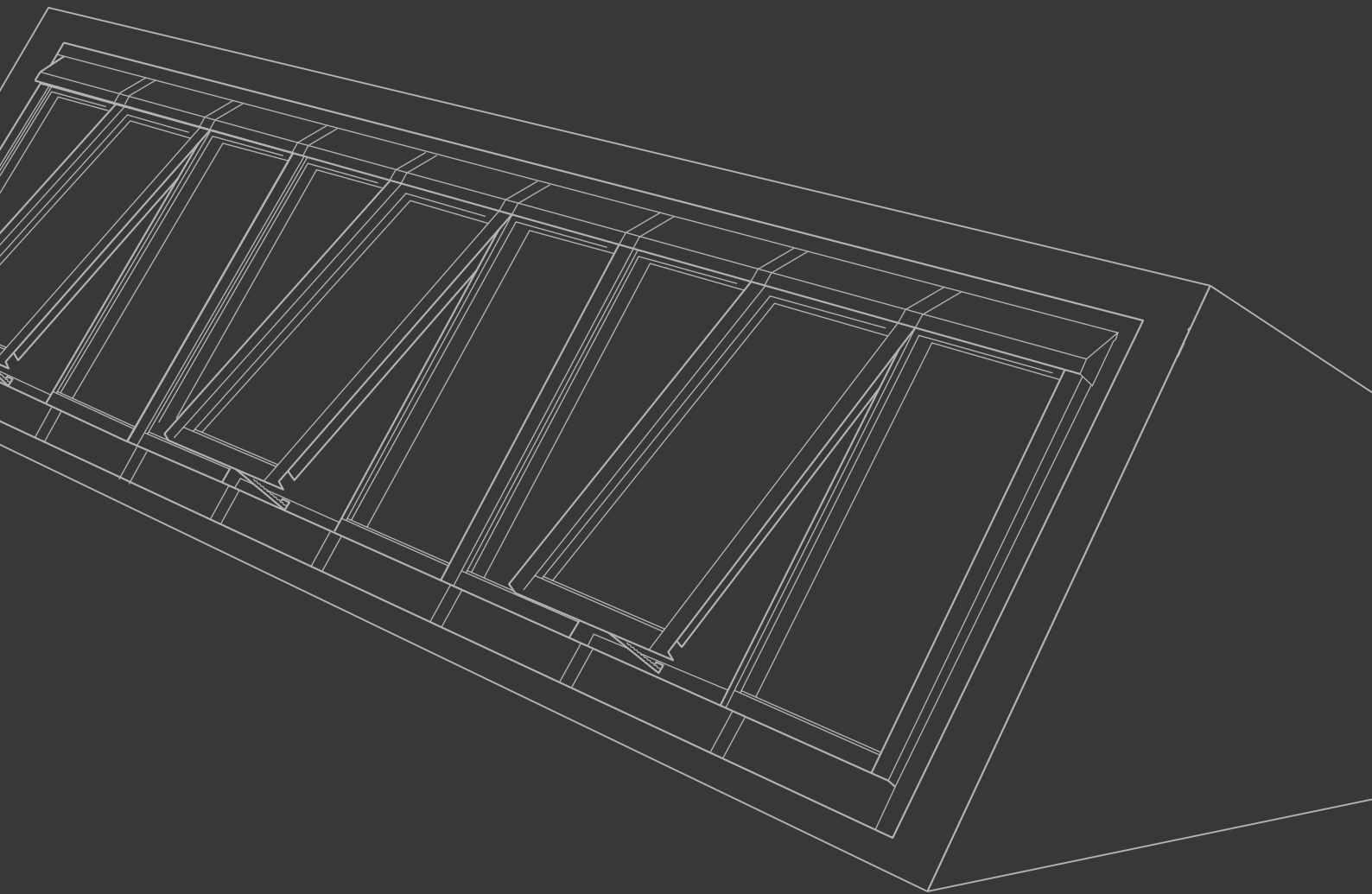


**VELUX®**

Commercial

# Sub-construction for Northlight 25-90°

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.



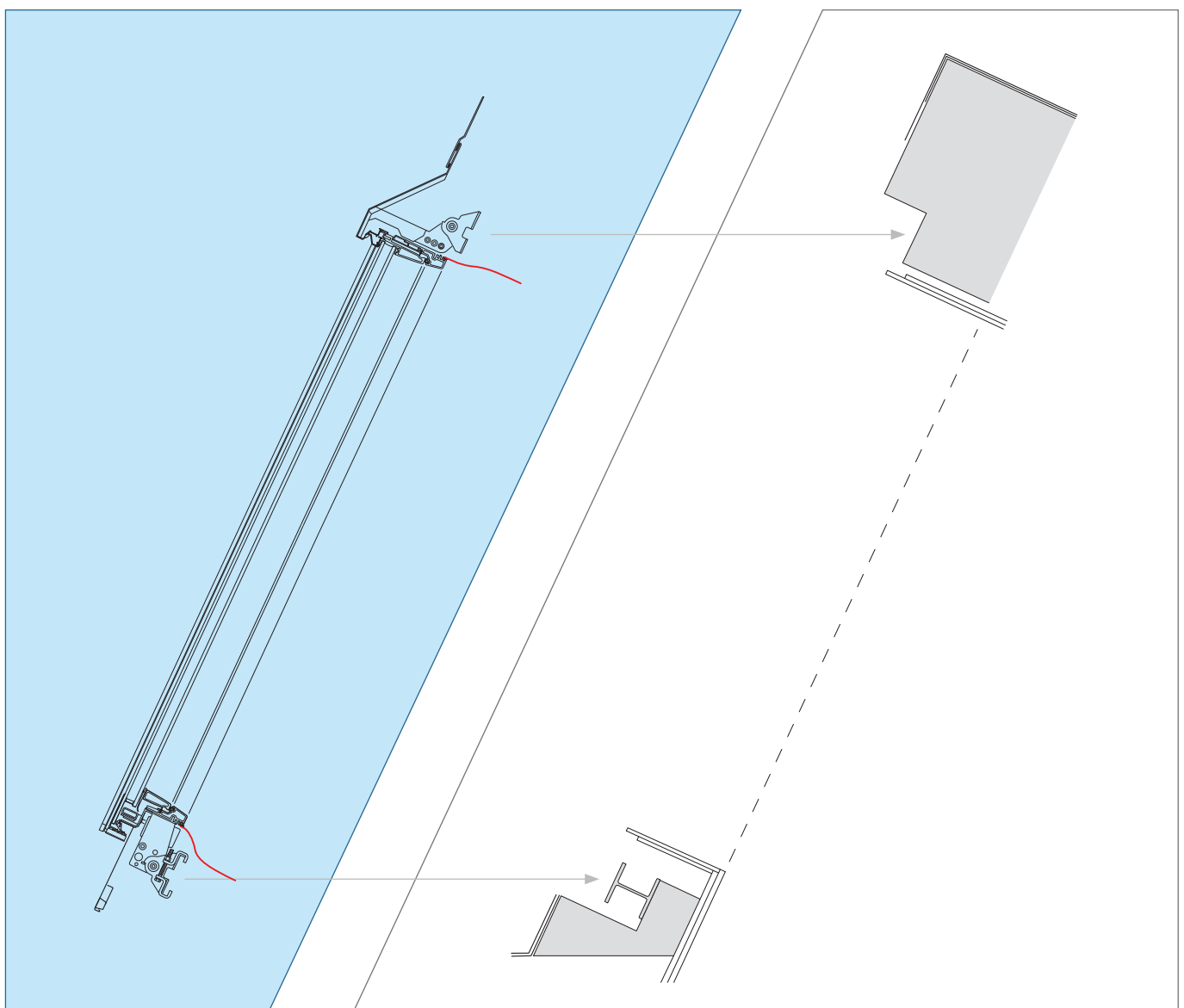
This is the Sub-construction document for Northlight 25-90°. You are browsing the brochure now.

