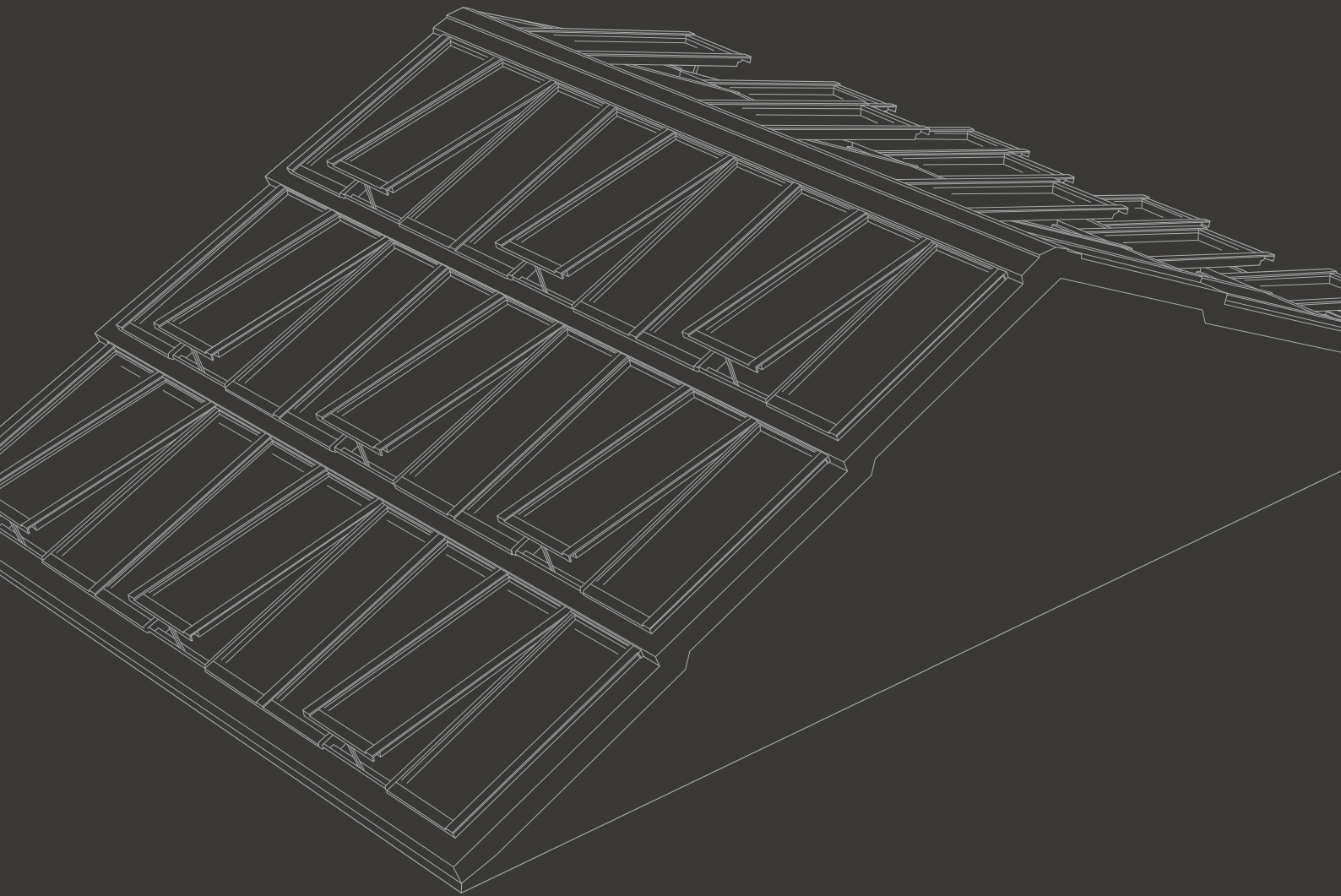


**VELUX®**

Commercial

# Sub-construction for Step Ridgelight 5-25° on Girder

VELUX Modular Skylights



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## Before you start

Before you can build a durable and secure sub-construction to provide the supporting base of the VELUX Modular Skylights, you will need to have the following three specification documents at hand and follow them closely:



Sub-construction quality assurance (QA) document and specification document. These two documents must be obtained through the official VELUX Commercial sales office.



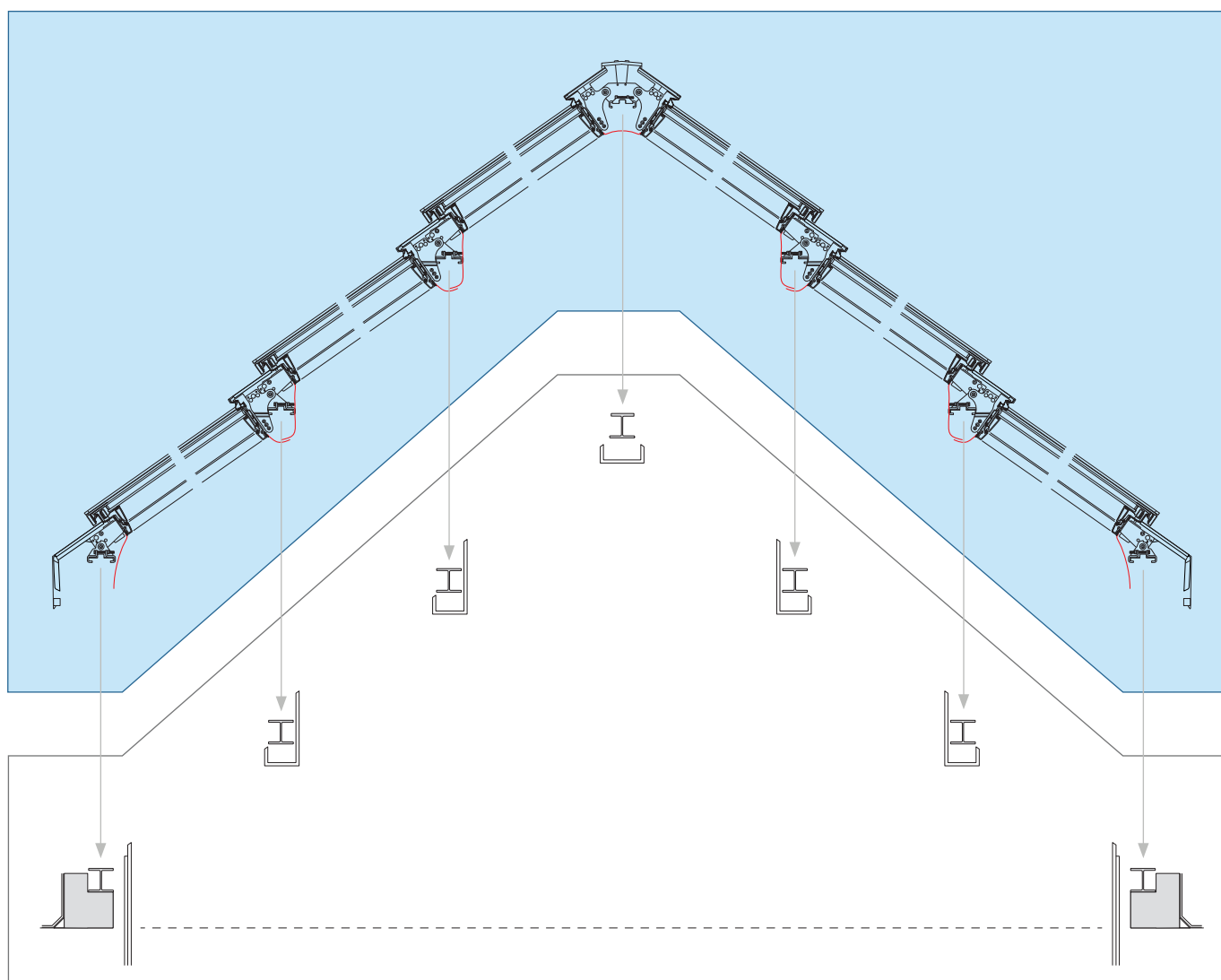
This is the Sub-construction document for Step Ridgelight on girder. You are browsing the brochure now.

