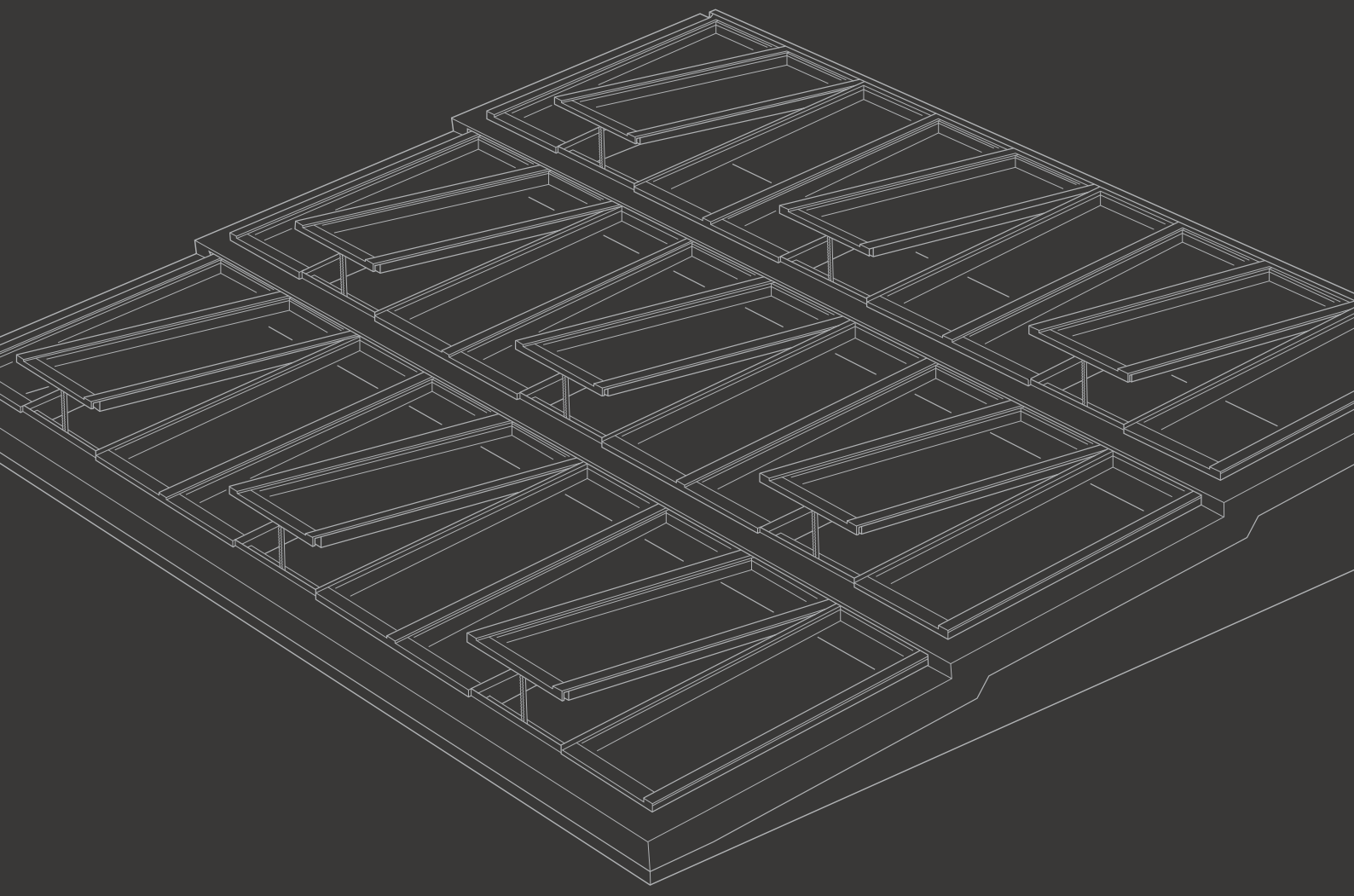
VELUX®

Commercial

Sub-construction for Step Longlight 5-25°

VELUX Modular Skylights



Version 1.0

modularskylights.veluxusa.com

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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 your local VELUX Commercial sales office.

