

## A - GENERAL INFORMATION

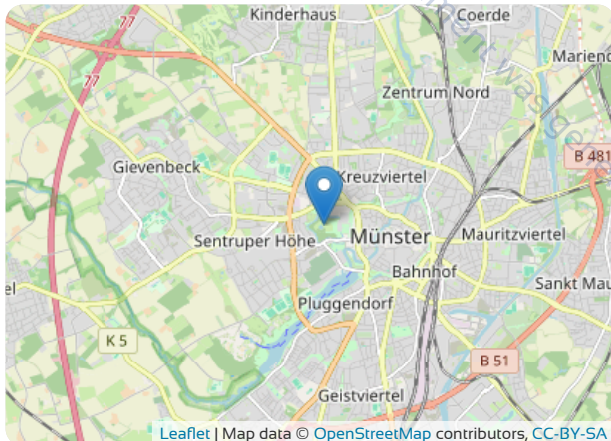
Project title : Eurocodes Zoning  
Customer name : Eurocodes Tools  
Software Version : 04-0717

- EC-Zoning is an helping tool to design. This calculation report is in no way a substitute for a study conducted by a competent structural engineer.
- The user is committed to verifying the input data and the results of this calculation report before any use.
- Furthermore, the user declares to release the software designer and its associated companies from all responsibilities in the event of an incident of any kind.

## B - DATA

### B1 - Location

Coordinates in World Geodetic System 1984 (WGS84) :

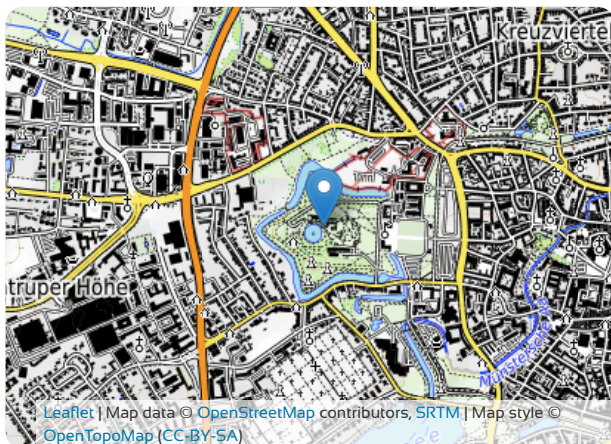


51.9638805 , 7.6096889



Address : Erlebnispfad Duft- und Riechgarten, 48149 Münster, Rhénanie-du-Nord-Westphalie

### B2 - Elevations



At the place of construction : 66 m

source : European digital elevation model Copernicus 25m

### B3 - Building

Type of building : common structure  
Design working life category : 50 years  
Max height : 5.0 m  
Orientation from North : 0°

## B4 - Terrain categories



Sectors	s1	s2	s3	s4
Categories	III-II	IV	III	III-II

Radius R of the angular sector : 3000 m

## C - RESULTS

### C1 - Snow DIN EN 1991-1-3/NA (04/2019)

Zone : 1 ( $s_{R,0} = 0.65 \text{ kN/m}^2$ ) Criteria for zoning :Nordrhein-Westfalen

Characteristic value of snow on the ground at the relevant site : $s_{R,66 \text{ m}} = 0.65 \text{ kN/m}^2$

Ground snow load with a return period of 50 years : $s_{50 \text{ year}} = 0.65 \text{ kN/m}^2$

### C2 - Wind E DIN EN 1991-1-4/NA (02/2023)

Zone : 2 ( $v_{b,0} = 25.0 \text{ m/s}$ ) Criteria for zoning :Nordrhein-Westfalen

Sectors	s1	s2	s3	s4
Sector definition	from 315 · to 45 ·	from 45 · to 135 ·	from 135 · to 225 ·	from 225 · to 315 ·
Fundamental value of the basic wind velocity $v_{b,0}$	25.0 m/s			
Shape parameter K	0.1			
Exponent n	1			
Annual probability of exceedance p	0.02			
Probability factor $c_{\text{prob}}$	1.0			
Elevation factor	1			
Directional factor $c_{\text{dir}}$	1.0	1.0	1.0	1.0
Basic wind velocity $v_b$	25.0 m/s	25.0 m/s	25.0 m/s	25.0 m/s
Reference roughness length $z_{0,II}$	0.05 m			
Roughness length $z_0$	0.1518 m	1.05 m	0.3 m	0.1518 m
Profile exponent $\alpha$	0.25	0.3	0.22	0.25
Height above ground z	5.0 m			
Minimum height $z_{\text{min}}$	7.0 m	16.0 m	8.0 m	7.0 m
Roughness factor $c_{r(z)}$	0.915	1.0	0.952	0.915
Orography factor* $c_{o(z)}$	1.0	1.0	1.0	1.0
Mean wind velocity $v_{m(z)}$	19.7 m/s	16.1 m/s	18.3 m/s	19.7 m/s
Turbulence intensity $I_{v(z)}$	0.241	0.373	0.294	0.241
Air density $\rho$	1.25 kg/m <sup>3</sup>			
Exposure factor $c_{e(z)}$	1.512	1.347	1.486	1.512
Peak velocity pressure $q_{p(z)}$	590.5 N/m <sup>2</sup>	526.3 N/m <sup>2</sup>	580.4 N/m <sup>2</sup>	590.5 N/m <sup>2</sup>
Peak wind velocity for Serviceability Limit States $v_{p(z),SLS}$	110.7 km/h	104.5 km/h	109.7 km/h	110.7 km/h
Peak wind velocity for Ultimate Limit States $v_{p(z),ULS}$	135.5 km/h	127.9 km/h	134.4 km/h	135.5 km/h

\* The effect from orography is not taken in account.

### C3 - Seism DIN EN 1998-1/NA (11/2023)

Zone :  $S_{aP,R} \leq 0.2 \text{ m/s}^2$  ( $a_{gR} \leq 0.08 \text{ m/s}^2$ ) Criteria for zoning :Nordrhein-Westfalen

No seismic analysis is required in this zone.