## Sub-construction for Step Ridgelight 5-25° on Girder

VELUX modular skylights installed in a Step Ridgelight on Girder solution are built on a sub-construction made of steel, concrete or wood. The sub-construction raises the modules above the roof surface, protecting the construction against water and drifting snow, and provides the supporting base for the modular skylights.

The sub-construction is not included in the VELUX delivery. The sub-construction as shown in the drawing only represents general principles and must be designed and dimensioned to fit the specific building project, local architectural style and practice, and the directions of other building suppliers.

### Step Ridgelight 5-25° on Girder A delivery of VELUX Commercial



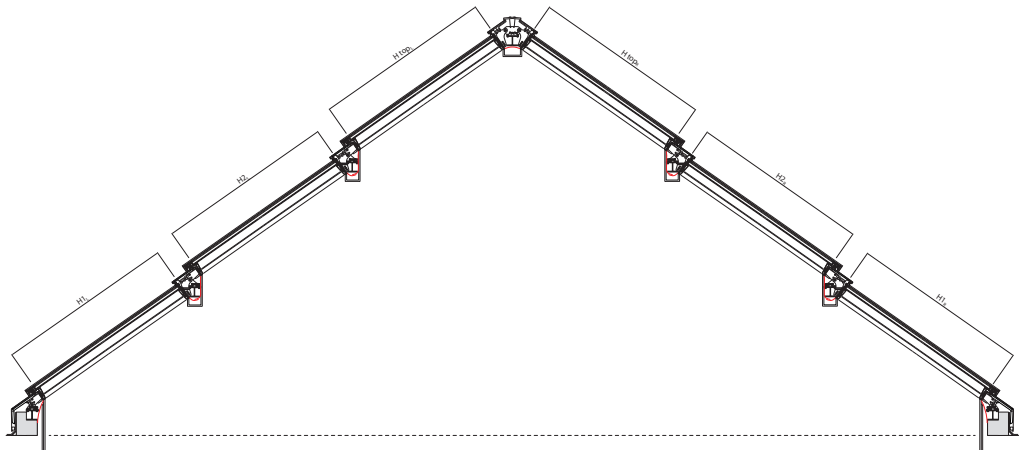
**On-site sub-construction**  
**This is not delivered by VELUX Commercial**

To ensure a high quality installation of VELUX modular skylights and to prevent condensation occurring within the sub-construction, it is highly recommended to install the BCX vapour barrier connection strip. The factory-finished BCX creates the perfect connection between the VELUX modular skylights and the vapour barrier of the building. BCX is CE-marked in accordance with EN 13984.

Numbering sequence for Step Ridgelight 5-25° on Girder

Numbering sequence	
H1	Module height – Always bottom module
H2 ...	Module height – Middle module 2, 3, ....
H top	Module height – Top module

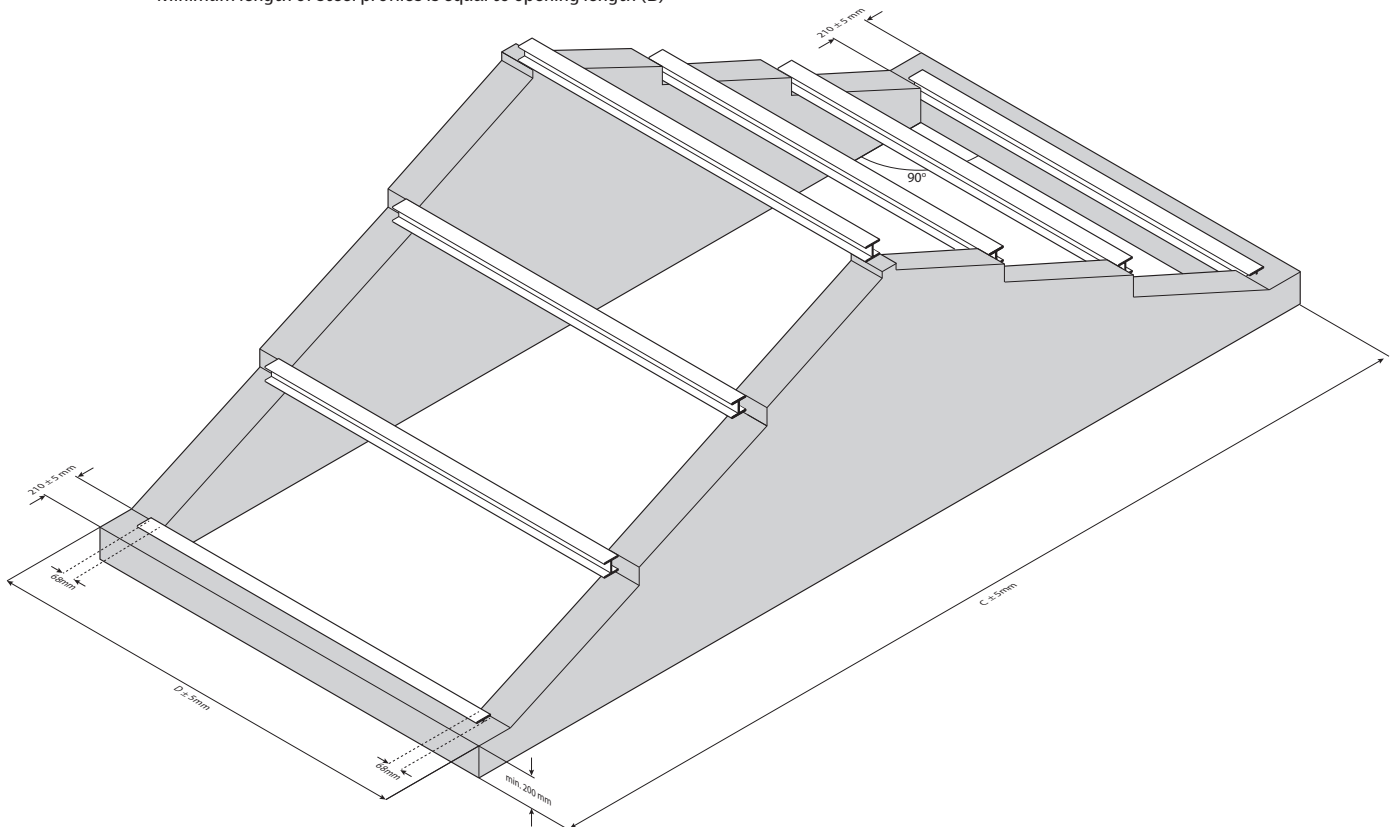
Example shows three rows with two steps



Building site measurements – Axonometric

Axonometric	
C	Sub-construction width – Tolerance $\pm 5$ mm
D	Sub-construction length – Tolerance $\pm 5$ mm

