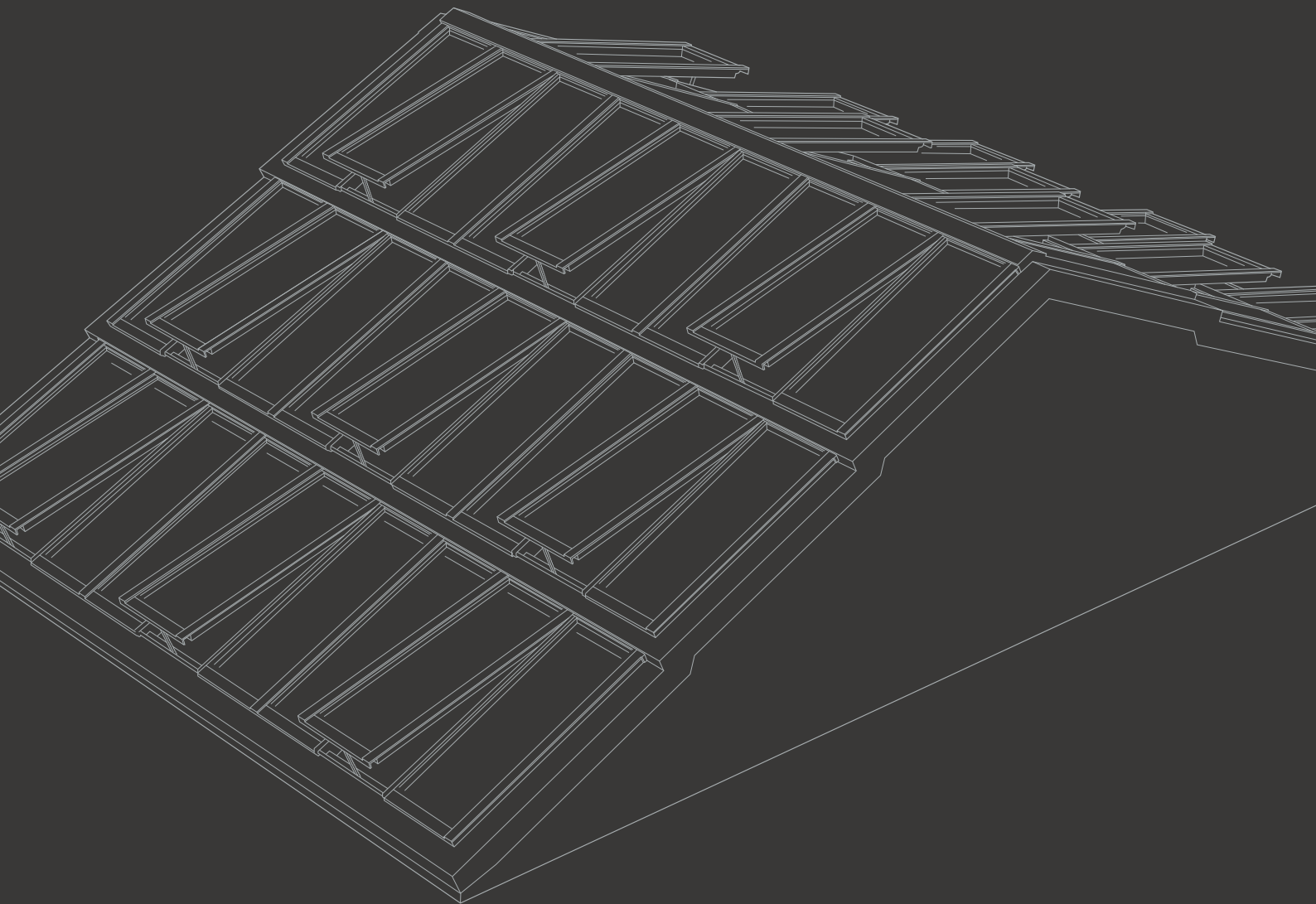


**VELUX®**

Commercial

# Sub-construction for Step Ridgelight 25°

VELUX Modular Skylights



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## Before you start

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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 your local VELUX Commercial sales office.



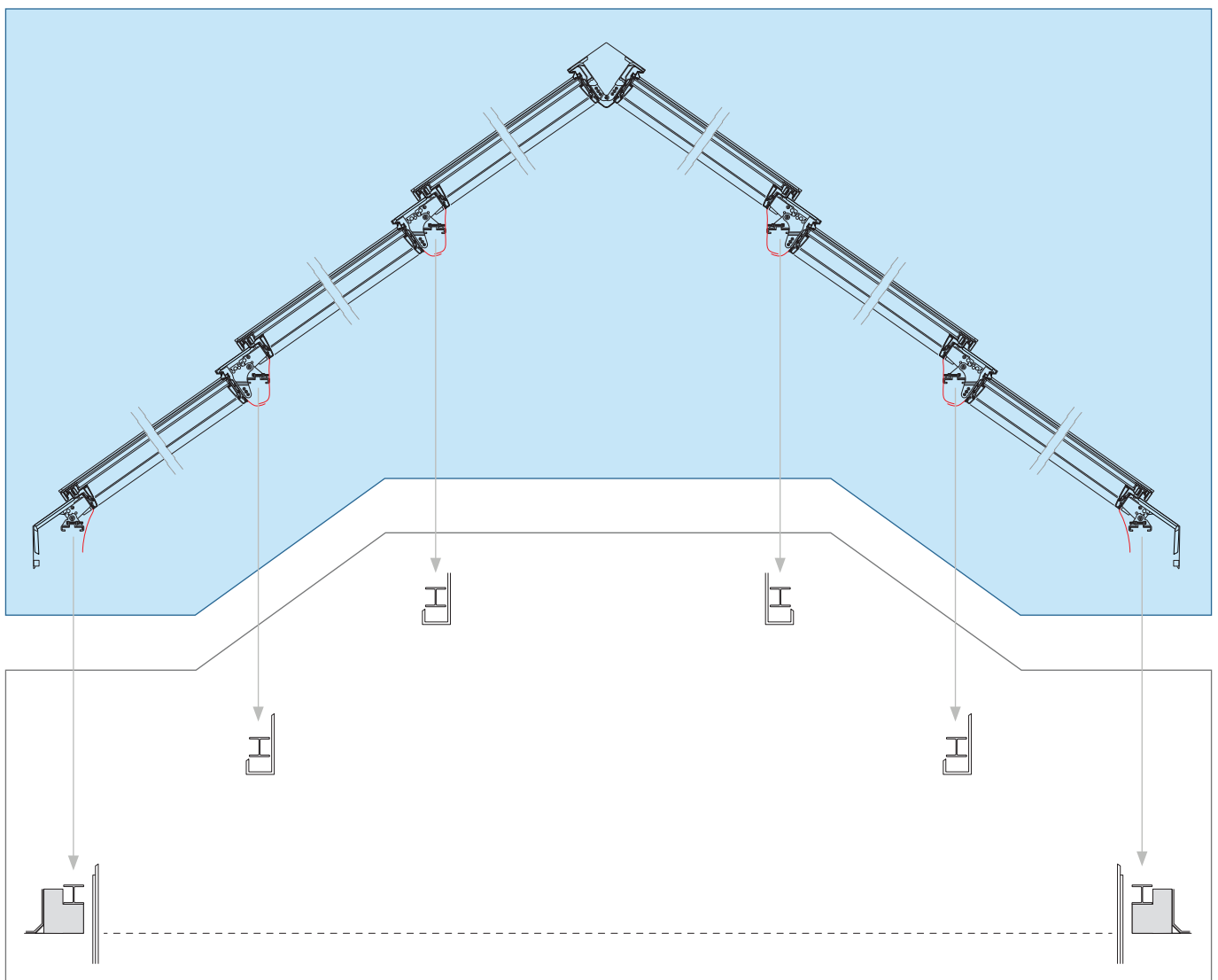
This is the Sub-construction document for Step Ridgelight 25°. You are browsing the brochure now.

