

Project: B212533 - Homefield Rise 18-28

Client: Ubique Architects

Roof Name 3rd Floor Roof

Wind Load Calculation

The calculations have been carried out in accordance with the requirements of NA to BS EN 1991-1-4:2005 the UK National Annex to Eurocode 1 – Actions on structures Part 1-4: and DG 489 Wind loads on roof-mounted photovoltaic and solar thermal systems

Site data for TQ 46358 66075

Basic Wind Velocity

$$V_b = V_{bmap} \times C_{alt} \times C_{dir} \times C_{season} \times C_{prop} \quad 23.0 \text{ m/s}$$

Wind Speed (V_{bmap})	21.6 m/s
Altitude Factor (C_{alt})	1.06 Site Altitude 61m
Direction Factor (C_{dir})	1
Seasonal Factor (C_{season})	1
Propability Factor (C_{prop})	1

Basic Velocity Pressue

$$q_b = 0.613 \times V_b^2 \quad 0.32 \text{ kN/m}^2$$

Distance to Sea 88km	Distance in Town 3km	Effective Height 12.5m
Orography factor $C_o(Z)$		1.00
Exposure Factor $C_e(Z)$		2.48
Correction Factor $c_{r,T}$		0.88

Peak Velocity Pressure

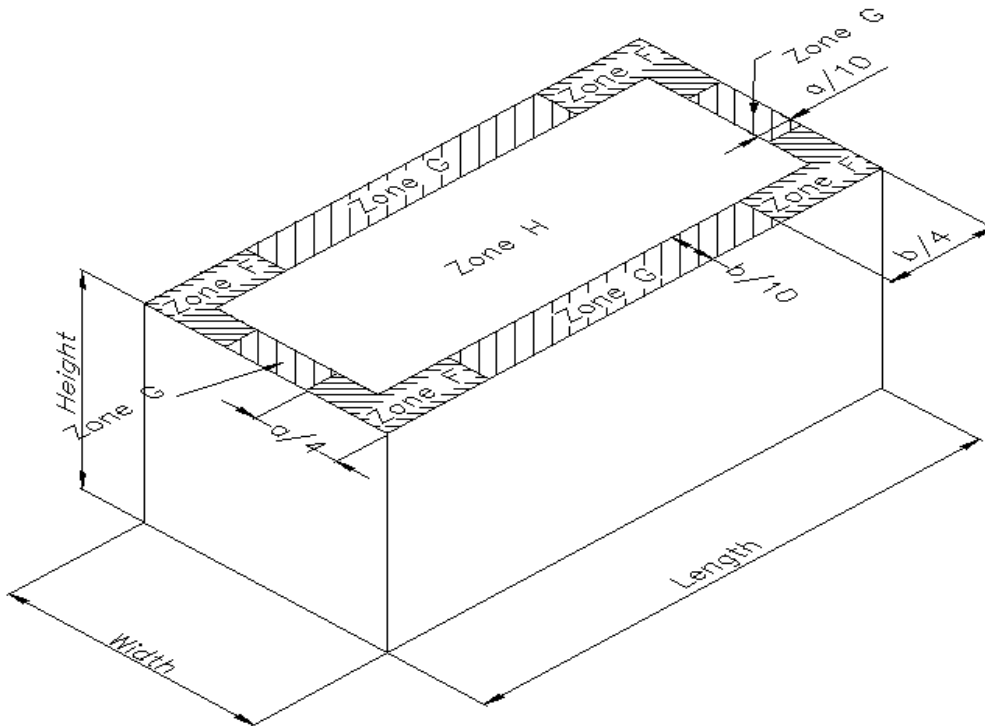
$$q_p \quad 0.71 \text{ kN/m}^2$$

Wind Loads	PV Units	Zone F	Zone G	Zone H
$p_e = q_p \times C_{pe.net} \times C_s$		-1.14	-0.78	-0.28
$C_{pe.net}$ is the external pressure coefficient		-1.6	-1.1	-0.4
Load Factor		1.35	1.35	1.35
Load on PV Units	kN/m ²	-1.53	-1.05	-0.38
Ballast Required	kg/m ² load capacity limit	None	None	None

PV Units

Size	North/South	1.134 m
	East/West	1.708 m
Number of Units		42
Numbe of Fixing points		79

Membrane	BauderTHERMOFOL U18
Fixing Strength	2.36 kN
Uplift Resistance	2.39 kN/m ²



$b = \text{Length or } 2 \times \text{Building Height whichever is the smaller}$
 $a = \text{Width or } 2 \times \text{Building Height whichever is the smaller}$

Building Height	12.5 m	$b =$	24.3 m
Building Width	23.6 m	$b/10 =$	2.43 m
Building Length	24.3 m	$b/4 =$	6.075 m
		$a =$	23.6 m
		$a/10 =$	2.36 m
		$a/4 =$	5.9 m

Notes

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