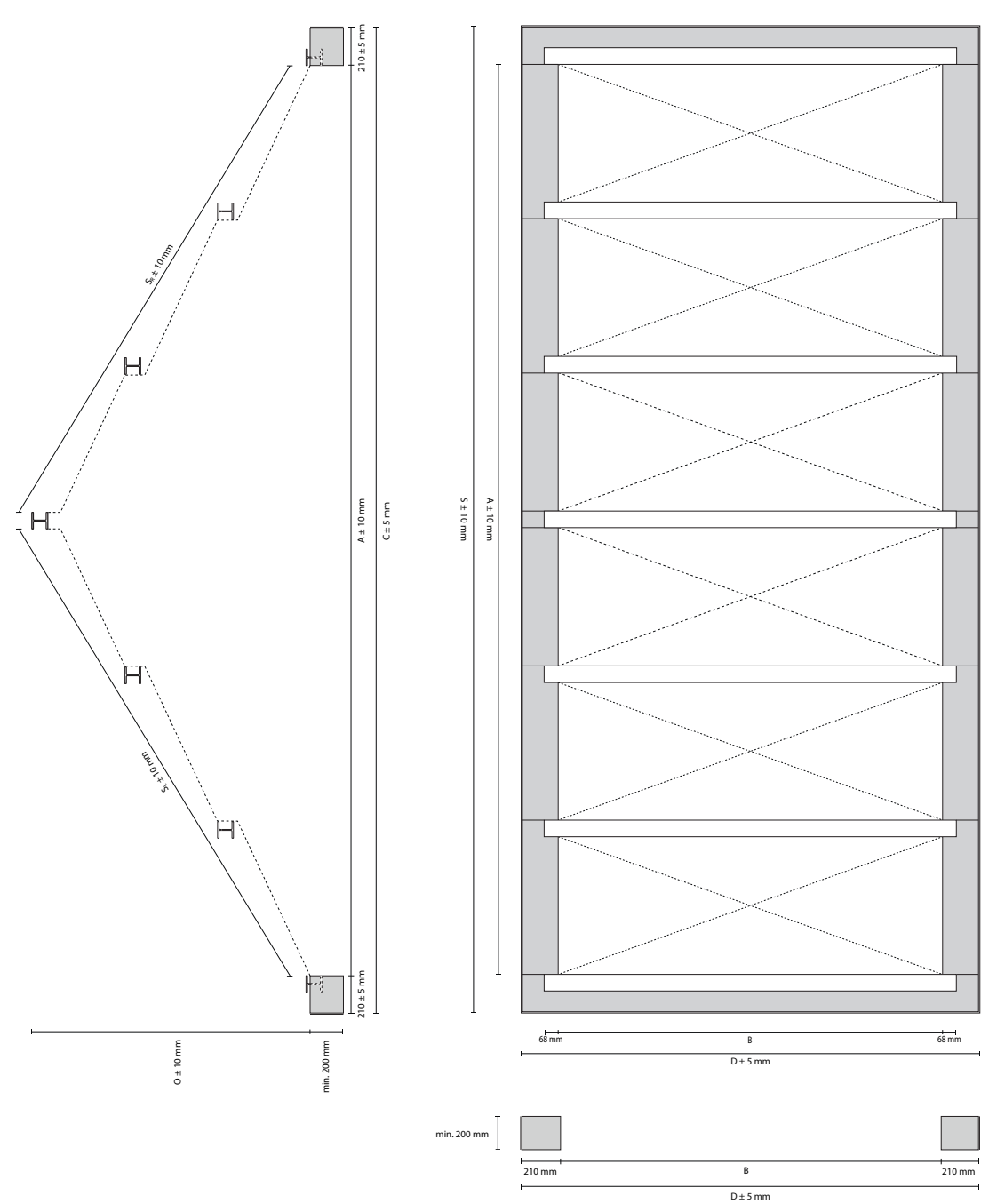
Minimum length of steel profiles is equal to opening length (B)



Building site measurements – Plan

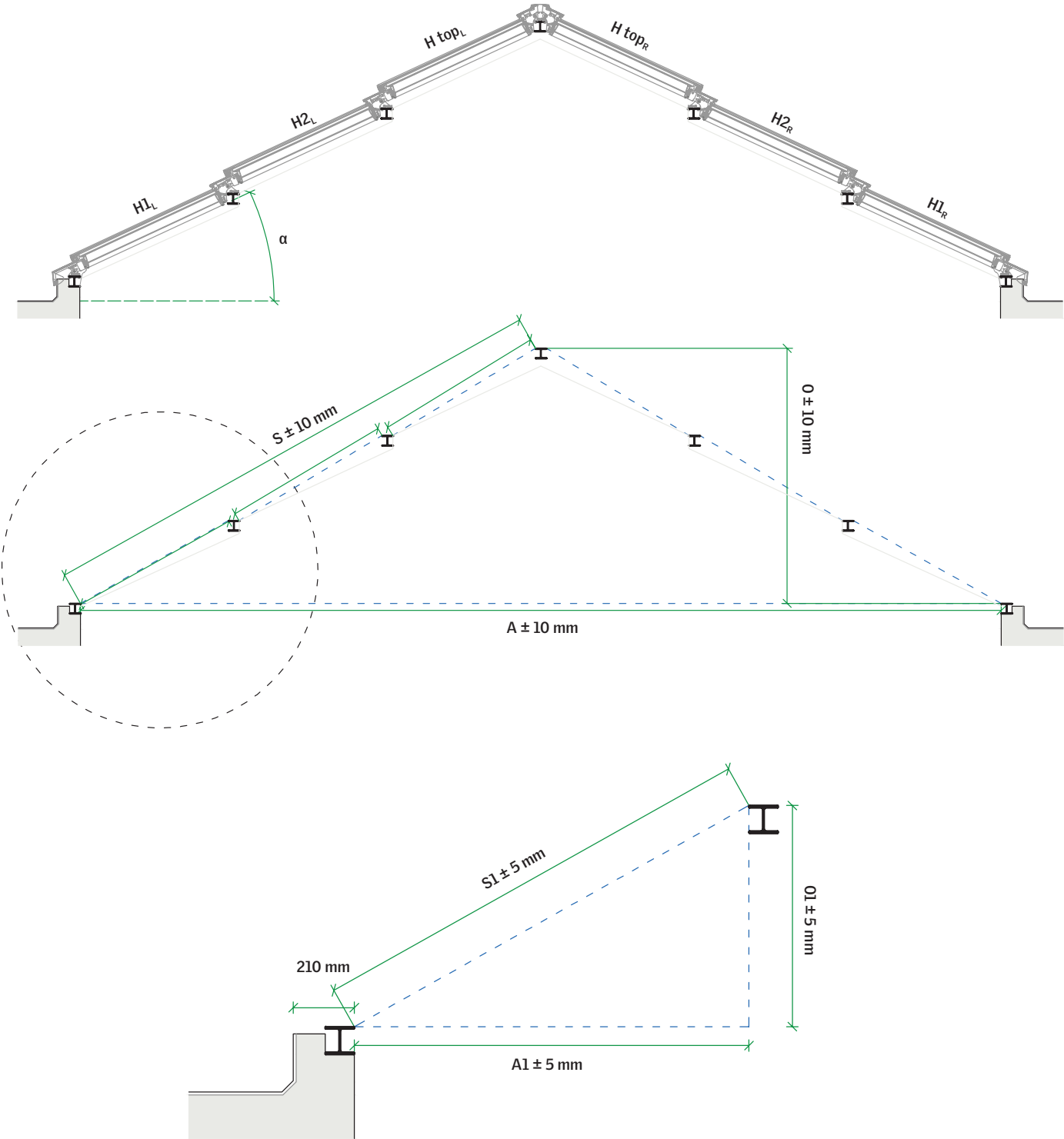
Plan	
A	Opening width – Tolerance $\pm 10$ mm
B	Opening lenght
C	Sub-construction width – Tolerance $\pm 5$ mm
D	Sub-construction length – Tolerance $\pm 5$ mm
O	Difference in height of sub-construction – Tolerance $\pm 10$ mm
S	Distance between steel, internal measurement between steel – Tolerance $\pm 10$ mm

Minimum length of steel profiles is equal to opening length (B)