## Sub-construction for Step Ridgelight 25°

VELUX modular skylights installed in a Step Ridgelight 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 25° A delivery of VELUX Commercial



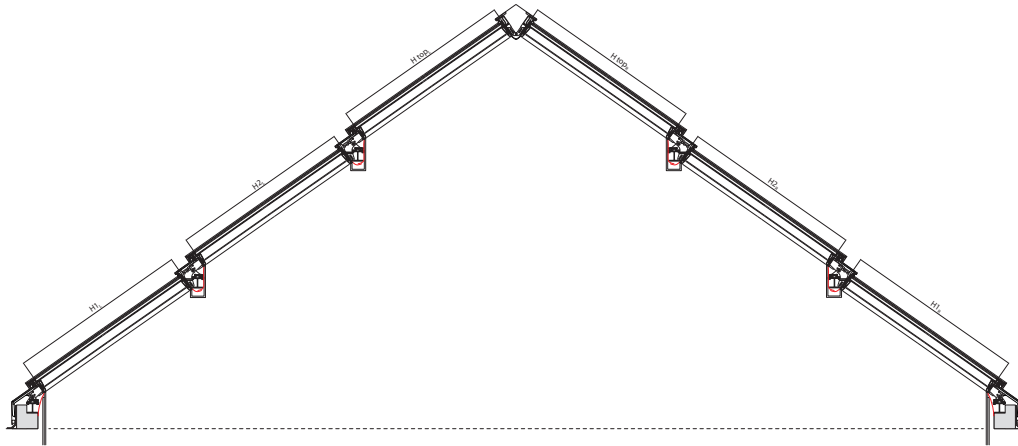
**On-site sub-construction**  
**This is not delivered by VELUX Commercial**

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 an easy 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 modules

| Numbering sequence  |   |                     |   |
|---------------------|---|---------------------|---|
| H1 <sub>L</sub>     | Module height – Always bottom module    | H1 <sub>R</sub>     | Module height – Always bottom module    |
| H2 <sub>L</sub> ... | Module height – Middle module 2, 3, ... | H2 <sub>R</sub> ... | Module height – Middle module 2, 3, ... |
| H top <sub>L</sub>  | Module height – Top module              | H top <sub>R</sub>  | Module height – Top module              |

