

Project: B234594 - McCarthy & Stone Boltro Road

Client: Re-Format

Roof Name Roof Above 5th Floor

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 32872 24112

Basic Wind Velocity

$$V_b = V_{bmap} \times C_{alt} \times C_{dir} \times C_{season} \times C_{prop} \quad 23.2 \text{ m/s}$$

Wind Speed (V_{bmap})	21.7 m/s
Altitude Factor (C_{alt})	1.07 Site Altitude 70m
Direction Factor (C_{dir})	1
Seasonal Factor (C_{season})	1
Propability Factor (C_{prop})	1

Basic Velocity Pressue

$$q_b = 0.613 \times V_b^2 \quad 0.33 \text{ kN/m}^2$$

Distance to Sea 32km	Distance in Town 0km	Effective Height 14.475m
Orography factor $C_o(Z)$		1.00
Exposure Factor $C_e(Z)$		2.64
Correction Factor $c_{r,T}$		1.00

Peak Velocity Pressure

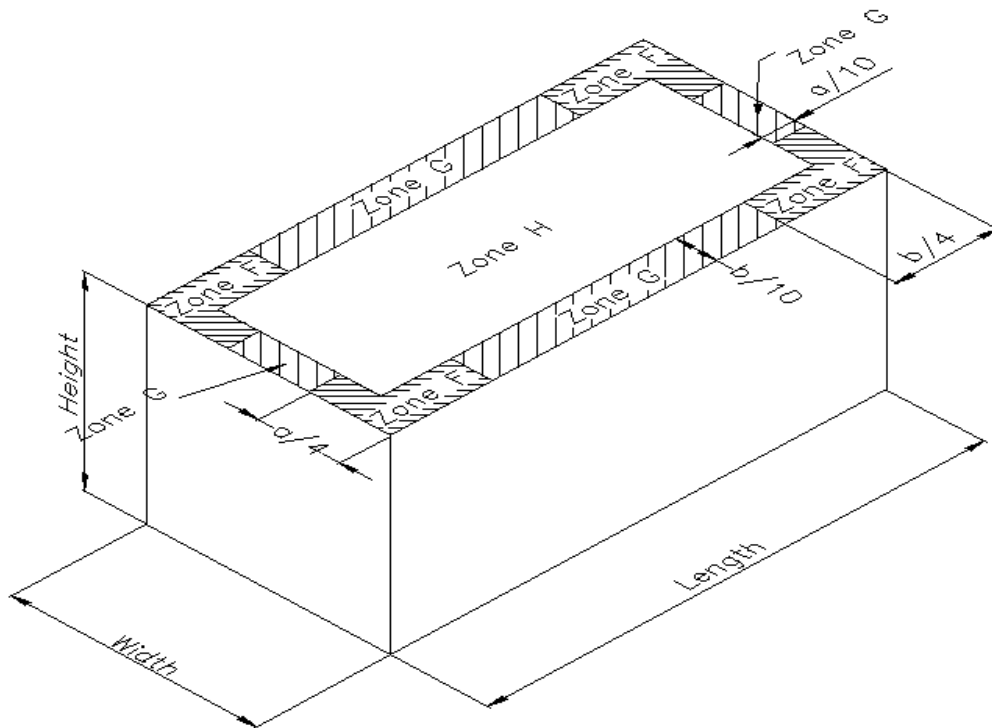
$$q_p \quad 0.87 \text{ kN/m}^2$$

Wind Loads	PV Units	Zone F	Zone G	Zone H
$p_e = q_p \times C_{pe.net} \times C_s$		-1.39	-0.96	-0.35
$C_{pe.net}$ 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	-1.88	-1.29	-0.47
Ballast Required	kg/m^2	None	None	None
	load capacity limit			

PV Units

Size	North/South	1.134 m
	East/West	1.708 m
Number of Units		74
Numbe of Fixing points		117

Membrane	BauderTHERMOFOL U18
Fixing Strength	2.36 kN
Uplift Resistance	2.03 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	14.475 m	$b =$	28.95 m
Building Width	15.6 m	$b/10 =$	2.895 m
Building Length	38.9 m	$b/4 =$	7.2375 m
		$a =$	15.6 m
		$a/10 =$	1.56 m
		$a/4 =$	3.9 m

Notes

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