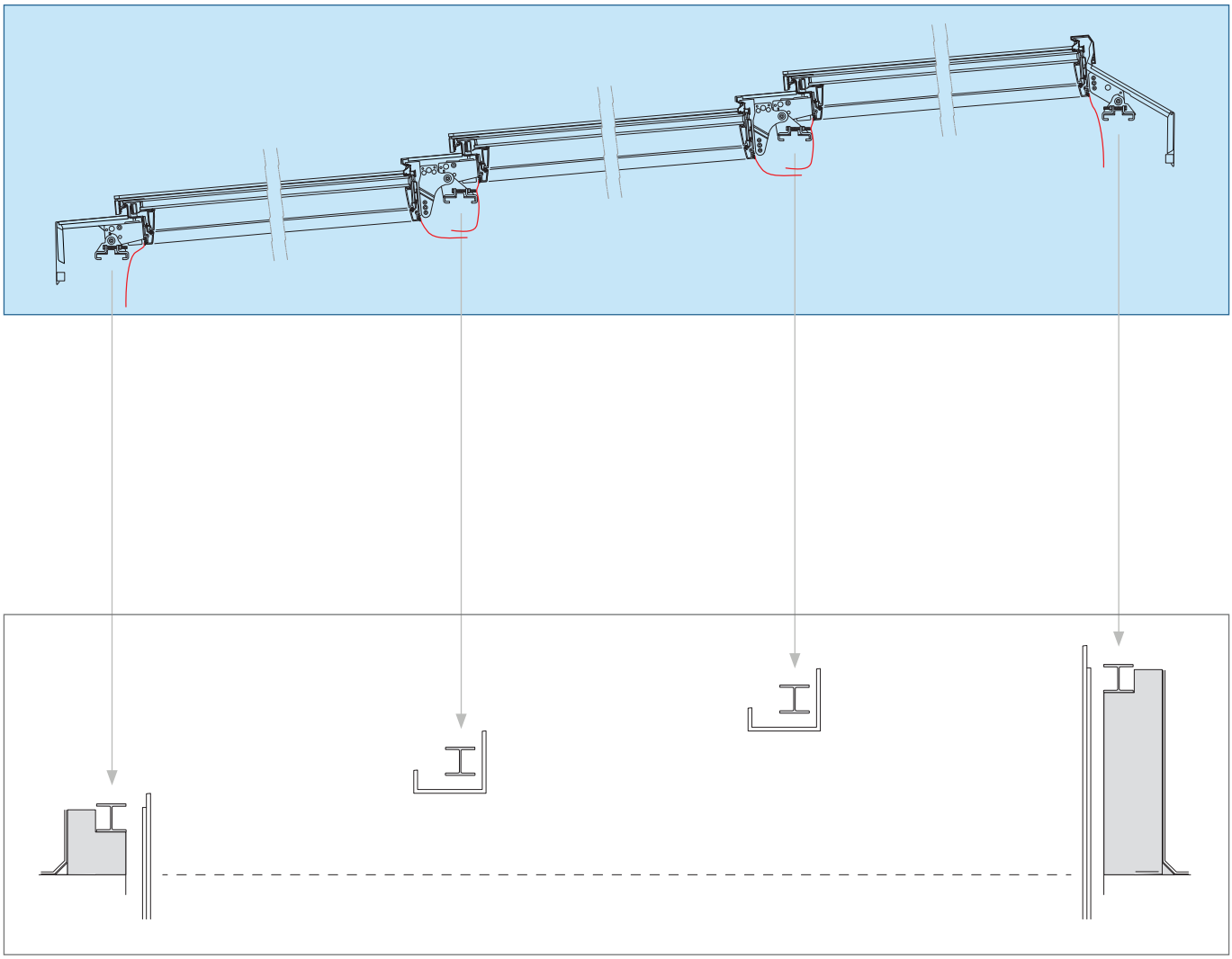
This is the Sub-construction document for Step Longlight 5-25°.
You are browsing the brochure now.

Sub-construction for Step Longlight 5-25°

VELUX modular skylights installed in a Step Longlight 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.