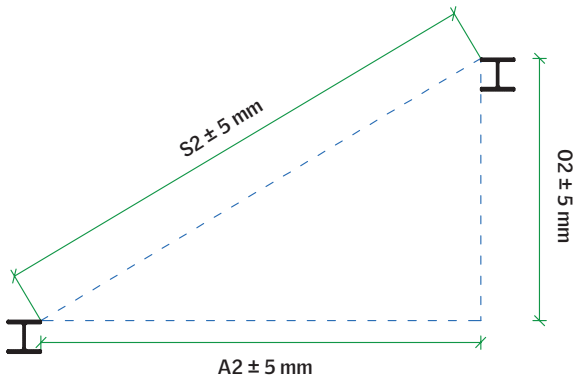
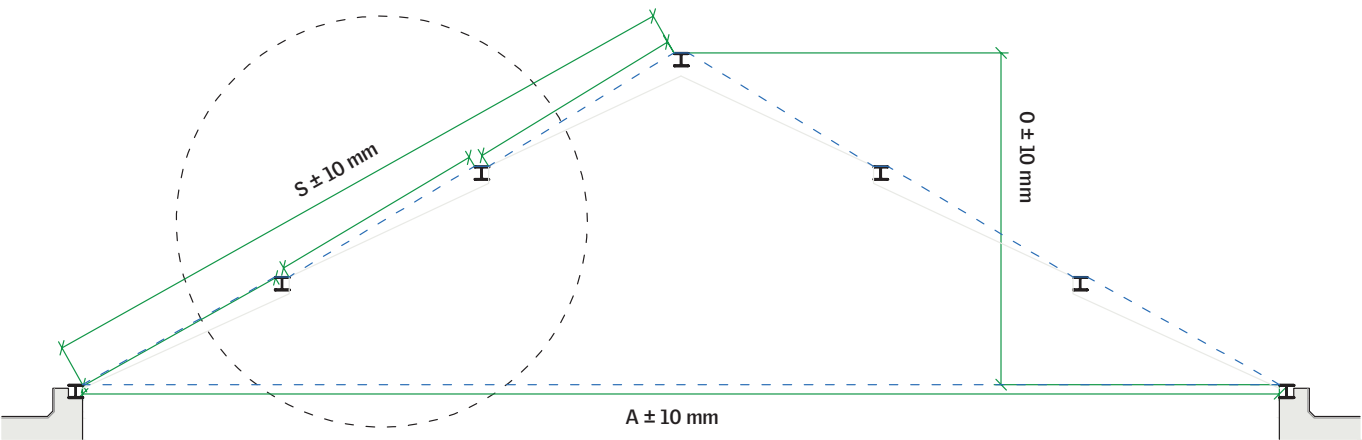
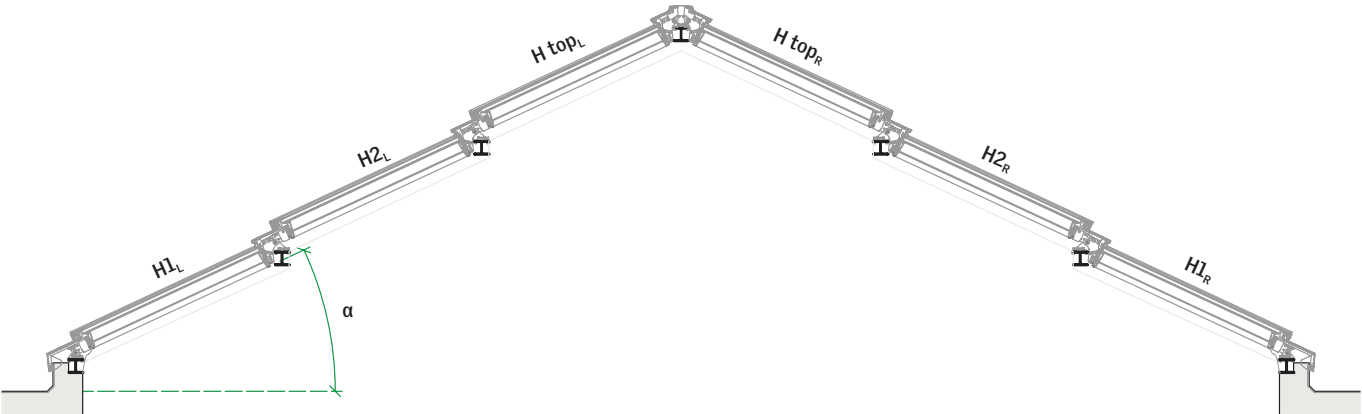
Building site measurements – Cross-section, Bottom

Cross-section, Bottom	
A1	Opening width, bottom row – Tolerance $\pm 5$ mm
S1	Distance between steel, internal measurement between steel in bottom row – Tolerance $\pm 5$ mm
O1	Difference in height of sub-construction in bottom row – Tolerance $\pm 5$ mm



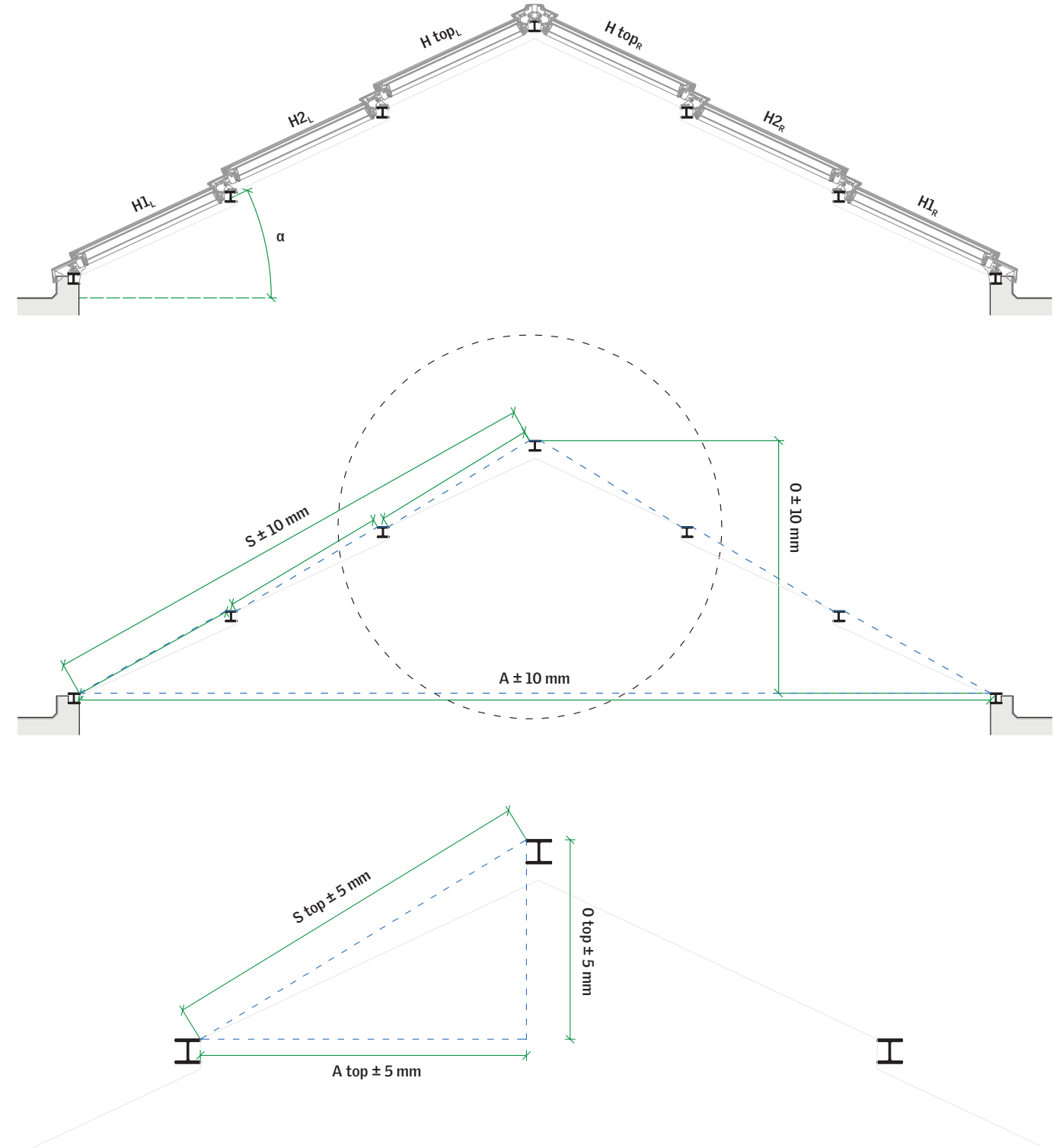
Building site measurements – Cross-section, Middle

