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WIND LOAD CALCULATION REPORT (TS EN 1991-1-4)

For preliminary design purposes; final design is the responsibility of a competent engineer in accordance with the relevant standards.

Project	Sample Project
Subject	Eurocode 1-4 – Wind Load Calculation for Curtain Walls
Prepared by	Civil Engineer
Approved by	Senior Civil Engineer
Date	13/08/2025

1) Inputs

C_dir **Direction factor**	1.00	**C_season** **Season factor**	1.00
V_b,0 (m/s) **Basic wind speed**	25.00	**C_o(z)** **Orography factor**	1.00
K_1 **Turbulence factor**	1.000	**z_0 (m)** **Surface roughness**	0.300
z (m) **Calculation height**	16.00	**ρ (kg/m³)** **Air density**	1.25
C_pe,A **Pressure coefficient (ZONE-A)**	-1.40	**C_pe,D** **Pressure coefficient (ZONE-D)**	1.00

2) Intermediate Values

V_b (m/s) - Adjusted basic speed	25.00
K_r - Wind profile factor	0.215389
ln(z/z_0) - Height-to-roughness ratio	3.976562
C_r(z) - Height factor	0.856509
V_m(z) (m/s) - Mean wind speed	21.413
I_v(z) - Turbulence intensity	0.2515
q_p(z) (kN/m²) - Peak velocity pressure	0.7910

3) Facade Zone Loads

Zone	Formula	Value
ZONE-A (Suction)	$w_A = q_p \cdot C_{pe,A}$	-1.11 kN/m²
ZONE-D (Pressure)	$w_D = q_p \cdot C_{pe,D}$	0.79 kN/m²

4) Applied Formulas

$V_b = C_{dir} \cdot C_{season} \cdot V_{b,0}$
$K_r = 0.19 \cdot (z_0/0.05)^{0.07}$,
$C_r(z) = K_r \cdot \ln(z/z_0)$
$V_m(z) = C_r(z) \cdot C_o(z) \cdot V_b$,
$I_v(z) = K_1/[C_o(z) \cdot \ln(z/z_0)]$
$q_p(z) = [1 + 7 \cdot I_v(z)] \cdot ½ \cdot \rho \cdot V_m(z)^2$
(1 kPa = 1 kN/m²)
$w = q_p \cdot C_{pe}$

Authority and Responsibility

This calculation report is prepared based on TS EN 1991-1-4 standard and relevant National Annexes (NA) for preliminary sizing purposes. The loads, coefficients, and assumptions used in the calculations are typical values valid across the project and do not cover final design or detail resolutions for implementation. The outputs of this report are for informational purposes only; the final responsibility for design and implementation lies with competent and professionally qualified engineers in accordance with relevant standards.