## Sub-construction for Northlight 25-90°

VELUX modular skylights installed in a Northlight solution are built on a sub-construction made of steel, concrete or wood.

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.

### Northlight 25-90° A delivery of VELUX Commercial



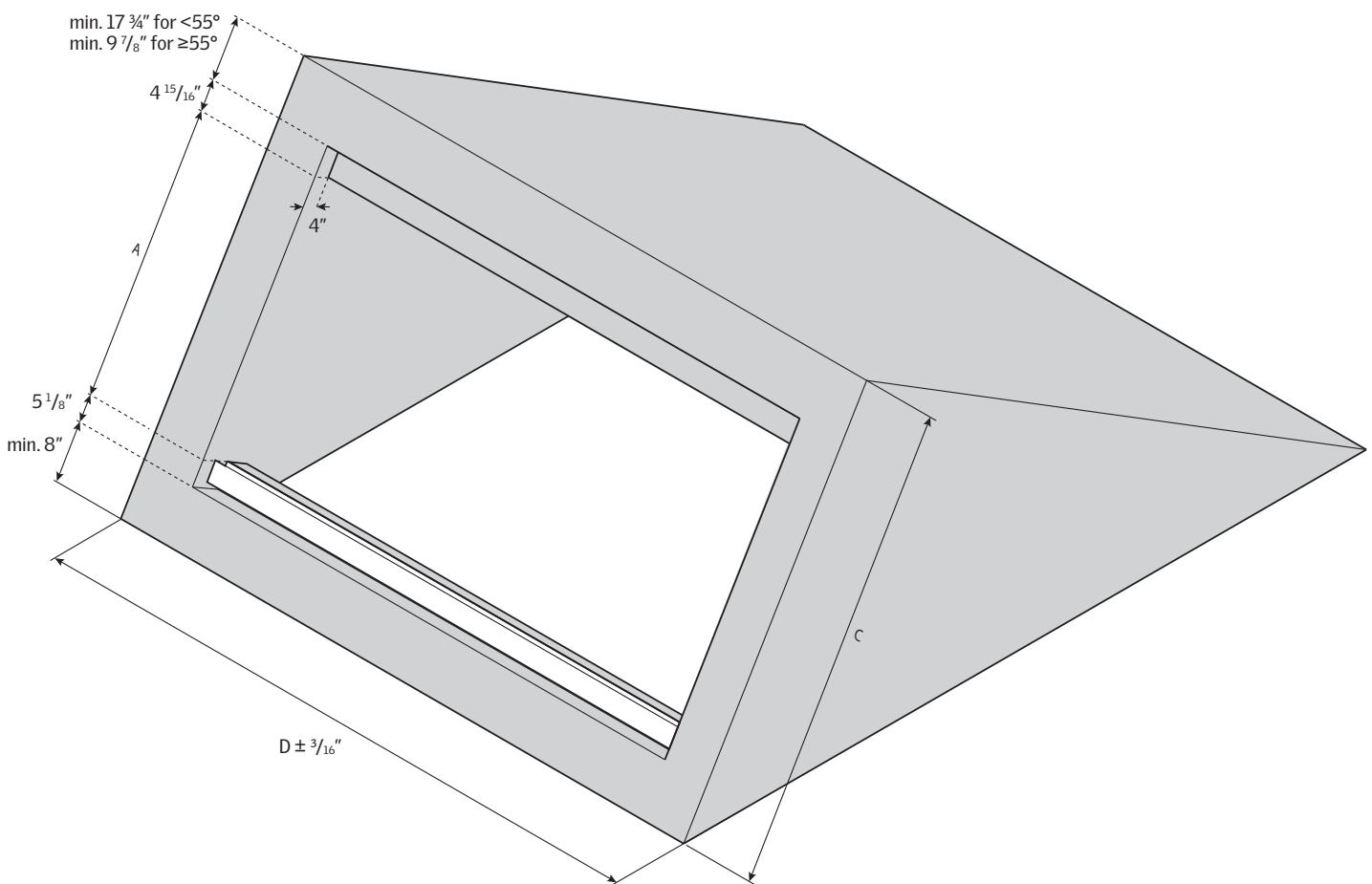
**On-site sub-construction  
This is not delivered by VELUX Commercial**

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.