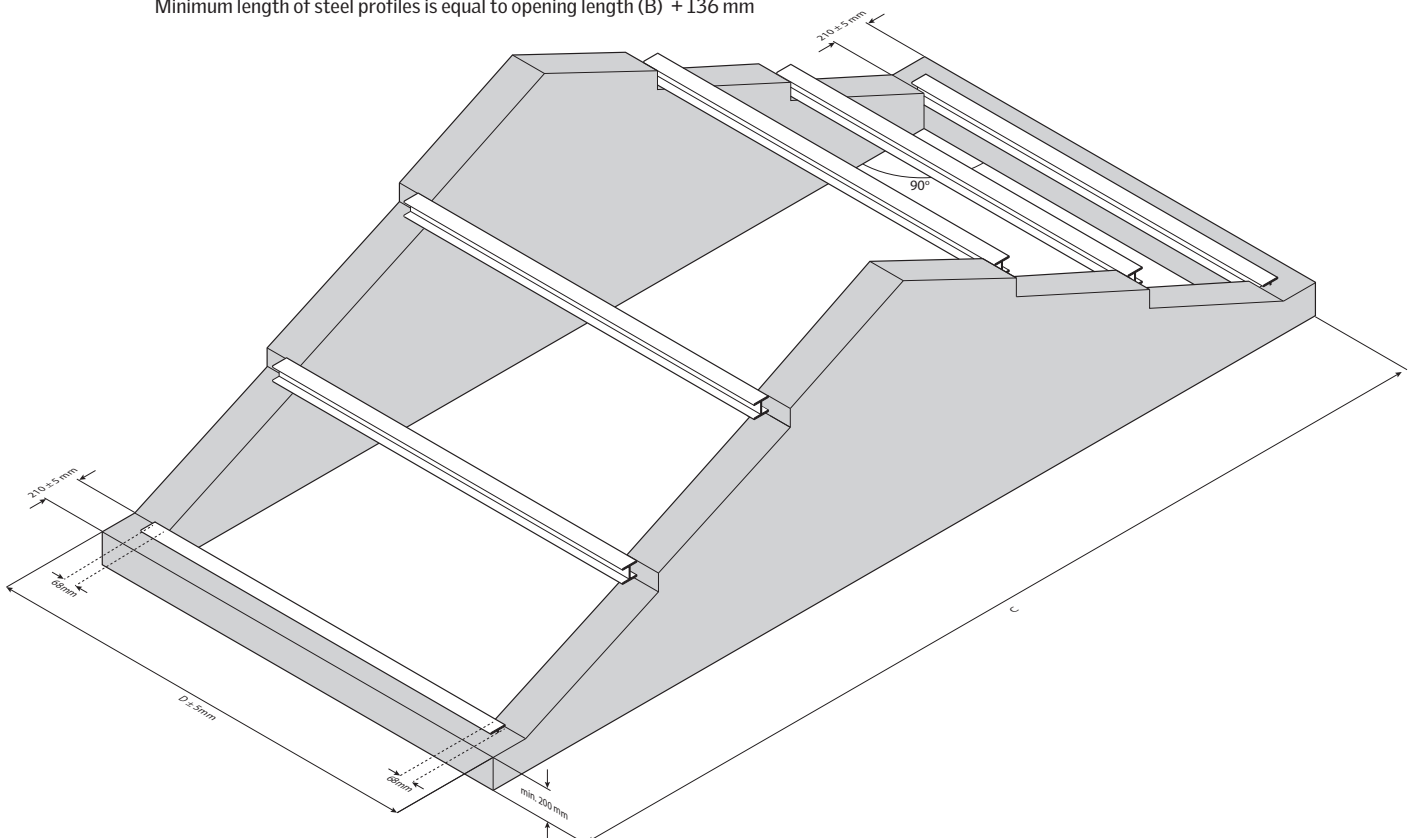
Example shows three rows with two steps



## Building site measurements – Axonometric

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

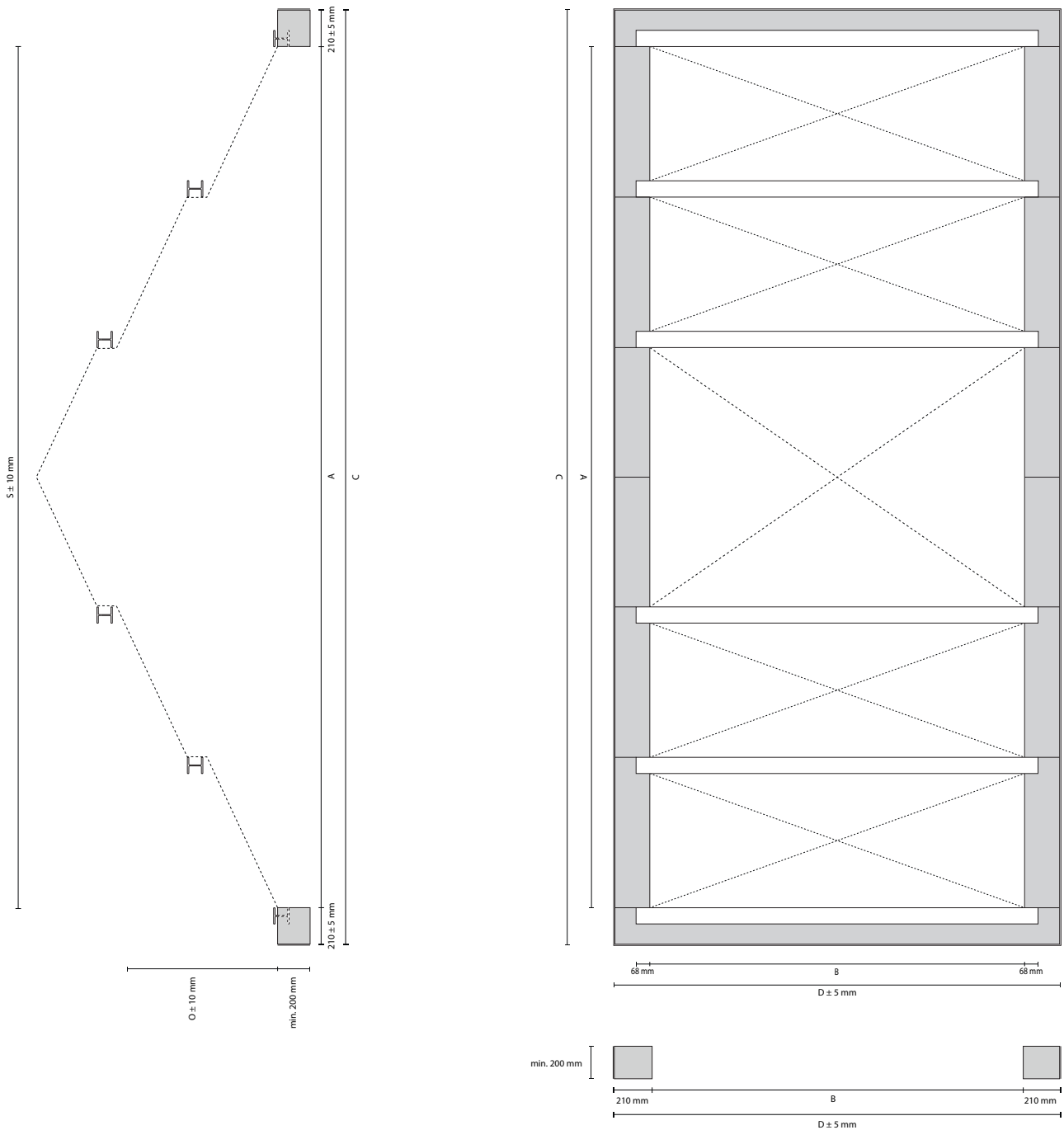
Minimum length of steel profiles is equal to opening length (B) + 136 mm



## Building site measurements

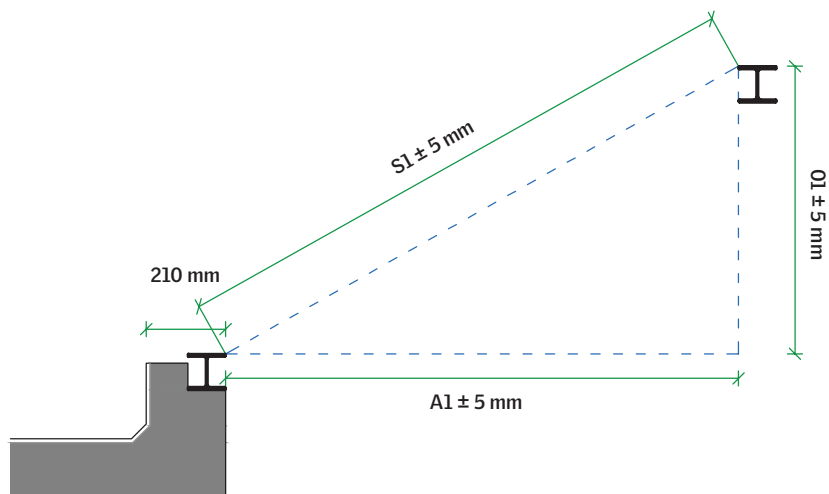
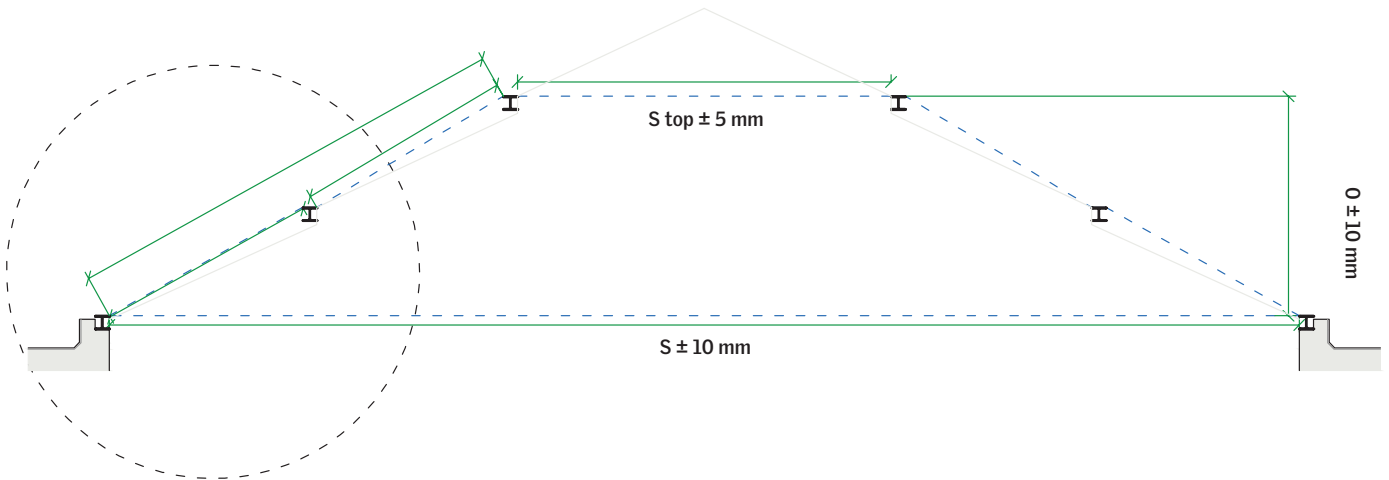
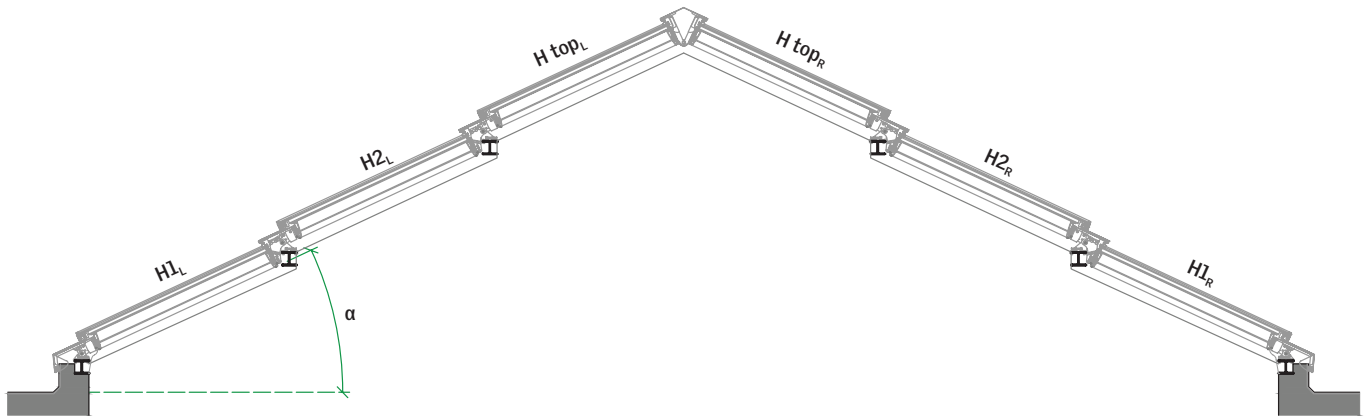
| Plan |  |
|------|--|
| A    | Opening width  |
| B    | Opening length   |
| C    | Sub-construction width   |
| D    | Sub-construction length – Tolerance $\pm 5$ mm                                     |
| O    | Difference in height of sub-construction – Tolerance $\pm 10$ mm                   |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