Cross-section, Middle	
A2	Opening width, middle rows – Tolerance $\pm 5$ mm
S2	Distance between steel, internal measurement between steel in middle rows – Tolerance $\pm 5$ mm
O2	Difference in height of sub-construction in middle rows – Tolerance $\pm 5$ mm



Building site measurements – Cross-section, Top

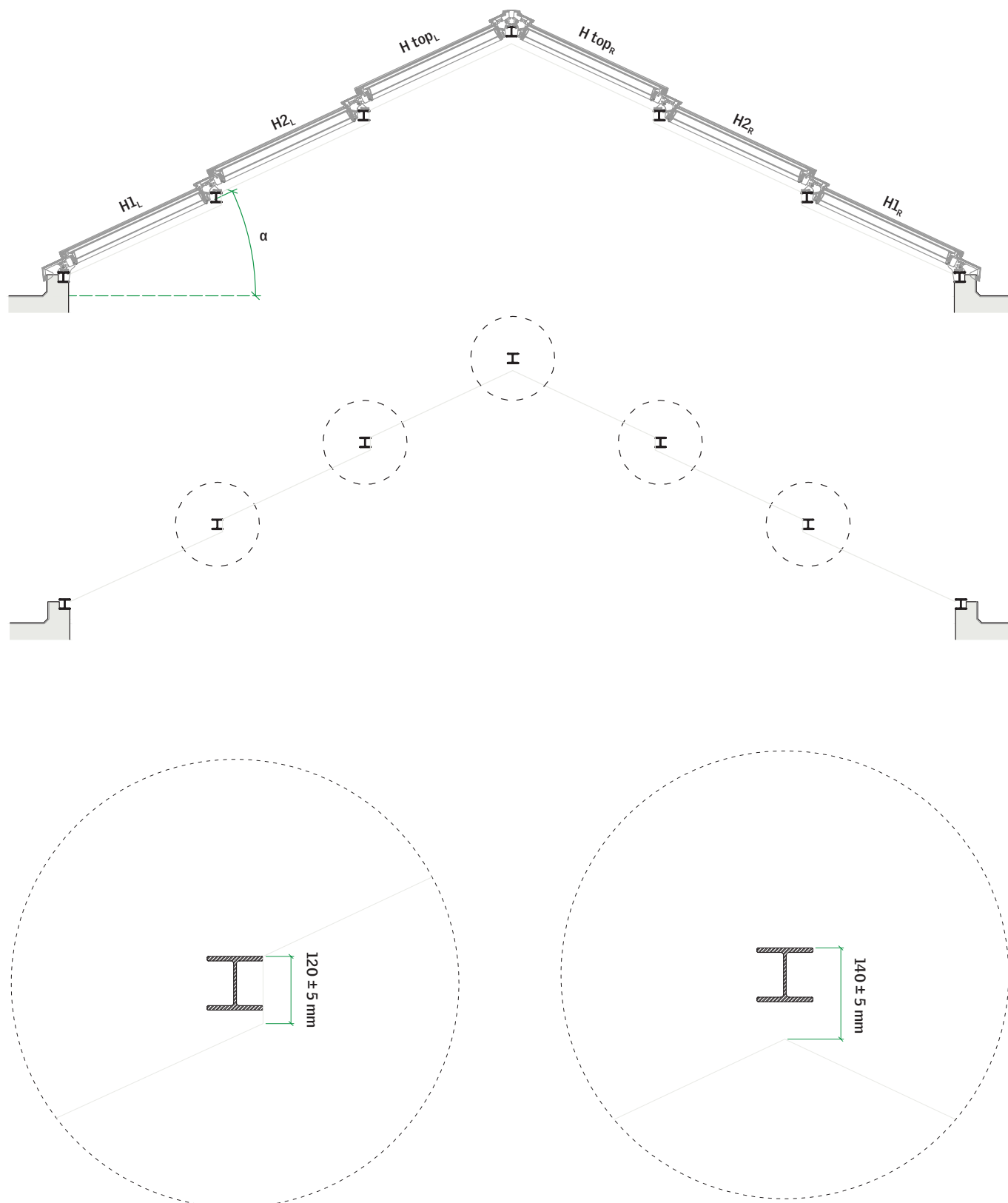
Cross-section, Top	
A top	Opening width, top row – Tolerance $\pm 5$ mm
S top	Distance between steel, internal measurement between steel in top row – Tolerance $\pm 5$ mm
O top	Difference in height of sub-construction in top row – Tolerance $\pm 5$ mm



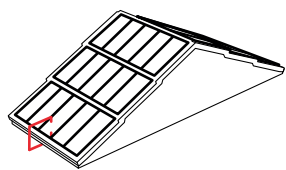


## Building site measurements – Cross-section, Gable

When designing the gable construction, it is important to be aware of the requirements to the step measurements to secure the correct installation of steel and flashings.



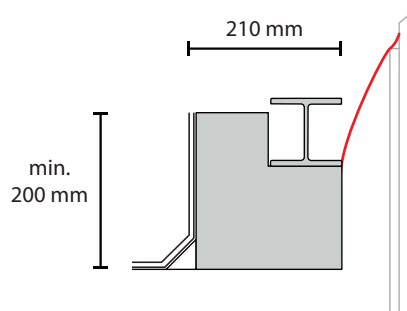
## Sub-construction variants



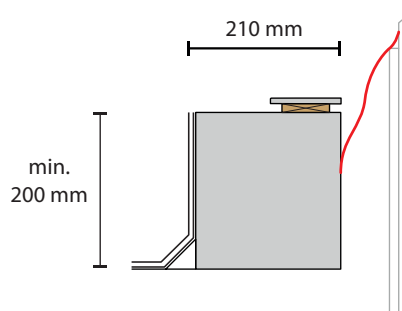
### Cross-section / Bottom

Options of sub-constructions for Step Ridgelight on Girder solutions. Please note that the width stated indicates the distance from the exterior of the roofing material to the interior edge of the steel profile.