## Building site measurements – Axonometric

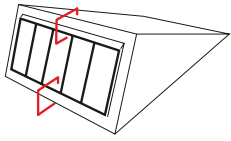
Axonometric	
A	Opening width
C	Sub-construction width – Tolerance $\pm 3/16"$
D	Sub-construction length – Tolerance $\pm 3/16"$

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





## Sub-construction variants



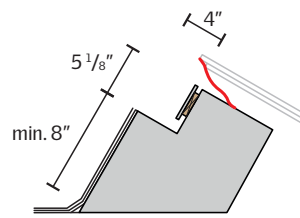
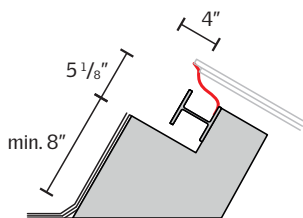
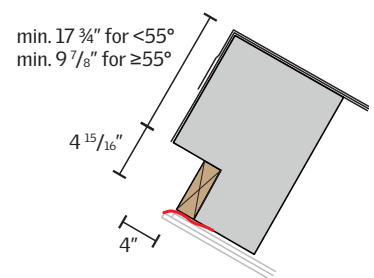
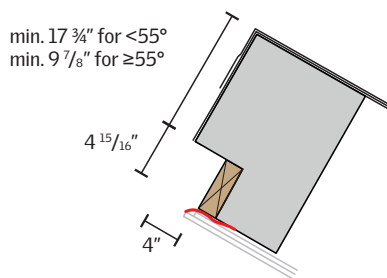
### Cross-section / Top and bottom

When replacing old Northlight installations with VELUX modular skylights, reuse of the existing sub-construction in the new installation is often required. In such cases, the possible variations of existing sub-constructions will be unlimited. Some examples are shown below as to what they could look like and how to prepare them for installation of VELUX modular skylights.

Sub-construction should be suitable for fixation with screws in the flashing area on all four sides.

#### Steel with steel profiles - bottom and top section

#### Steel with flat steel - bottom and top section

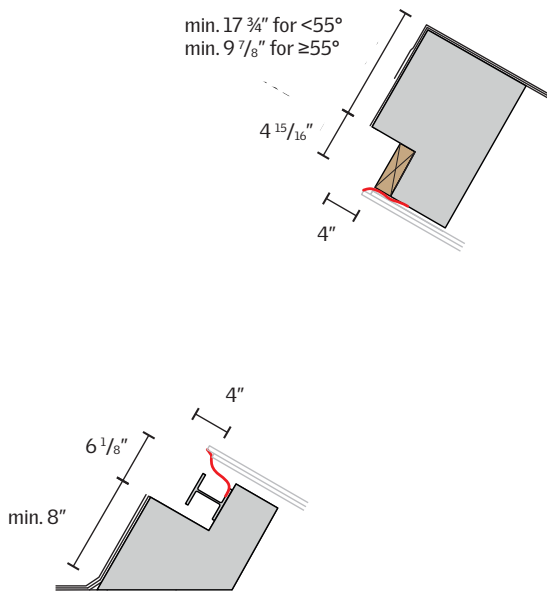


For installation on steel profile

For installation on flat steel

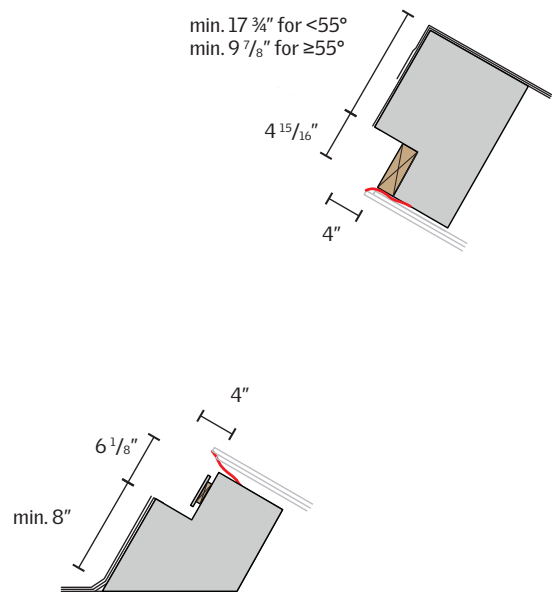
## Sub-construction variants

### Concrete with steel profile - bottom and top section



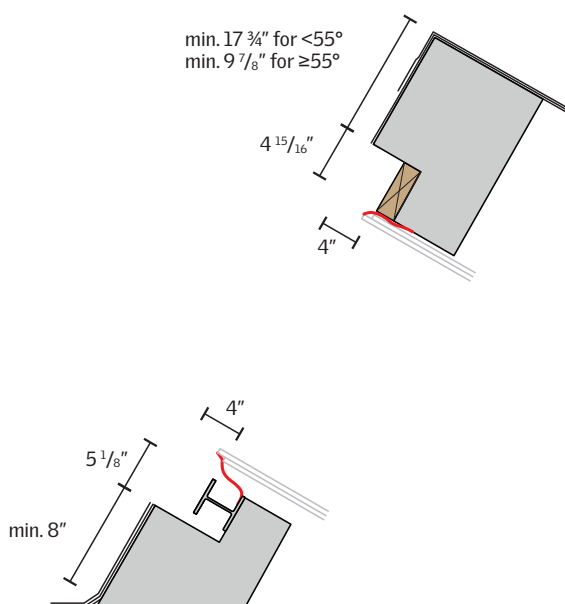
For installation on steel profile

### Concrete with flat steel - bottom and top section



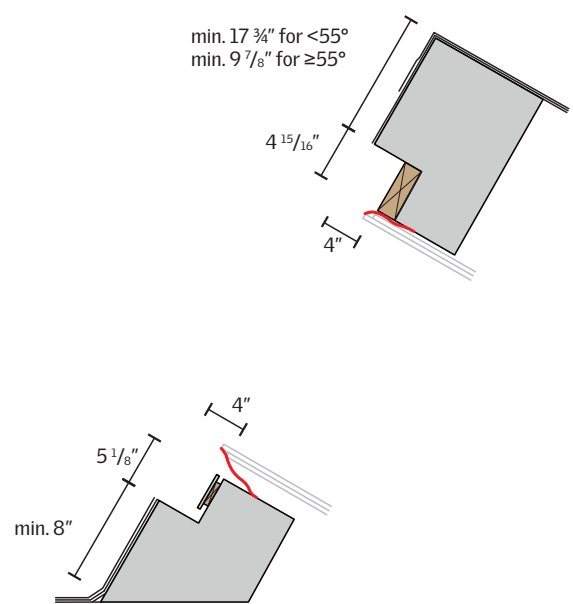
For installation on flat steel

### Wood with steel - bottom and top section



For installation on steel profile

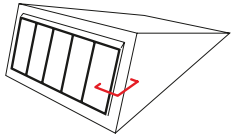
### Wood with flat steel - bottom and top section