Step Longlight 5-25°
A delivery of VELUX Commercial



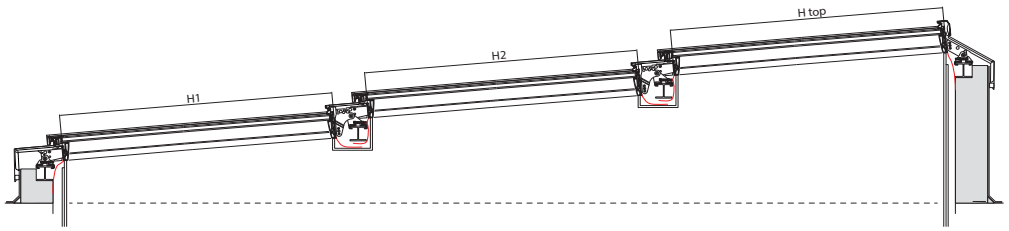
On-site sub-construction
This is not delivered by VELUX Commercial

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.

Numbering sequence for Step Longlight modules

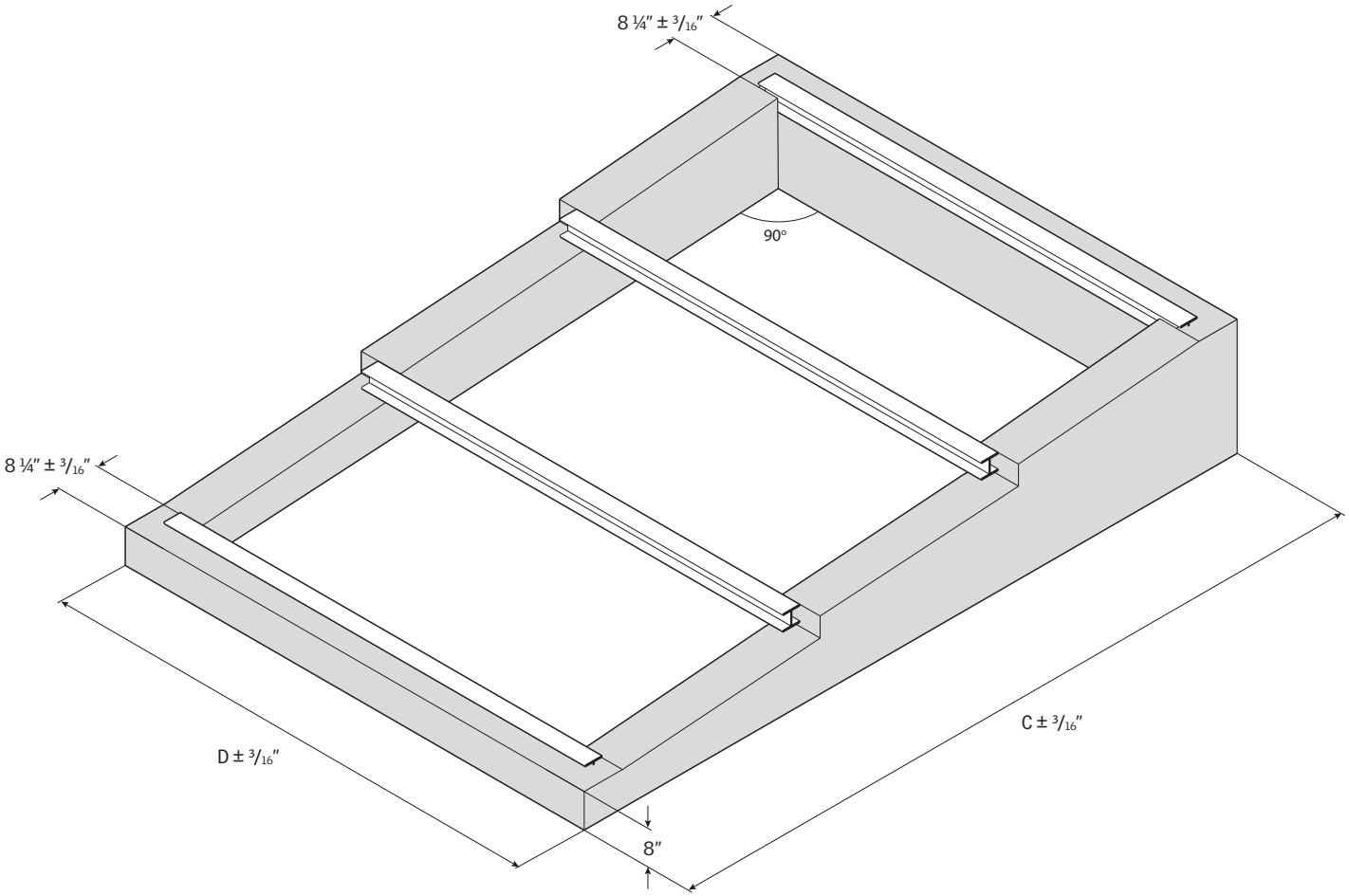
Numbering sequence	
H1	Module height – Always bottom module
H2 ...	Module height – Middle module 2, 3, ...
H top	Module height – Top module