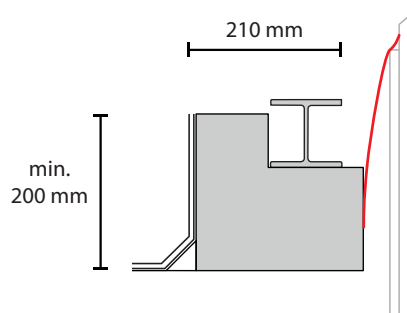
**Steel with steel profile**



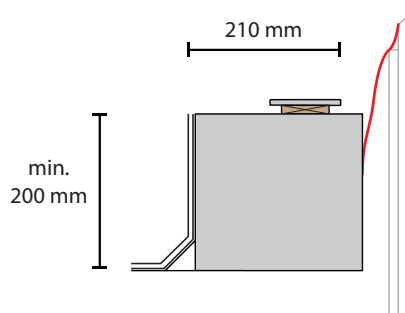
**Steel with flat steel**



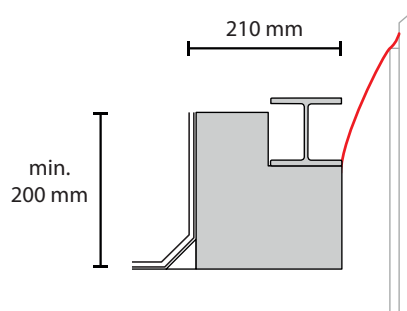
**Concrete with steel profile**



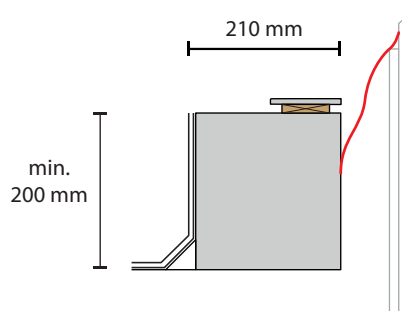
**Concrete with flat steel**

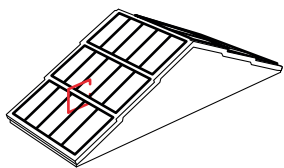


**Wood with steel profile**



**Wood with flat steel**

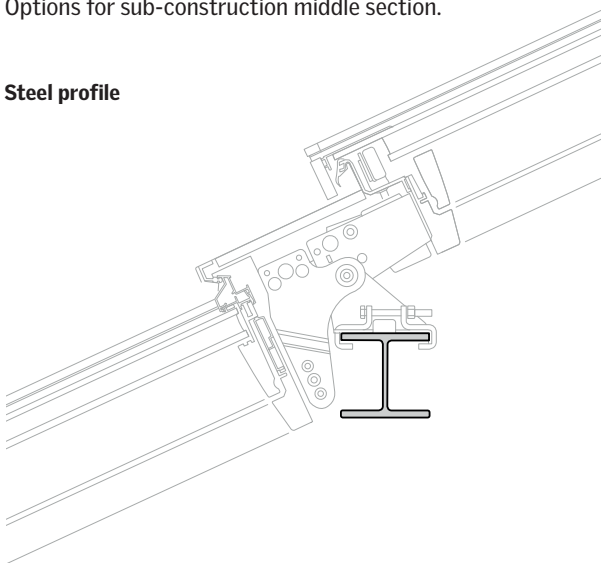




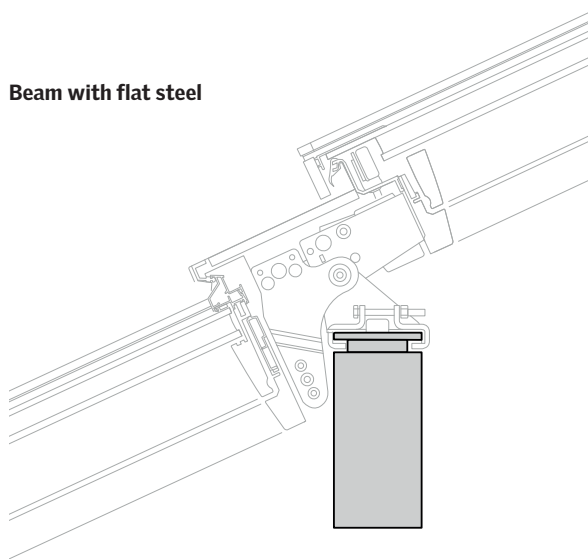
## Cross-section, Middle

Options for sub-construction middle section.

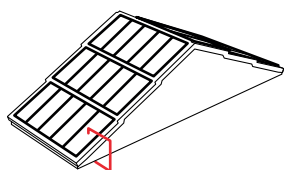
### Steel profile



### Beam with flat steel

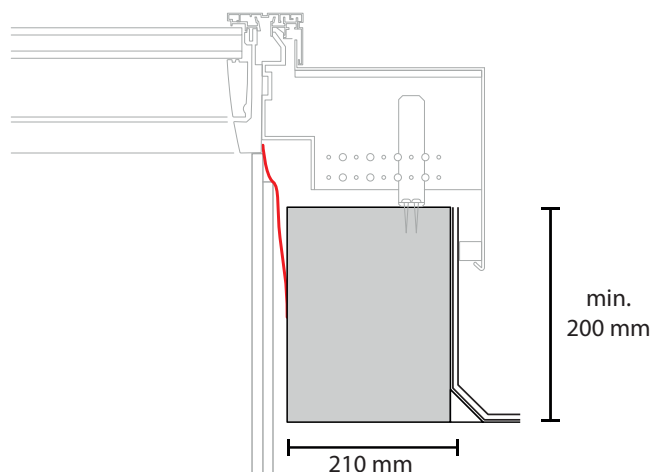


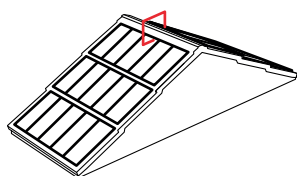
\*The load bearing beams can also be mounted perpendicular to the modules. In that case none of the numbers in this brochure will be correct. The new calculations shall be obtained from a VELUX Commercial sales office.



## Longitudinal section

In the gable construction for Step Ridgelight 5-25° on Girder pitch, the height of the sub-construction must be at least 200 mm measured from finished roof surface. It is important that the surface of the gable construction is suitable for fixation of screws.

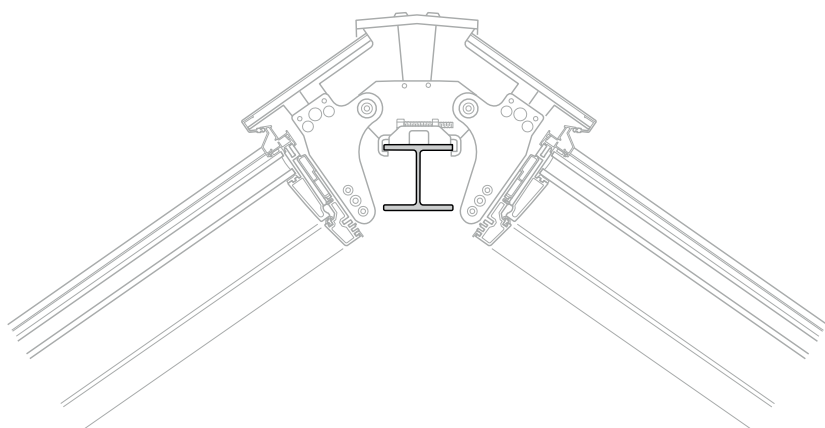




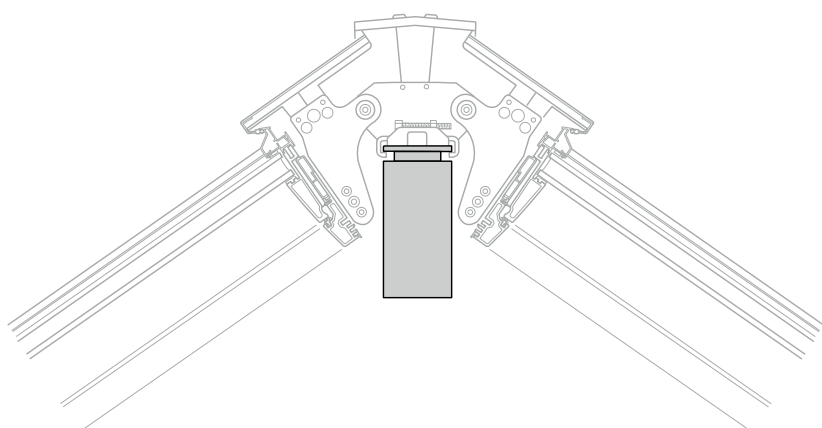
## Cross-section, Top

Options for sub-construction top section.