For installation on flat steel

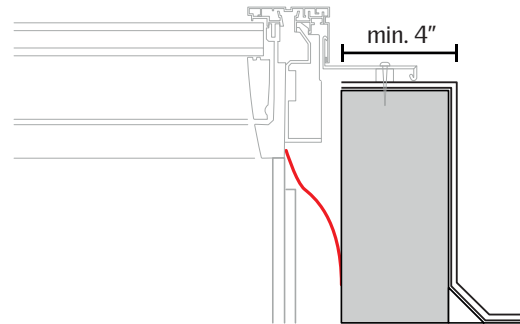
## Sub-construction variants

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### Longitudinal section

In the gable construction for Northlight at 25-90° pitch, the distance from the exterior of the roofing material to the interior of the steel/concrete/wood must be at least 4" and can in principle be unlimited.

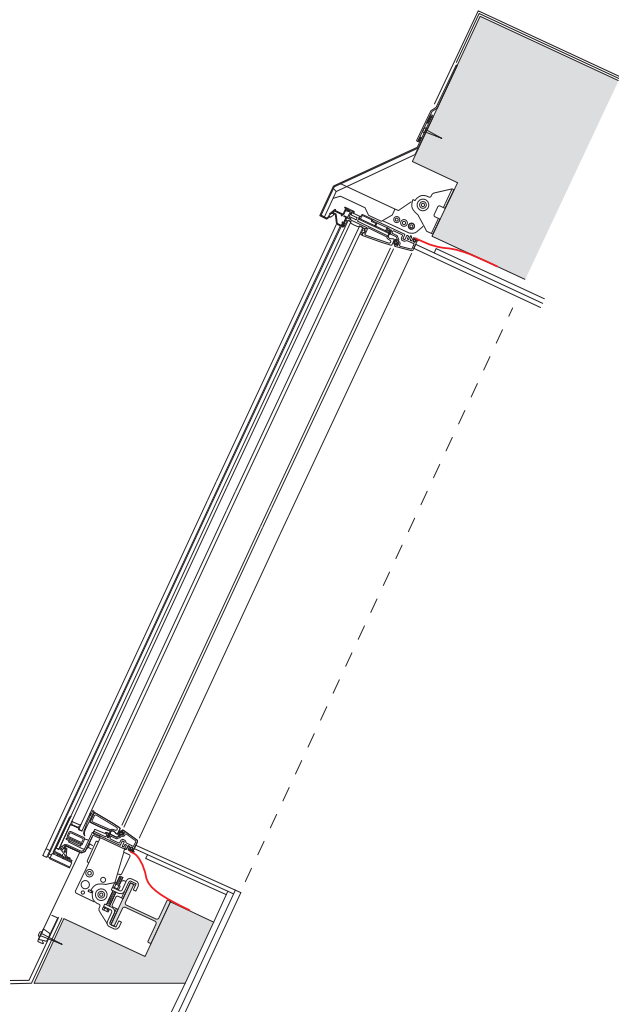




## Securing modular skylights to the sub-construction

### Using steel profile

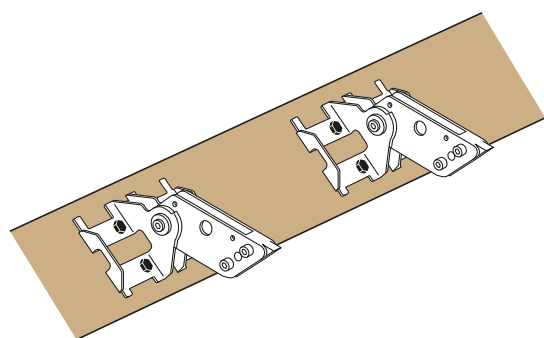
When mounting the modular skylight on a steel profile, the top flange of the profile must be 4" in width and  $\frac{5}{16}$ " -  $\frac{7}{16}$ " in thickness. In addition there must be at least  $\frac{9}{16}$ " free space underneath the flange both vertically and horizontally to give room for the clamp.



Steel or wood construction with steel profile

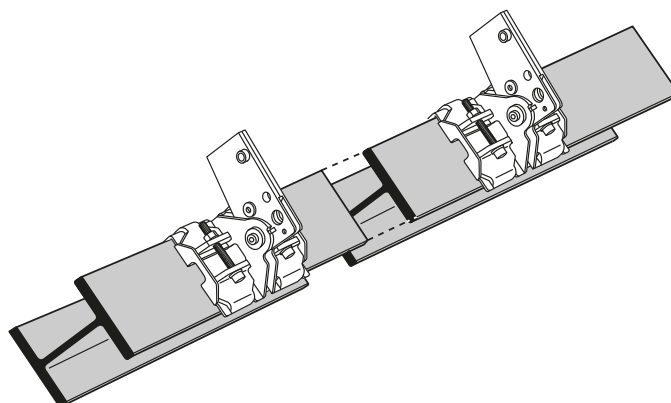
### Top of modular skylights

In the top of the skylight module, the mounting brackets are fixed directly to the wooden batten of the sub-construction without using clamps. The screws are included in the VELUX delivery.



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

### Bottom of modular skylights



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.**

The following standard steel profiles are suited for installation of VELUX modular skylights in Northlight 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

In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, longer installation bolts must be ordered separately from a VELUX Commercial sales office.