Example shows three rows with two steps



Building site measurements – Axonometric

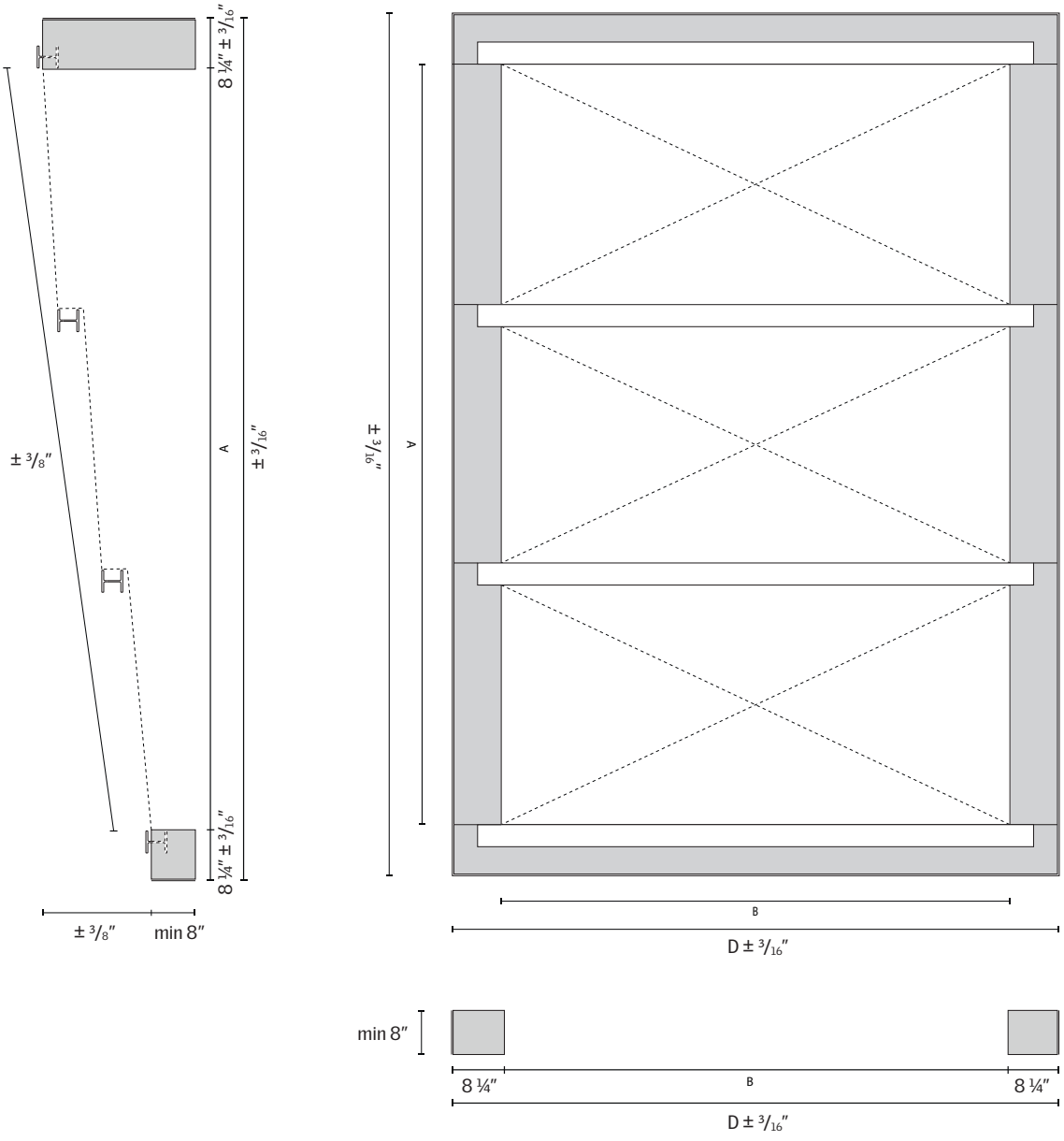
Axonometric	
C	Sub-construction width – Tolerance ± 3/16"
D	Sub-construction length – Tolerance ± 3/16"