### Steel profile



### Beam with flat steel

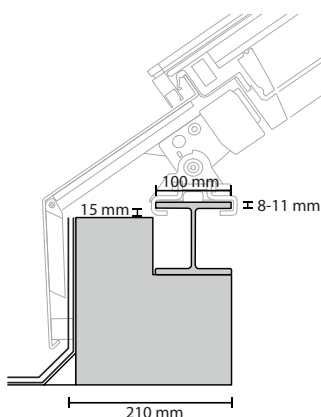


## Securing modular skylights to the sub-construction

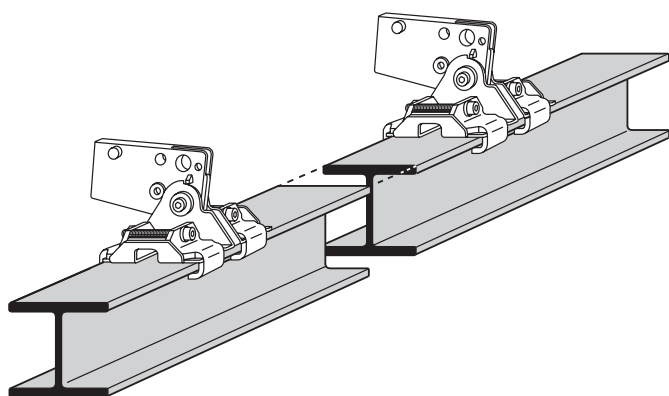
The sub-construction can be finished at the top and bottom with steel profile, which provides a level and stable surface for the skylight modules and forms a base for fitting mounting brackets with clamps.

### Using steel profile

When mounting the modular skylight on a steel profile, the top flange of the profile must be 100 mm in width and 8-11 mm in thickness. In addition there must be at least 15 mm free space underneath the flange both vertically and horizontally to give room for the clamp.



Steel, concrete or wood construction with steel profile

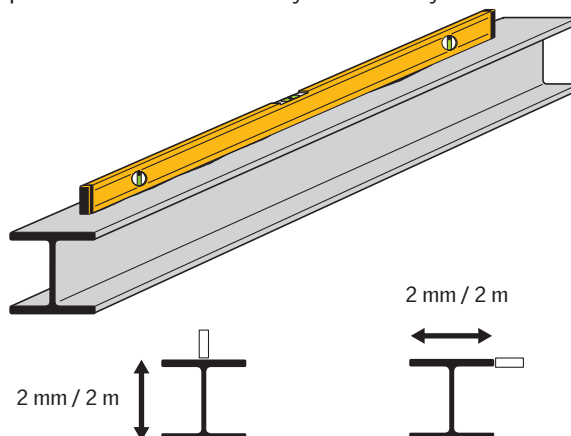


Connection of steel profiles must not collide with clamps

The number and size of fixings for securing the steel profile to the sub-construction must be dimensioned by the customer to fit each project.

### Straightness of steel profile

Requirements as to the straightness of the steel profile are 2 mm per 2 meters both horizontally and vertically..



The following standard steel profiles are suited for installation of VELUX modular skylights in Step Ridgelight 5-25° on Girder solutions.

EU steel beams	British steel beams *	US steel beams *
INP 220	UB 178 x 102 x 19	W 12 x 22
IPE 200	UB 203 x 102 x 23	W 12 x 19
HE100A	UB 254 x 102 x 22	W 10 x 19
HE100B	UB 254 x 102 x 25	W 10 x 17
	UB 305 x 102 x 25	W 8 x 15
	UB 305 x 102 x 28	W 6 x 16
	UB 305 x 102 x 33	W 4 x 13 **
		S 8 x 23 ***
		S 8 x 18.4

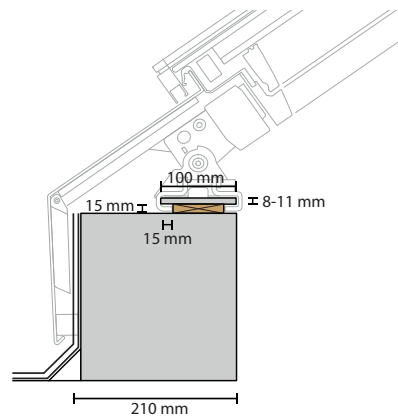
\*) The steel profile for British UB and US beams may not be used for installing in a slope declining more than 23°.

\*\*) The US steel profile W 4x13 may not be used for installing in a slope declining more than 22°.

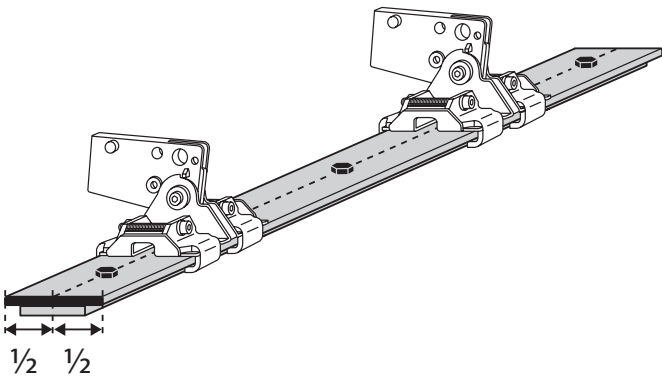
\*\*\*) The US steel profile S 8x23 may not be used for installing in a slope declining more than 19°..

Using flat steel profile

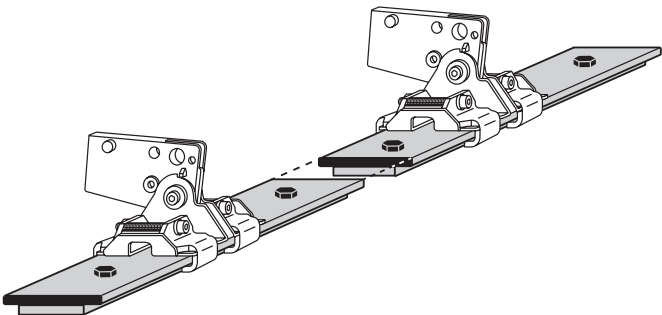
When the sub-construction is finished with a flat steel profiles, the steel profile must be 100 mm in width and 8-11 mm in height. In addition there must be at least 15 mm free space underneath the steel both vertically and horizontally to give room for the clamps.



Steel, concrete or wood construction with flat steel



- The distance pieces under the flat steel profile must be for the full length of the steel profile
- The flat steel profile must be secured using screws along the middle of the steel profile

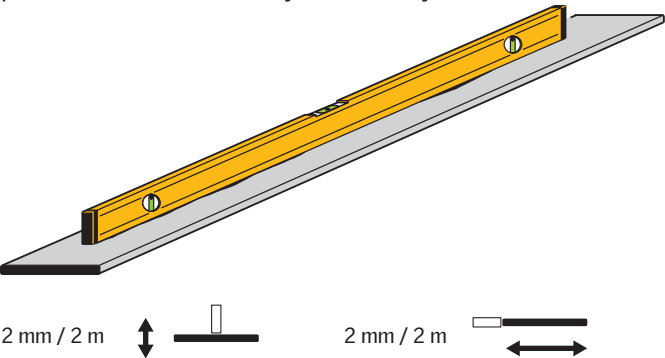


- Connection of flat steel profiles must not collide with clamps

**The number and size of fixings for securing the flat steel profile to the sub-construction must be dimensioned by the customer to fit each project.**

Straightness of steel profile

Requirements as to the straightness of the flat steel are 2 mm per 2 meters both horizontally and vertically.