Minimum length of steel profiles is equal to opening length (B) + 136 mm



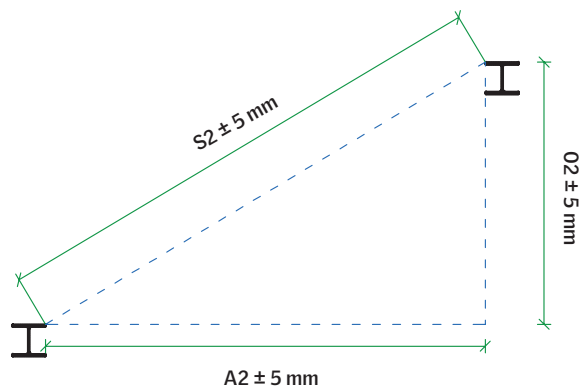
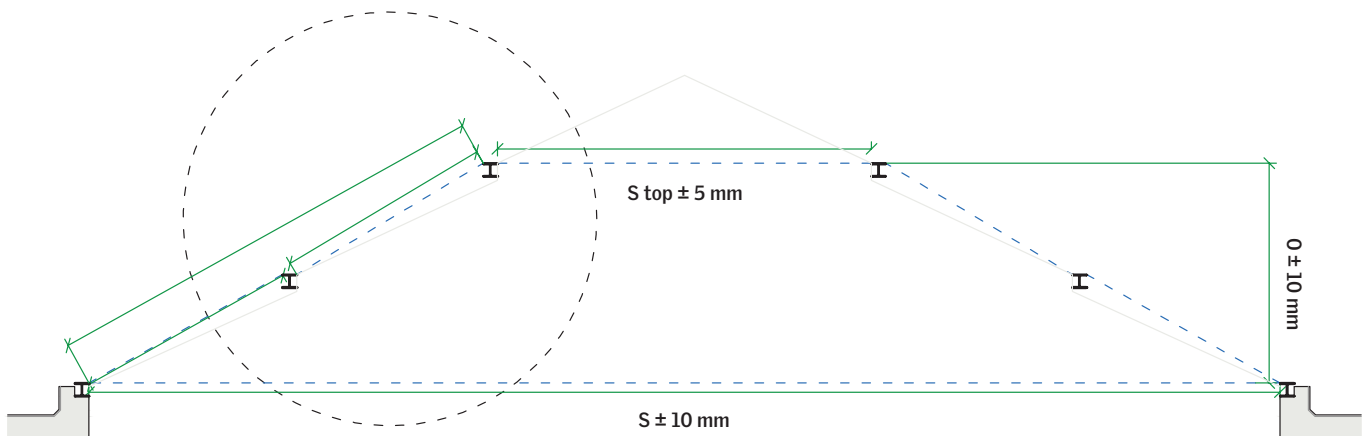
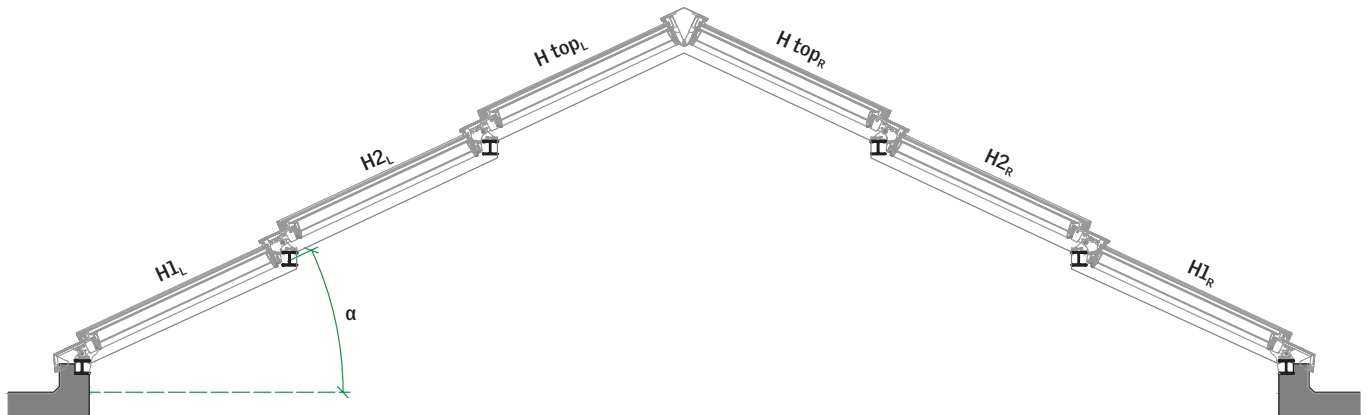
## Building site measurements – Cross-section, Bottom