Building site measurements

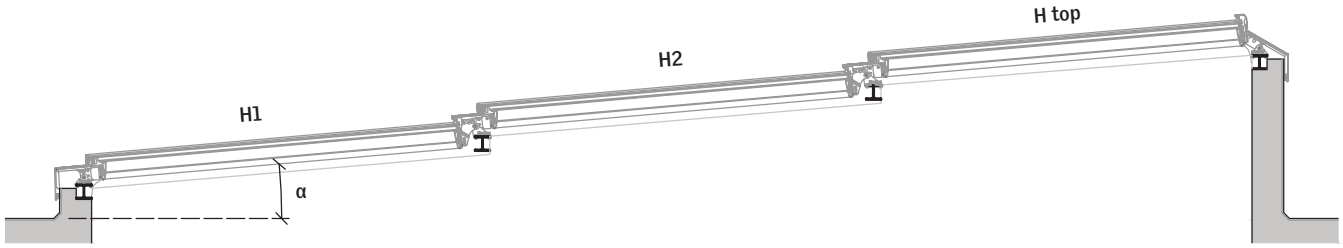
Plan	
A	Opening width
B	Opening length
C	Sub-construction width – Tolerance ± 3/16″
D	Sub-construction length – Tolerance ± 3/16″
O	Difference in height of sub-construction – Tolerance ± 3/8″
S	Distance between steel, internal measurement between steel – Tolerance ± 3/8″

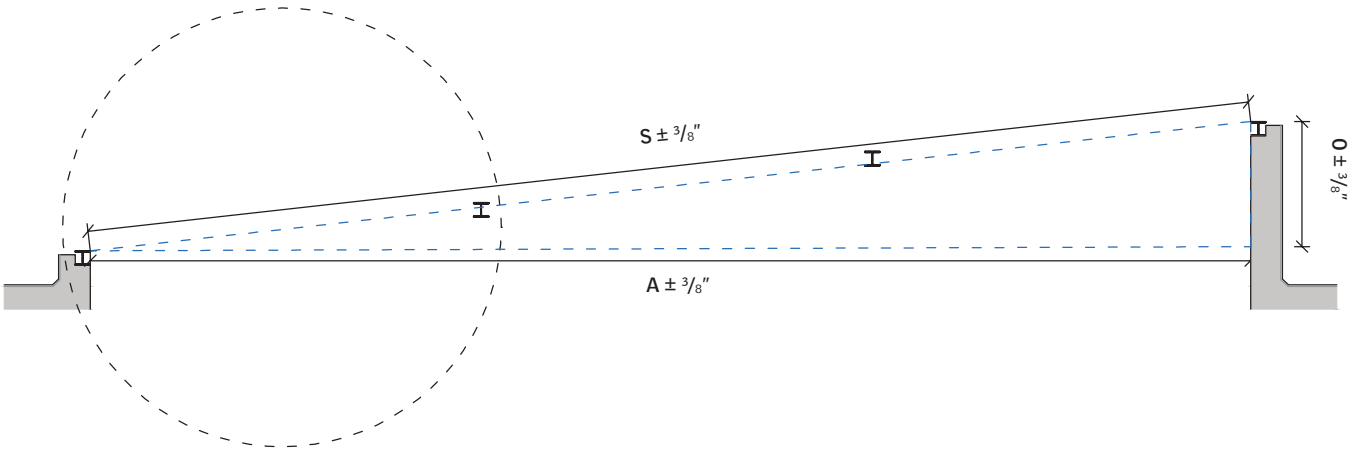
Minimum length of steel profiles is equal to opening length (B)