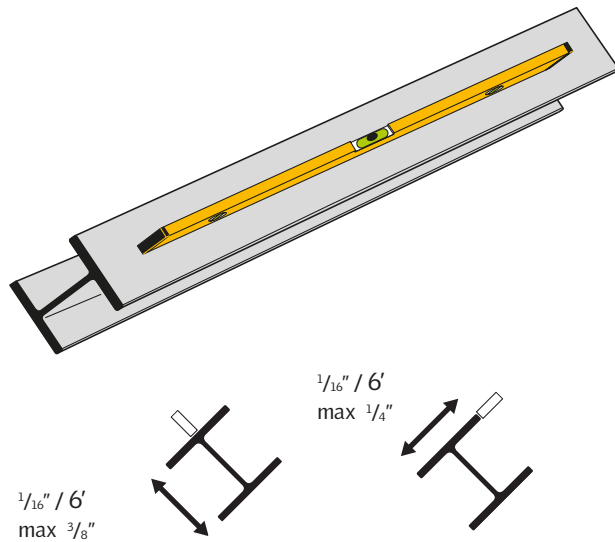
The following profiles can be combined with the longer bolts.

EU steel beams	British steel beams	US steel beams
INP 240, 260, 280	UB 305 x 127 x 37	S 10 x 25.4
IPE 220, 240	UB 305 x 127 x 42	
HE120A	UB 356 x 127 x 33	
HE120B		

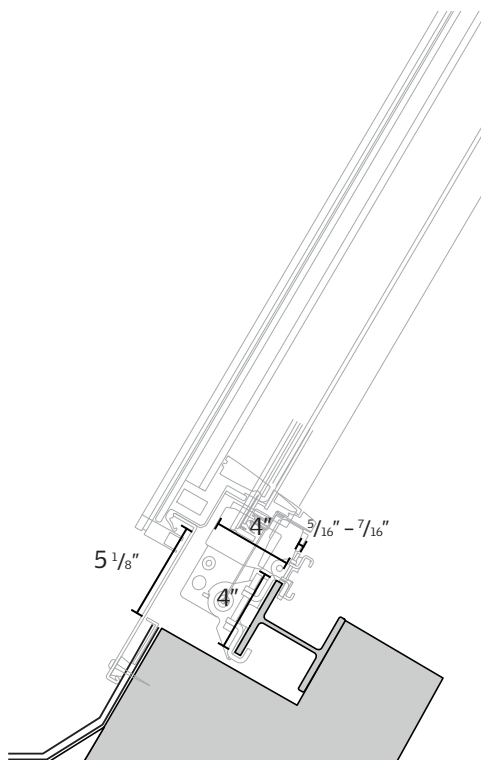
## Securing modular skylights to the sub-construction

### Straightness of steel profile

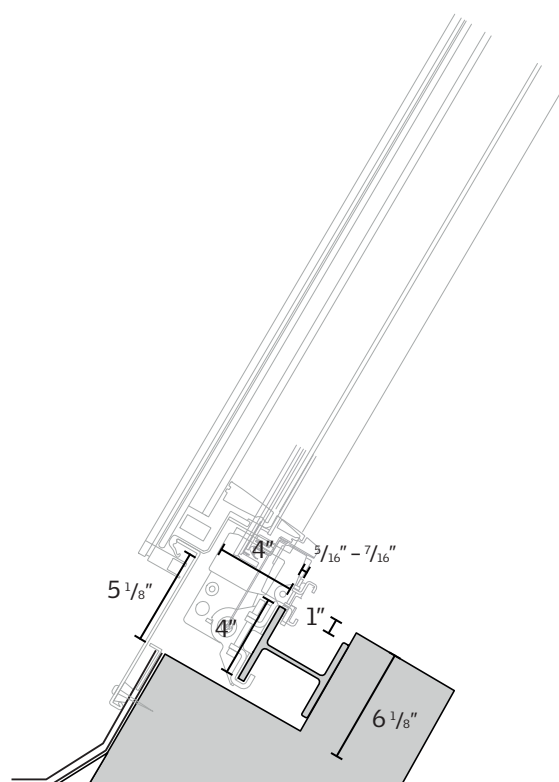
Requirements as to the straightness of the steel profile is  $\frac{1}{16}$ " per 6', not exceeding  $\frac{1}{4}$ " parallel to the modular skylights and  $\frac{3}{8}$ " perpendicular to the modular skylights along the full length of the sub-construction.