| 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                   |



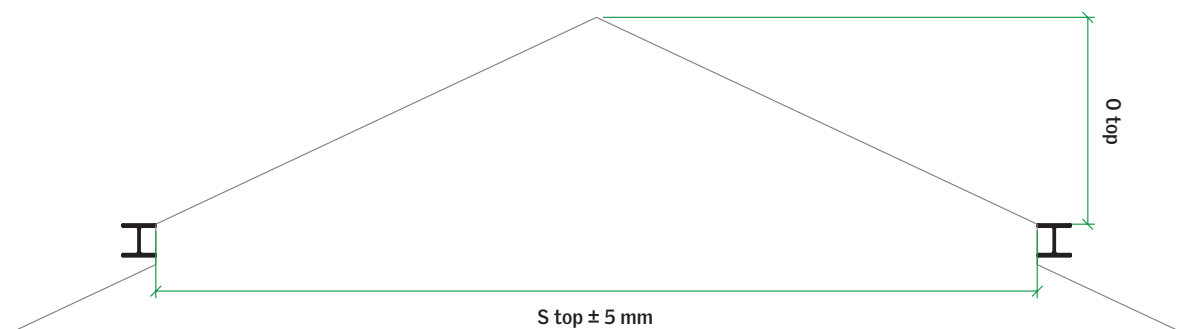
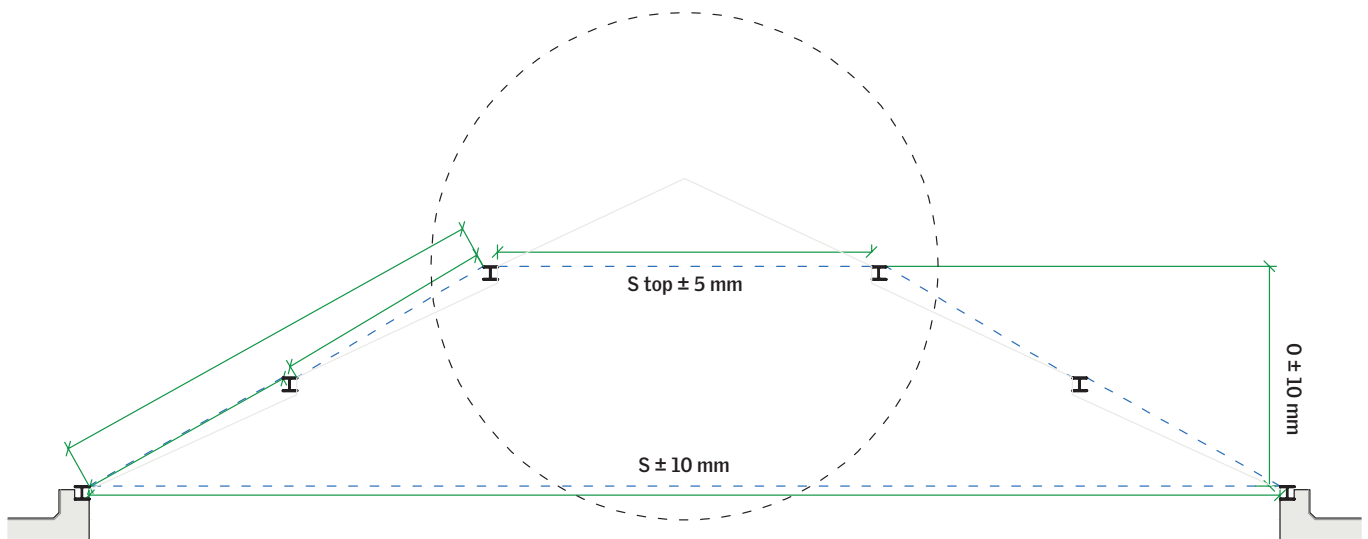
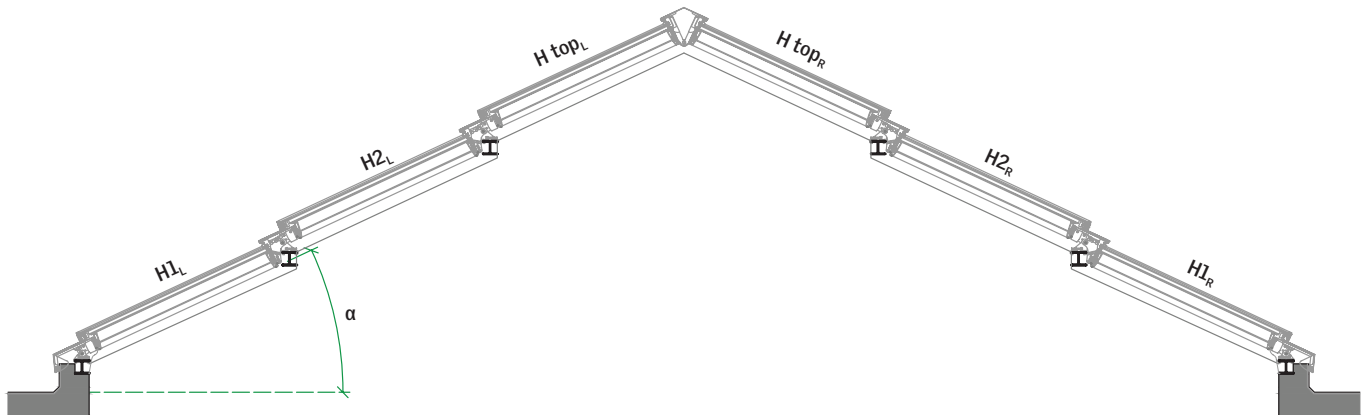
## Building site measurements – Cross-section, Middle

| Cross-section, Bottom |  |
|-----------------------|--|
| 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

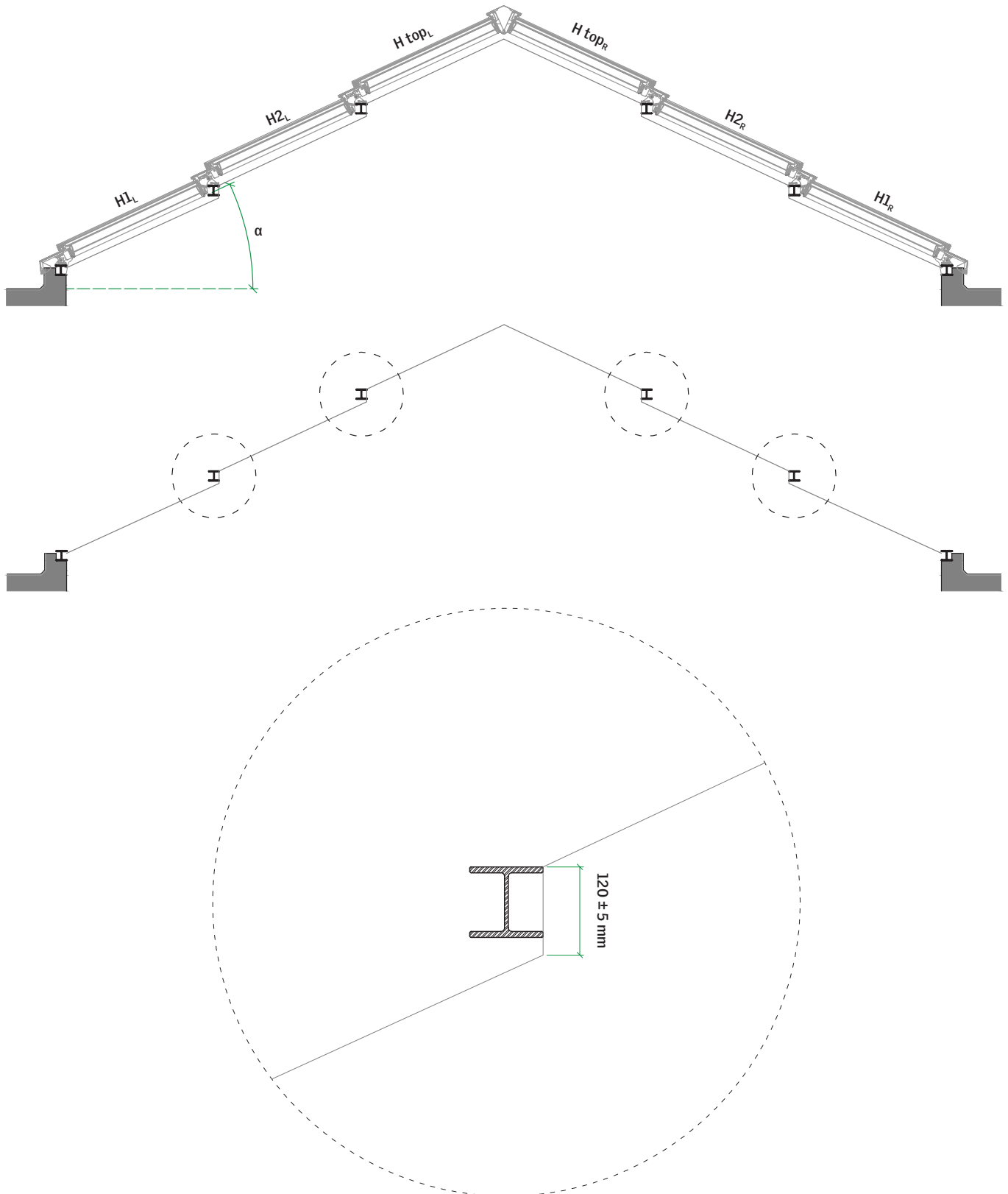
| Cross-section, Top |  |
|--------------------|--|
| S top              | Distance between steel, internal measurement between steel in top row – Tolerance $\pm 5$ mm |
| O top              | Difference in height of sub-construction in top row  |