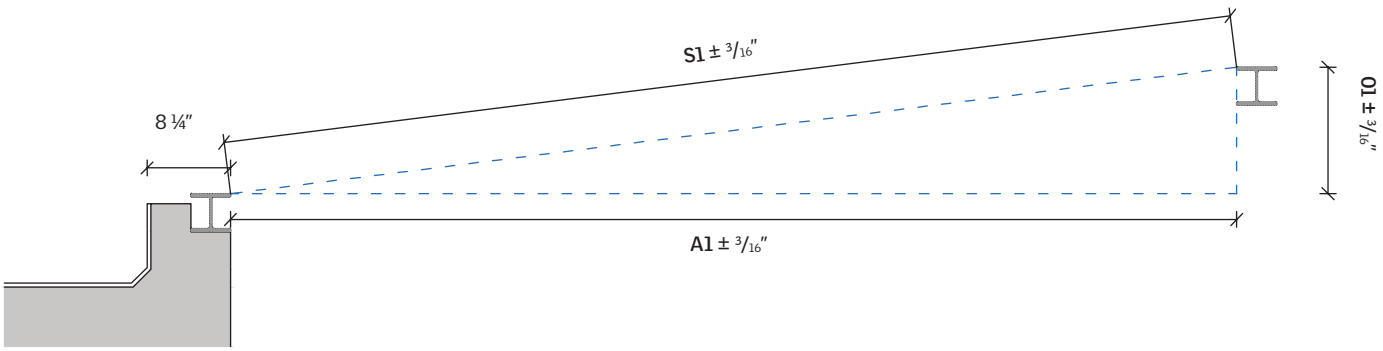


Building site measurements – Cross-section, Bottom

Cross section, Bottom	
A1	Opening width, bottom row – Tolerance ± 3/16"
S1	Distance between steel, internal measurement between steel in bottom row – Tolerance ± 3/16"
O1	Difference in height of sub-construction in bottom row – Tolerance ± 3/16"