Steel or wood construction with steel profile

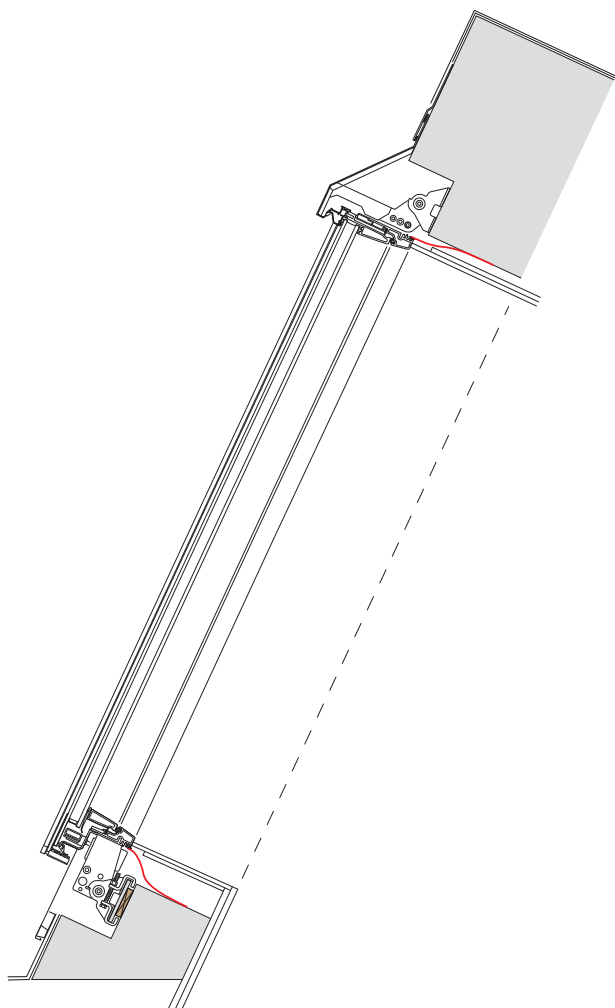


Concrete construction with steel profile

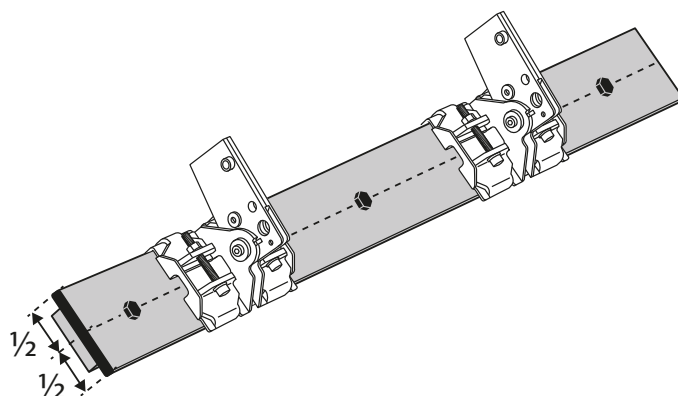


## Using flat steel profile

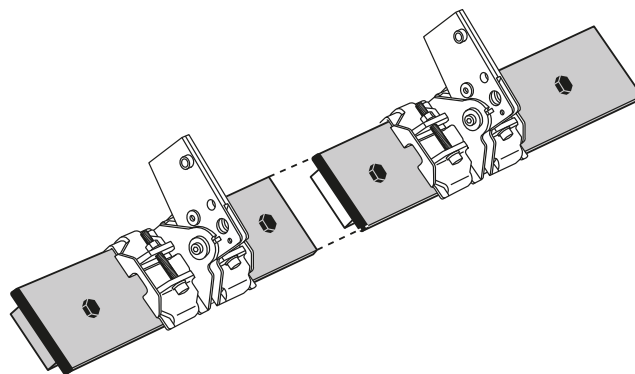
When mounting the modular skylights on a flat steel profile, the steel profile must be 4" in width and  $\frac{5}{16}$ " -  $\frac{7}{16}$ " in height. In addition there must be at least  $\frac{9}{16}$ " free space underneath the steel both vertically and horizontally to give room for the clamps.



Steel or wood construction with flat steel



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

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

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

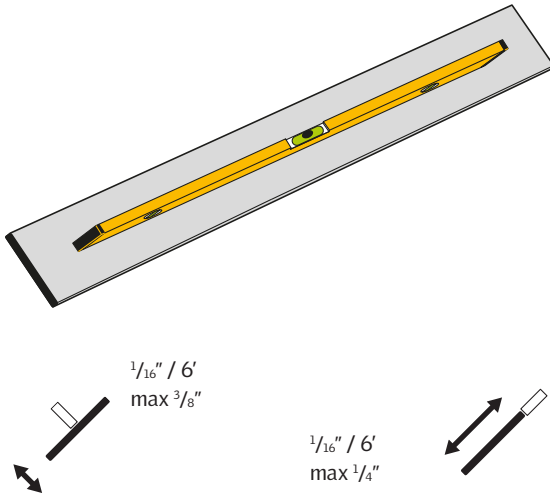
In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, longer installation bolts must be ordered separately from a VELUX Commercial sales office.

The following flat steel profiles can be used combined with the longer bolts.

Standard EU flat steel	Standard US flat steel
110 x 8	3/8 x 4 1/2
110 x 10	
120 x 8	
120 x 10	

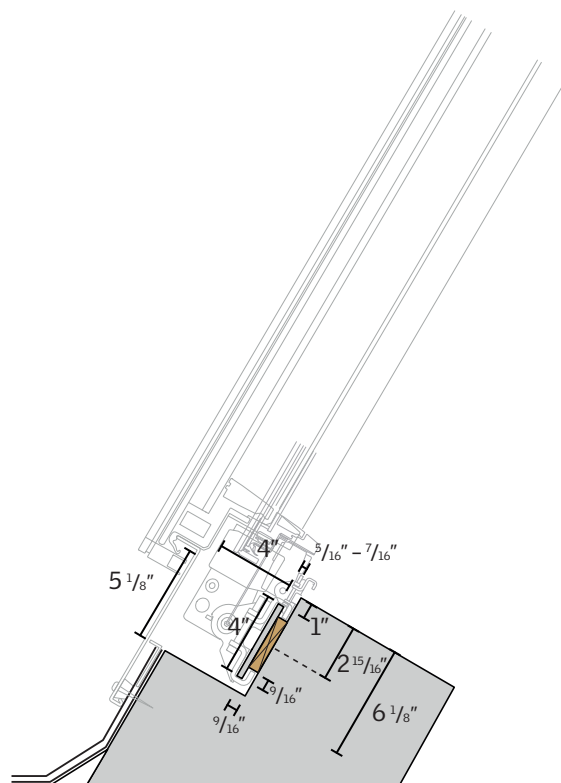
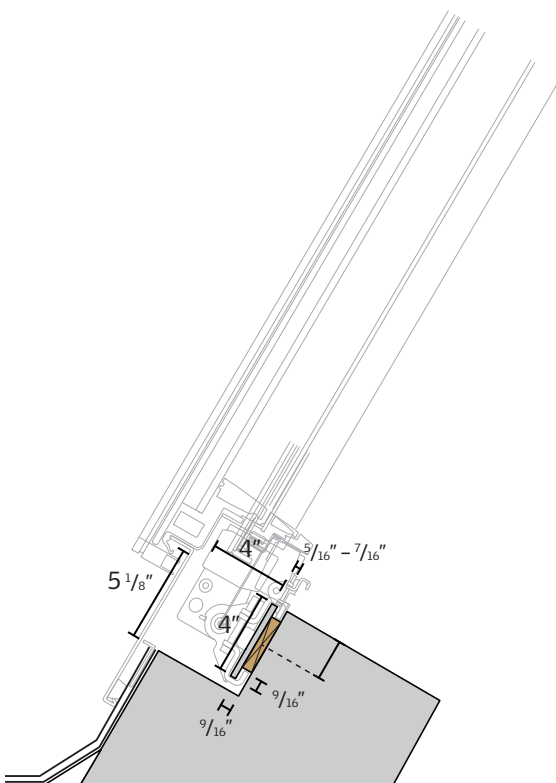
## Straightness of flat steel

Requirements as to the straightness of the steel profile is  $\frac{1}{16}$ " per 6', not exceeding  $\frac{1}{4}$ " parallel to the modular skylights and  $\frac{3}{8}$ " perpendicular to the modular skylights along the full length of the sub-construction.