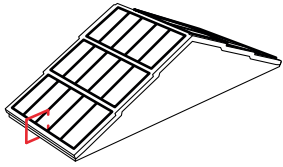


## Building site measurements – Cross-section, Gable

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.



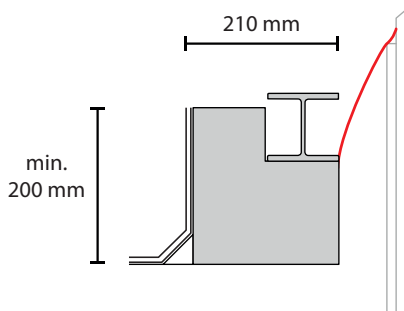
## Sub-construction variants



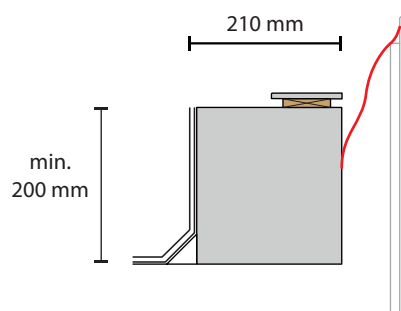
### Cross-section / Bottom

Options of sub-constructions for Step Ridgelight 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.

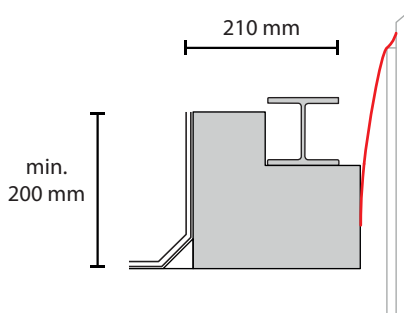
**Steel with steel profile**



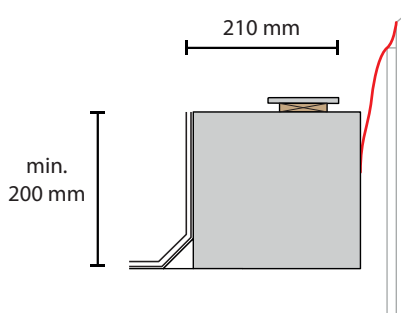
**Steel with flat steel**



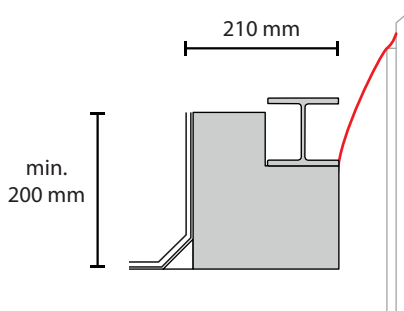
**Concrete with steel profile**



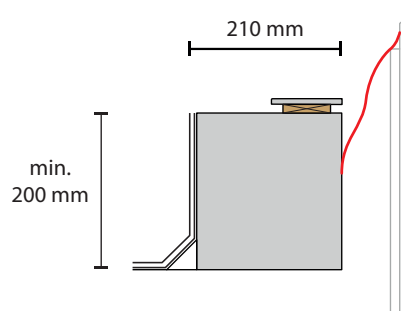
**Concrete with flat steel**

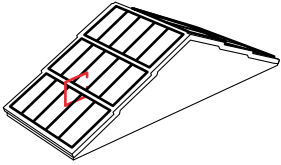


**Wood with steel profile**



**Wood with flat steel**

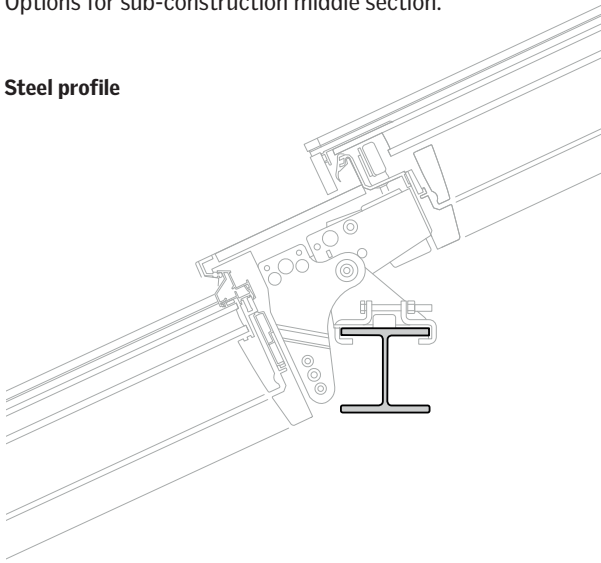




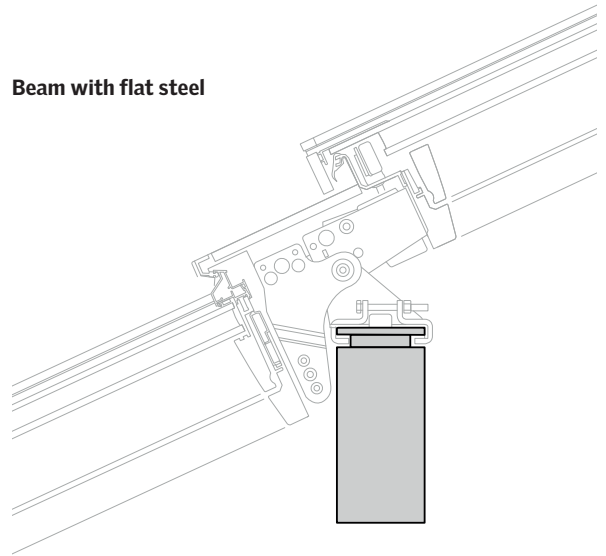
## Cross-section, Middle

Options for sub-construction middle section.