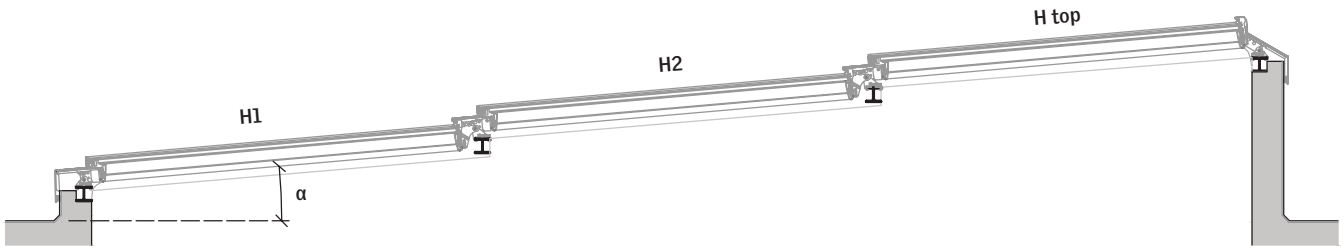


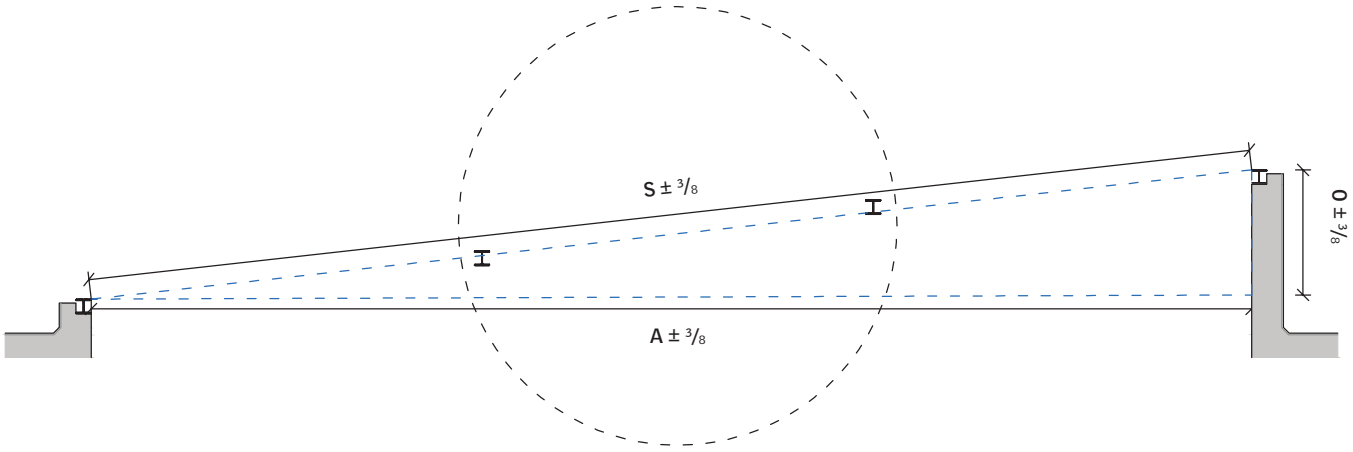


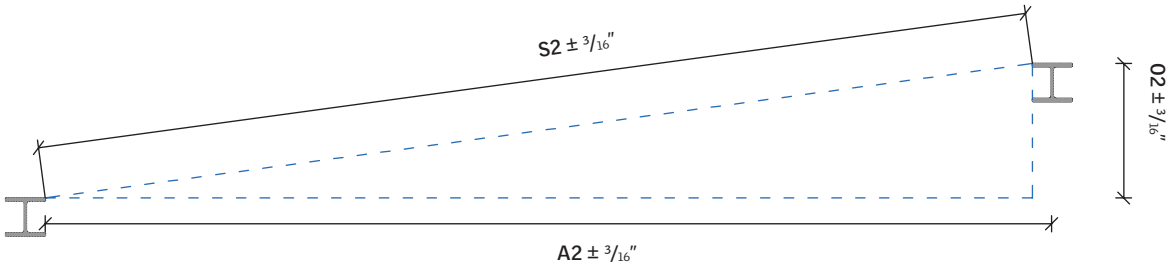


Building site measurements – Cross-section, Middle

Cross section, Middle	
A2	Opening width, middle rows – Tolerance ± 3/16"
S2	Distance between steel, internal measurement between steel in middle rows – Tolerance ± 3/16"
02	Difference in height of sub-construction in middle rows – Tolerance ± 3/16"