Steel or wood construction with flat steel

Concrete construction with flat steel



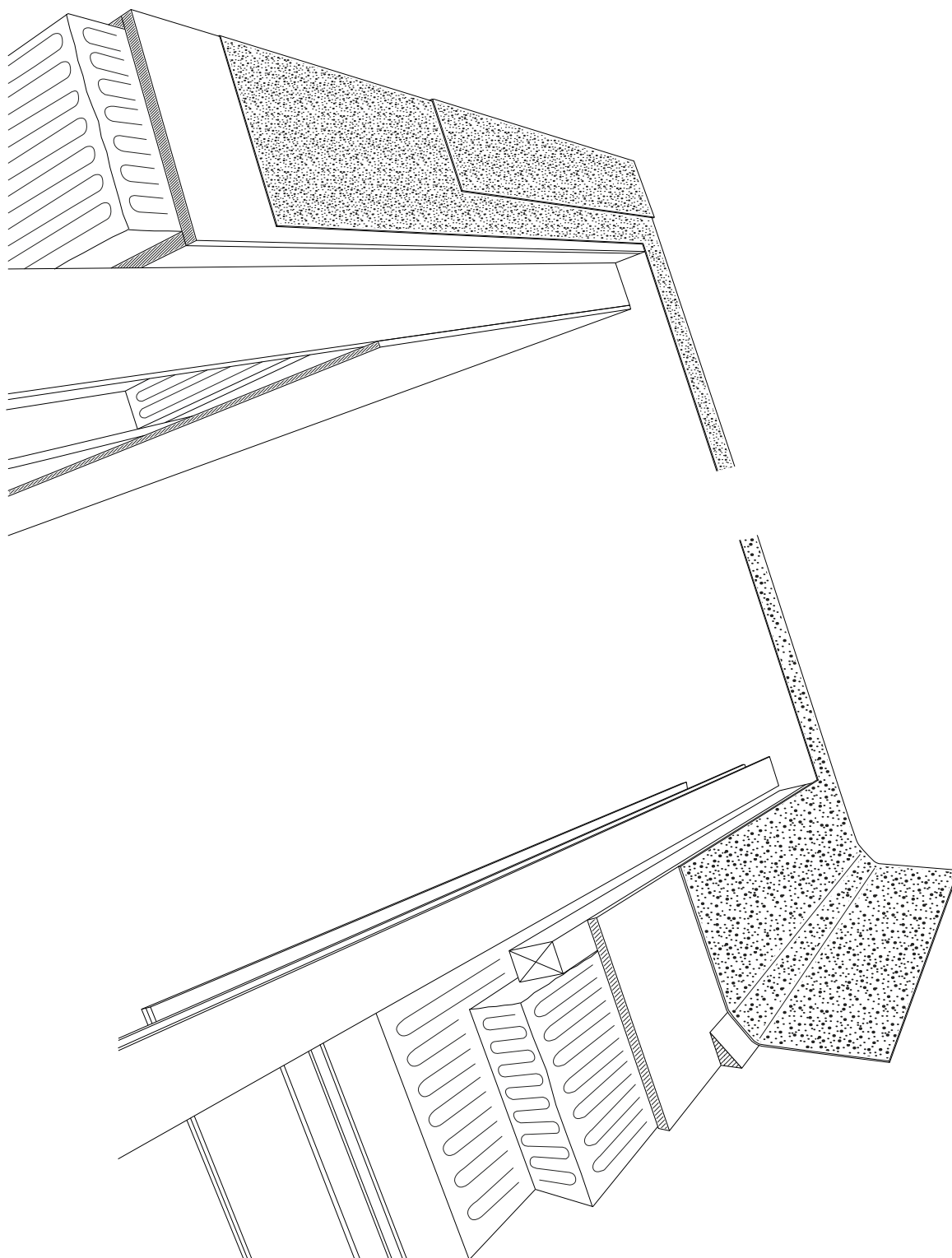
## Connecting to the roof

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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.

Sub-construction should be suitable for fixation of screws in flashing area on all four sides.