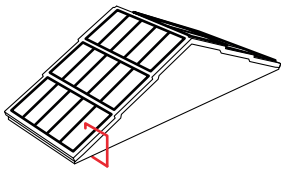
### Steel profile



### Beam with flat steel

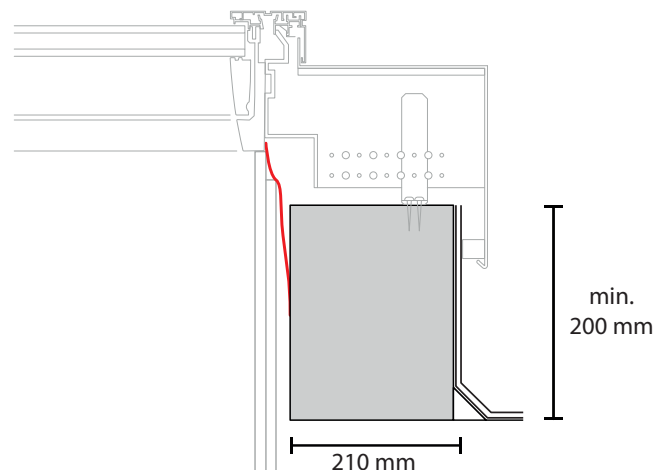


\*The load bearing beams can also be mounted perpendicular to the modules. In that case none of the numbers in this brochure will be correct. The new calculations shall be obtained from a VELUX Commercial sales office.



## Longitudinal section

In the gable construction for Step Ridgelight 25° 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.

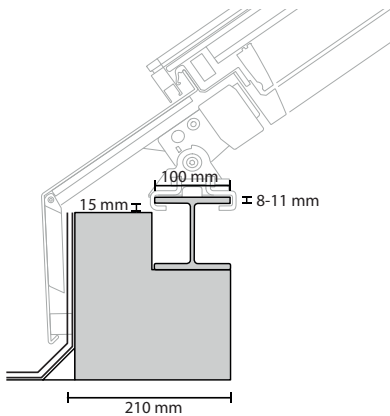


## Securing modular skylights to the sub-construction

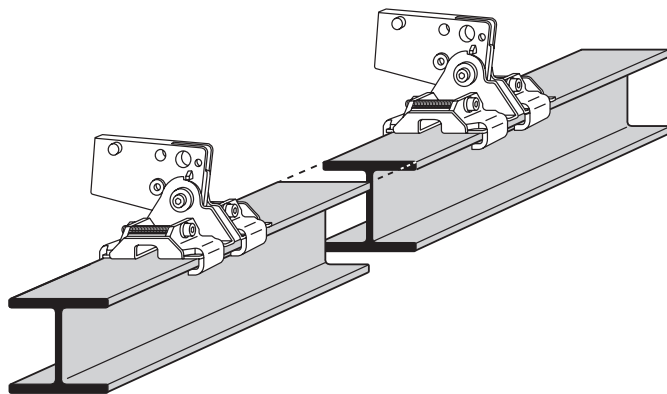
The sub-construction can be finished at the top and bottom with steel profile, which provides a level and stable surface for the skylight modules and forms a base for fitting mounting brackets with clamps.

### 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

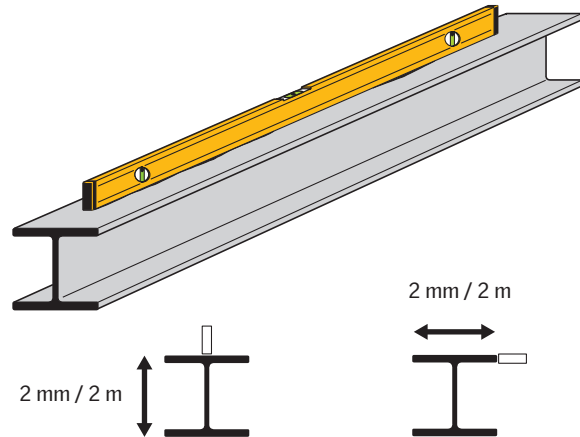


Connestion of steel profiles must not collide with clamps

**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..

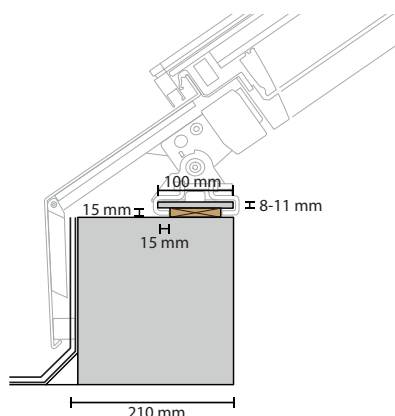


The following standard steel profiles are suited for installation of VELUX modular skylights in Step Ridgelight solutions.

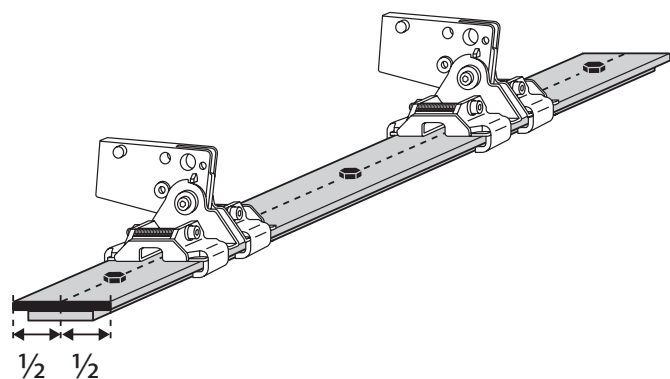
| EU steel beams |
|----------------|
| INP 220        |
| IPE 200        |
| HE100A         |
| HE100B         |

## Using flat steel profile

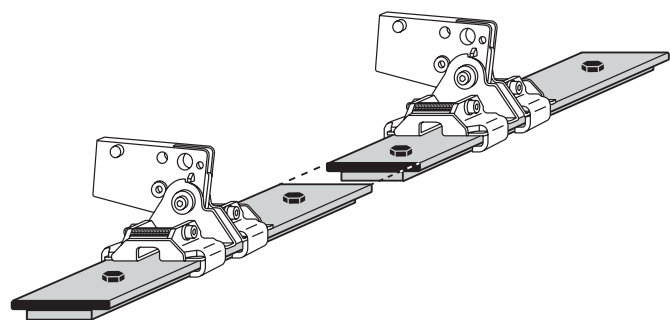
When the sub-construction is finished with a flat steel profiles, the steel profile must be 100 mm in width and 8-11 mm in height. In addition there must be at least 15 mm free space underneath the steel both vertically and horizontally to give room for the clamps.



