

Noistop® Essential Static Calculations

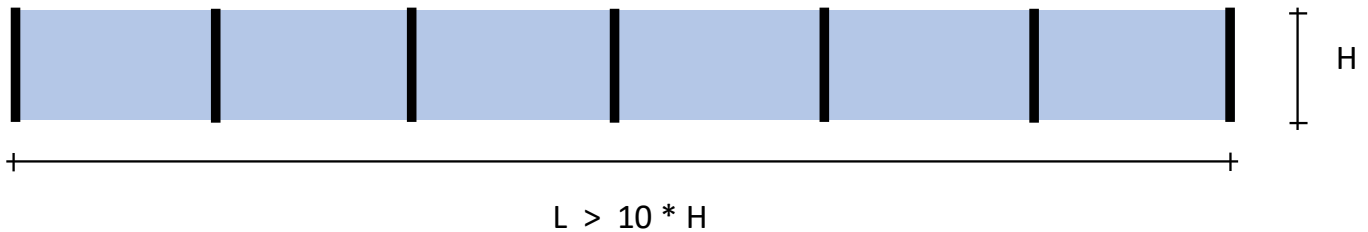
Input to Noistop Essential guidelines



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for ROCKWOOL Noistop

Assumptions

- Module size: Width 2,40m or smaller, the height varies.
- Fence length: Long fence - more than 10 times the height.
For a shorter fence, a smaller post dimension may be applicable.



- Foundation: Specific instructions on post foundations are not included in these guidelines. The post foundations should be designed to withstand the wind loads, given the local soil conditions.

Basis of design

Wind loads are determined according to Eurocode (EN 1991-1-4), given Danish wind conditions. Thus, the basic wind velocity (i.e. the 10 minute mean velocity, exceeded every 50 years in average) is 24m/s.

Other wind load conditions can be assessed by comparing the loads.

Wind load (characteristic peak velocity pressure) in kN/m²:

Fence height (m)	Terrain category			
	1	2	3	4
2,0	0,68	0,51	0,46	0,42
3,0	0,75	0,59	0,46	0,42
4,0	0,81	0,65	0,46	0,42

To determine the actual load on the fence, the values in the table above are multiplied by 2,1, which is the relevant pressure coefficient for a free standing wall, with a length of more than 10 times the height, according to EN 1991-1-4.

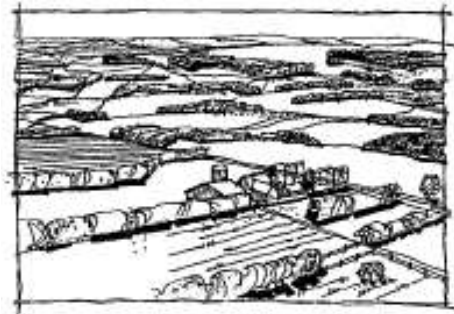
Terrain category I

Lakes or area with negligible vegetation and without obstacles



Terrain category II

Area with low vegetation such as grass and isolated obstacles (trees, buildings) with separations of at least 20 obstacle heights



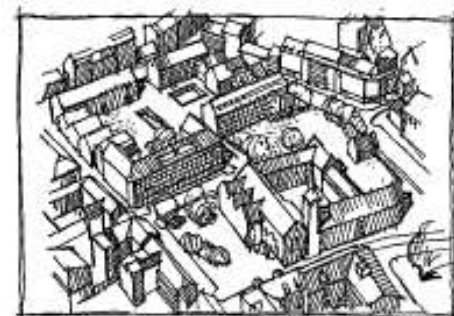
Terrain category III

Area with regular cover of vegetation or buildings or with isolated obstacles with separations of maximum 20 obstacle heights (such as villages, suburban terrain, permanent forest)



Terrain category IV

Area in which at least 15% of the surface is covered with buildings and their average height exceeds 15 m



These illustrations are taken from DS/EN 1991 FU:2015 (the Danish shortened version of the Eurocodes for loads on structures).



The strength of the fence (modules and posts) is determined by testing until breakage.

The tested strength of the posts has been reduced by a safety factor of 1,2.

The test results are scaled to other post sizes using the section modulus of the respective post sizes.

All observed failure is in the form of steel yielding, and happens slowly rather than suddenly, causing excessive permanent deformation.

Mounting screws and bolts

Installing a Noistop fence requires mounting screws. These are not supplied with the fence. We recommend using stainless or color-matching powder coated steel screws:



Mounting elements in steel posts

Stainless steel 6,3 x 32 mm (for example Würth ZEBRA PIASTA 6KT. A2 06,3 x 32, article nr. 0214816332).



Mounting posts with footplate in concrete foundation

Epoxy and hybrid adhesive anchors may be used (for example Hilti anchors, 12 mm or 16 mm, depending on the wind load).



The minimum pull-out strength of the screws should be 3kN (screwed into 3mm steel).





Post sizes and material

The posts are made of structural steel with a yield strength of minimum 230 N/mm² (S235 in Europe).

Post sizes included in these guidelines:

SHS 80x3,0	SHS 80x4,0	SHS 80x5,0	SHS 100x3,0	SHS 100x4,0	SHS 100x5,0
A	B	C	D	E	F

Post sizes with sufficient strength, according to tests:

Wind terrain category, Danish conditions				
Fence height (m)	1	2	3	4
				
1,80	A	A	A	A
1,90	A	A	A	A
2,00	A	A	A	A
2,30	C	B	A	A
2,50	E	C	B	A
2,70	E	D	B	B
3,00	F	E	C	C
3,50			E	E
4,00				F

If other post sizes and/or steel grades are used, an engineer should be consulted to make static calculations, given local wind conditions and the strength of the applied steel post.

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