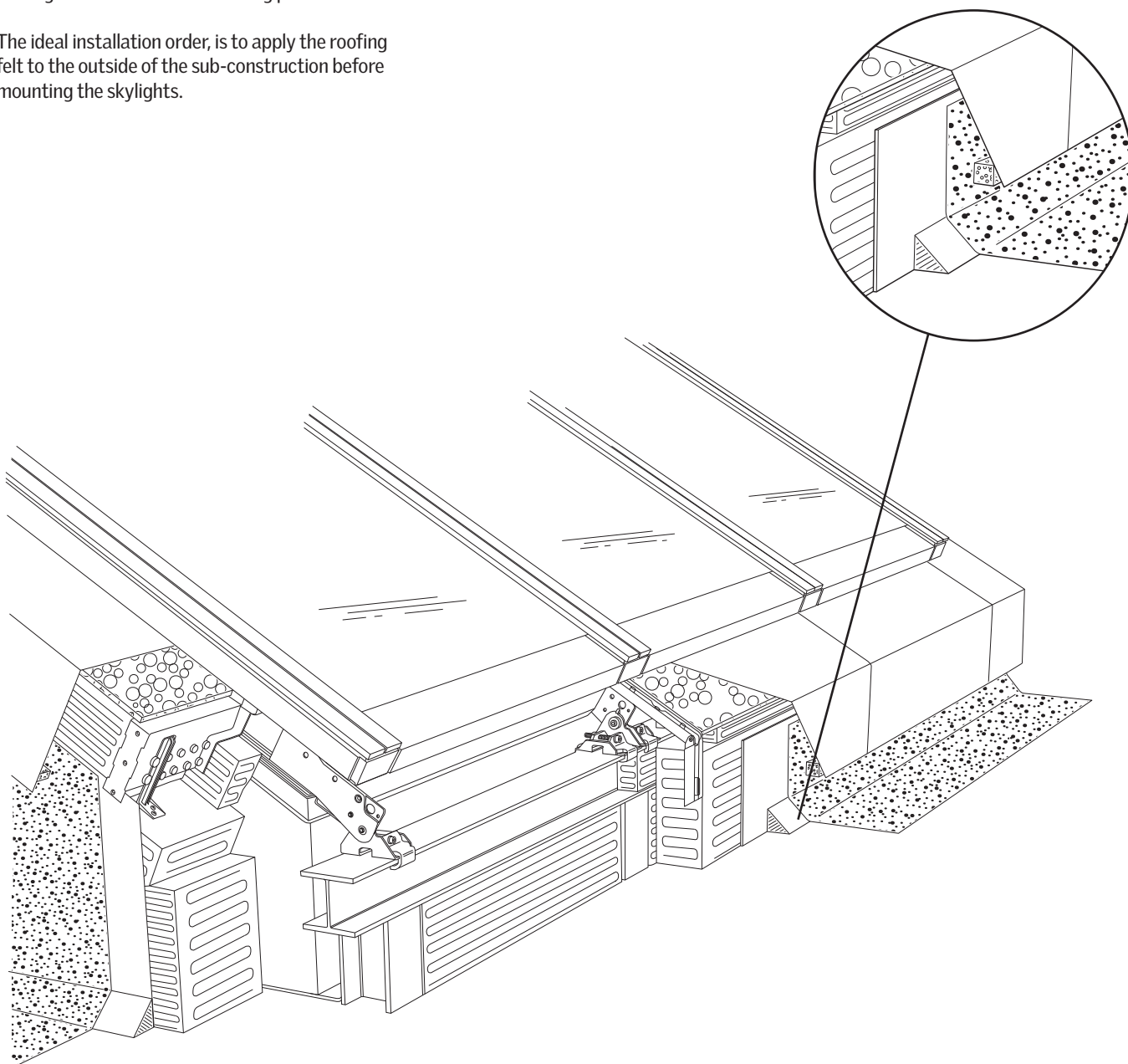
The following standard flat steel profiles are suited for installation of VELUX modular skylights in Step Ridgelight 5-25° on Girder solutions.

Standard EU flat steel	Standard US flat steel
100 x 8	5/16 x 4
100 x 10	3/8 x 4

## Connecting to the roof

The surface on which roofing felt is laid must be prepared according to applicable standards for roofing materials and best building practice.

The ideal installation order, is to apply the roofing felt to the outside of the sub-construction before mounting the skylights.

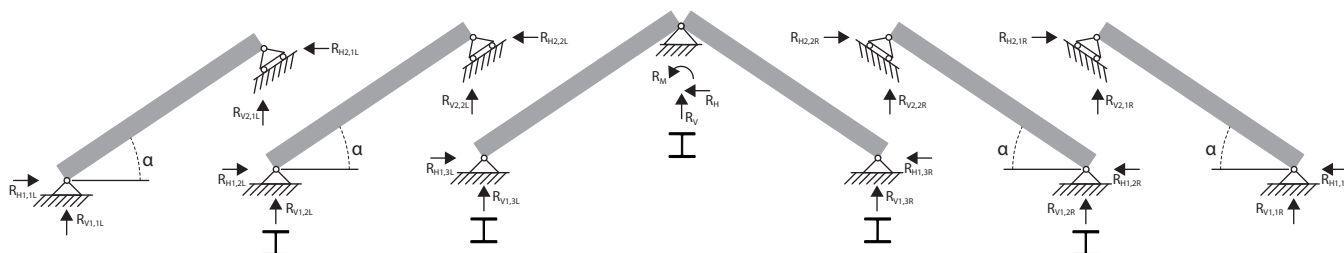


## Static information for dimensioning

As an additional service, VELUX Commercial offers to provide static calculation for the skylight solution based on the actual loads given by the customer. For static calculation please contact a VELUX Commercial sales office.

en by the customer. For static calculation please contact a VELUX Commercial sales office.

### Static model of reactions

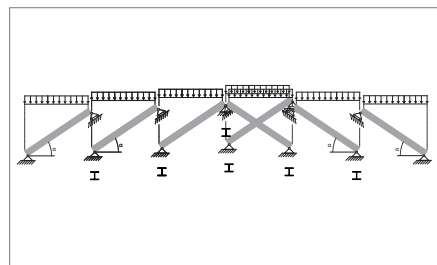


### Characteristic loads

Fill out please

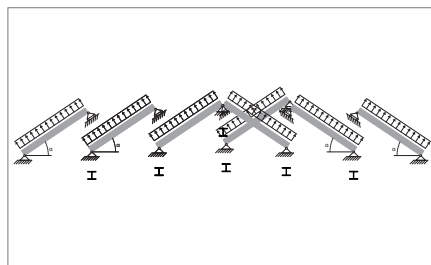
Name of your project:

Snowload pressure in kN/m<sup>2</sup>



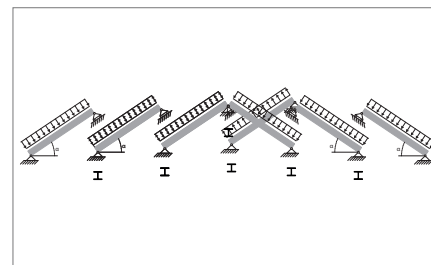
kN/m<sup>2</sup>

Windload pressure in kN/m<sup>2</sup>



kN/m<sup>2</sup>

Windload suction in kN/m<sup>2</sup>

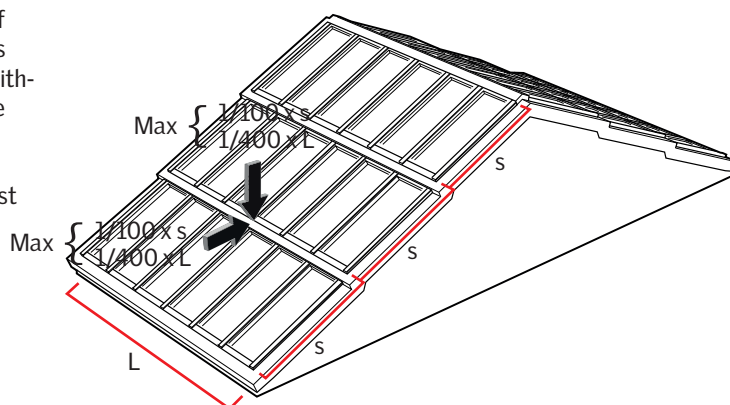


kN/m<sup>2</sup>

## Sub-construction dimensioning requirements

The roof construction is subject to deflection after installation of the skylight modules. These deflections include subsequent roof covering, various building installations and external loads such as snow and wind etc. The sub-construction must be designed to withstand all these loads and the deformations must be limited to the maximum of  $1/100 \times s$  or  $1/400 \times L$ .

After completing the sub-construction, it must be secured against water penetrating the roof construction and insulation.





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Blog: [commercial.velux.com/blog](http://commercial.velux.com/blog)

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