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

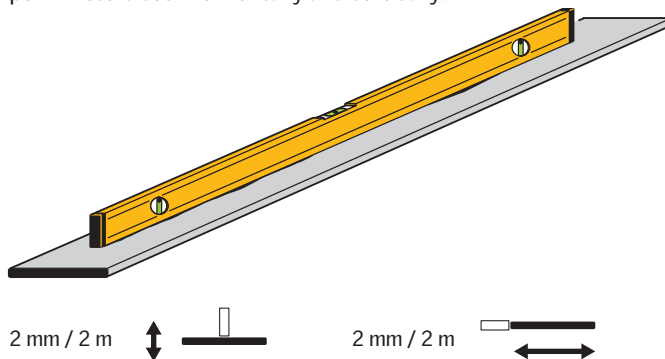


- Connection of flat steel profiles must not collide with clamps

**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 solutions.

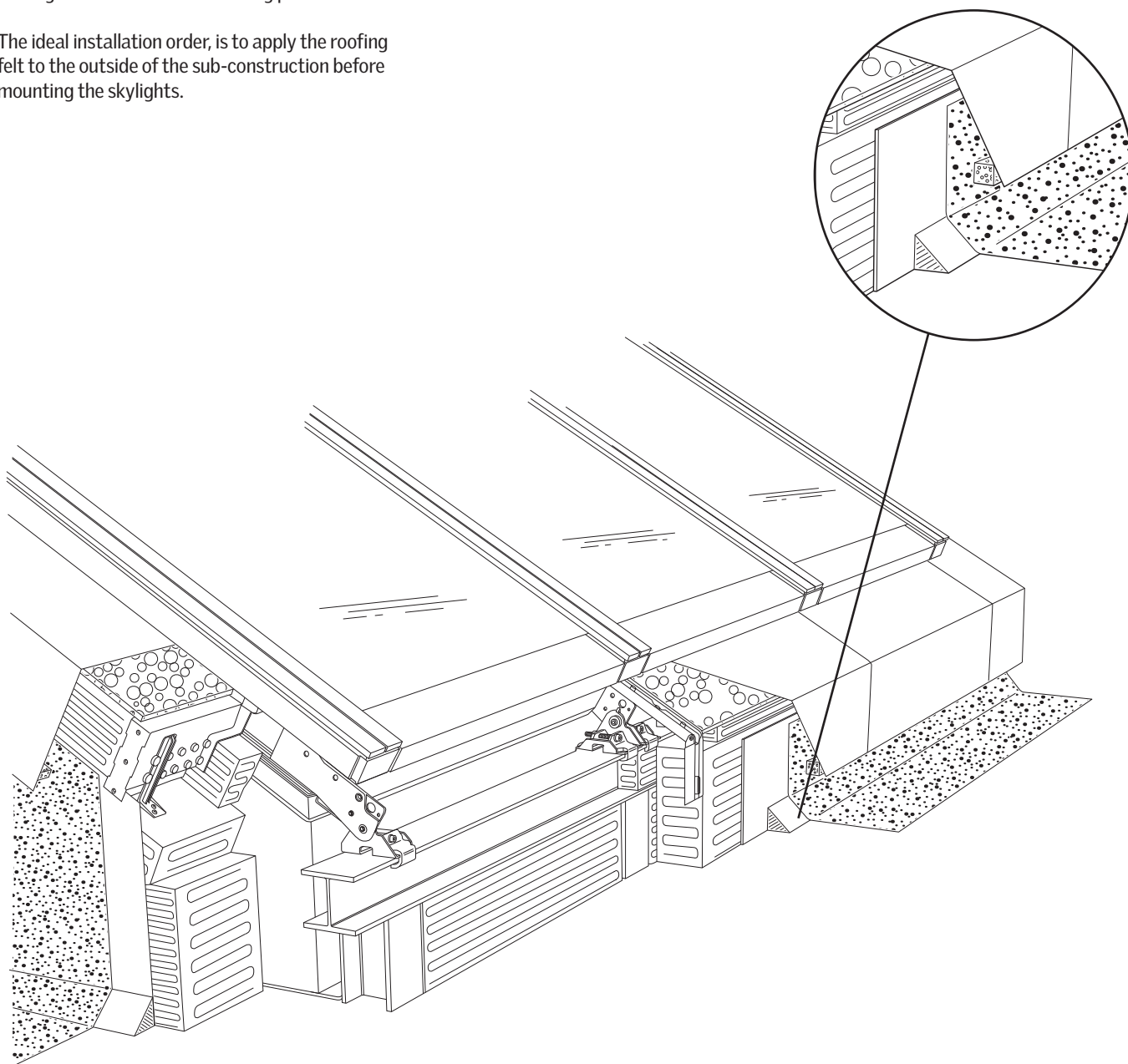
| Standard EU flat steel | Standard US flat steel |
|------------------------|------------------------|
| 100 x 8                | 5/16 x 4               |
| 100 x 10               | 3/8 x 4                |

## Connecting to the roof

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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.

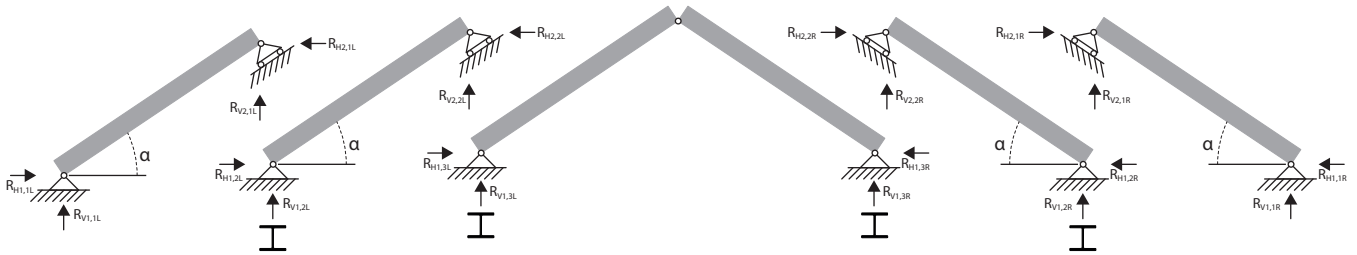


## Static information for dimensioning

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

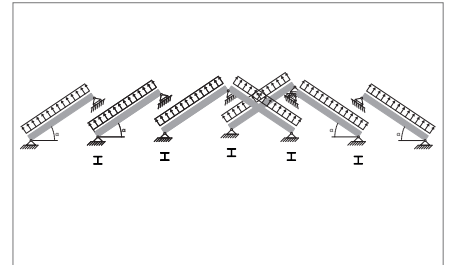
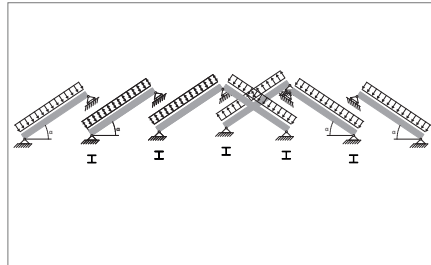
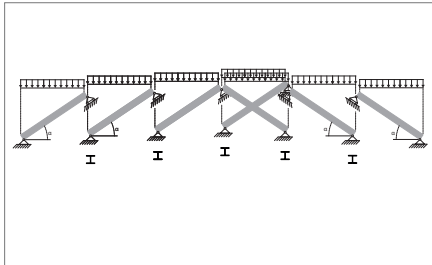
Fill out please

Name of your project:

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

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

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



kN/m<sup>2</sup>

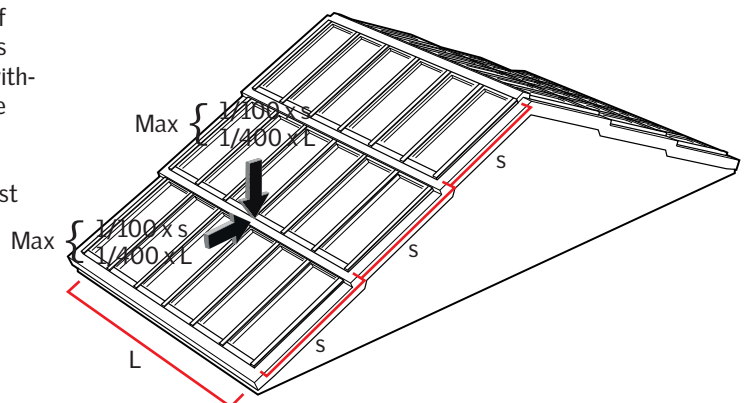
kN/m<sup>2</sup>

kN/m<sup>2</sup>

## Sub-construction dimensioning requirements

The roof construction is subject to deflection after installation of the skylight modules. These deflections includes 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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