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

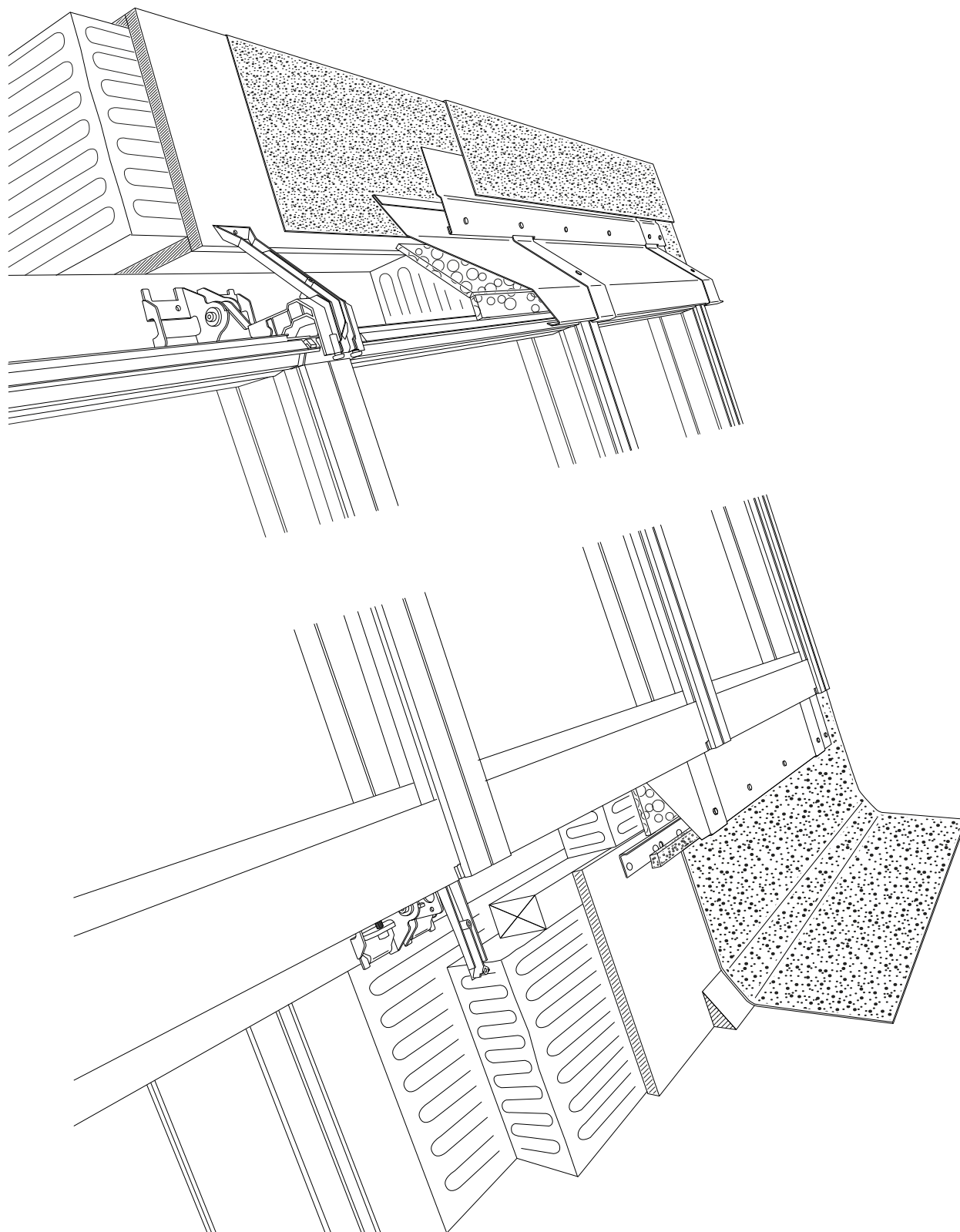


## Connecting to the roof

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During the installation of VELUX modular skylights, strips of roofing felt must be fitted on and along the sub-construction bottom and sides. The roofing felt is not part of the VELUX delivery.

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

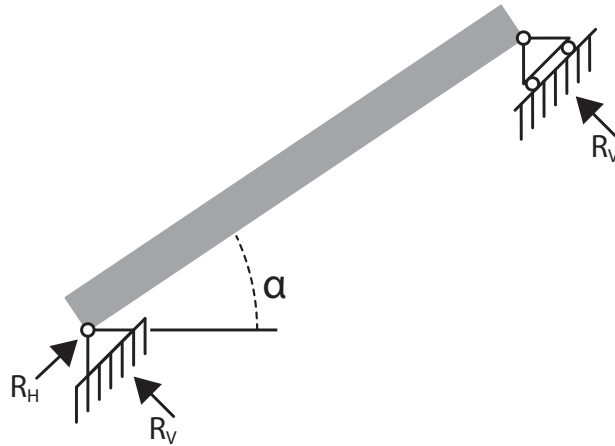


## Static information for dimensioning

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.

### Static model of reactions

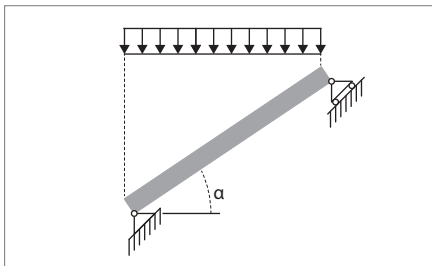


### Characteristic loads

Fill out please

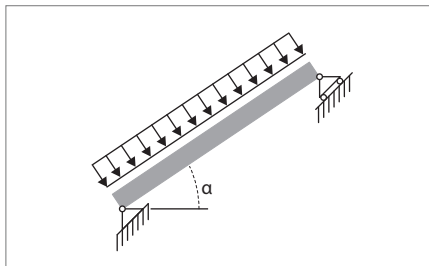
Name of your project:

Snowload pressure in psf



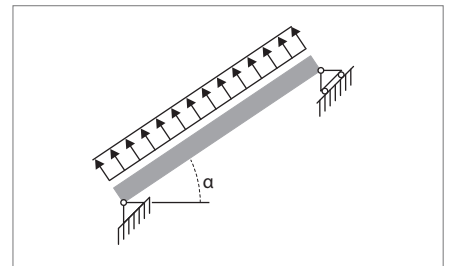
psf

Windload pressure in psf



psf

Windload suction in psf

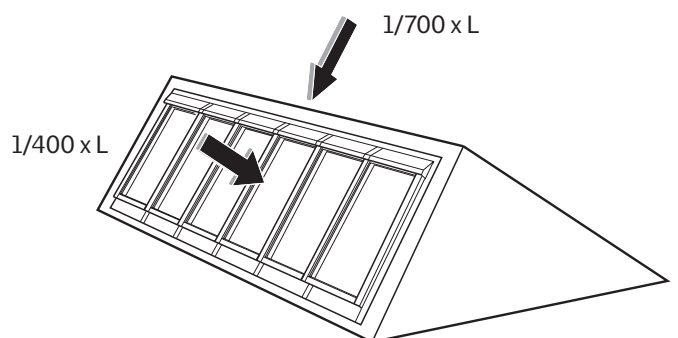


psf

## 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 deflections must be limited to maximum 1/400 / 1/700 over the full length of the sub-construction.

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



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