SPACING	.46	(M)

CLIENT CHECKLIST (PLEASE TICK) LIST IS EXTENSIVE - PROVIDE IF AVAILABLE	
PV PANEL LAYOUT/ BOUNDARY	x
PVSOL DESIGN	
DATA SHEET FOR PV PANEL	x
FIXINGS SPECIFICATIONS	x
MOUNTING DESIGN	x
FULL SITE ADDRESS INCLUDING POST CODE	x
OTHER INFORMATION:	

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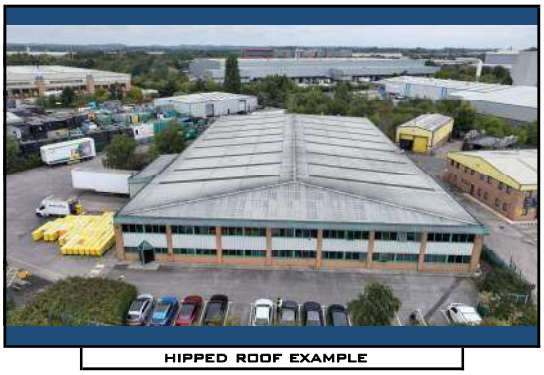
Desktop Structural Roof Appraisal Information Request Form
(Sheet 3 of 4)

Example site footage and drone footage required

Full site photo

Duopitch example

Monopitch example



Hipped roof example

Flat roof example

Internal frame example

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(Sheet 4 of 4)

Example Site Footage and Drone Footage Required

Showing Roof Profile and Fixings

Showing Obstructions

Showing Frame and Connections

Internal Frame Example 2

Internal Frame Example 3

Internal Frame Example 4

APPENDIX F – ROOF PLAN

HIDDEN FOR CLIENT

APPENDIX G – PROPOSED ELEVATIONS

HIDDEN FOR CLIENT

APPENDIX H – RENUSOL MOUNTING SYSTEM DATA SHEET

HIDDEN FOR CLIENT

HIDDEN FOR CLIENT

HIDDEN FOR CLIENT

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