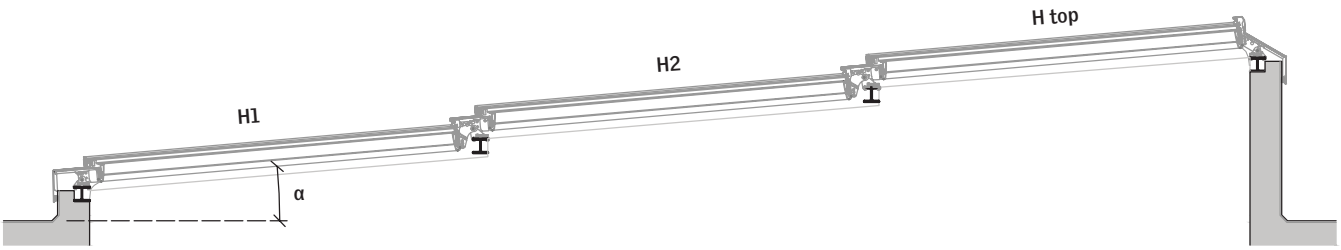


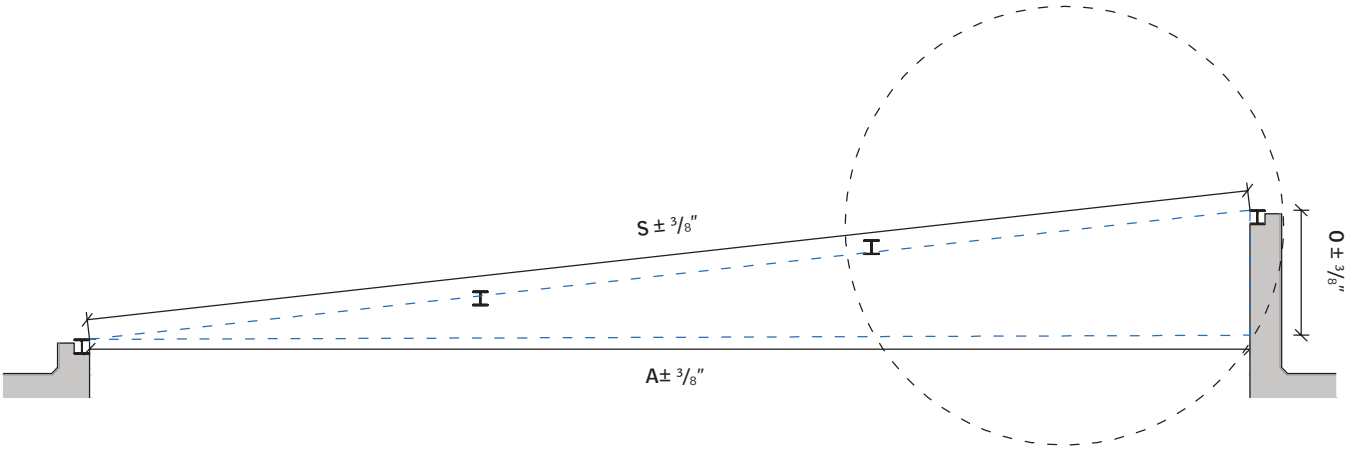


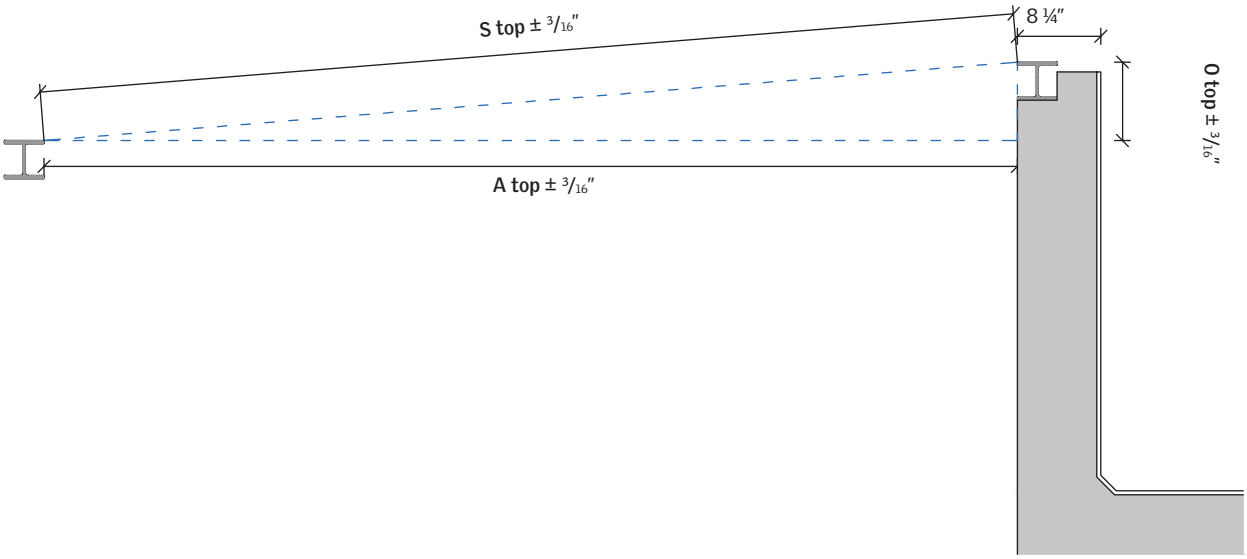


Building site measurements – Cross-section, Top

Cross section, Top	
A top	Opening width, top row – Tolerance ± 3/16"
S top	Distance between steel, internal measurement between steel in top row – Tolerance ± 3/16"
O top	Difference in height of sub-construction in top row – Tolerance ± 3/16"

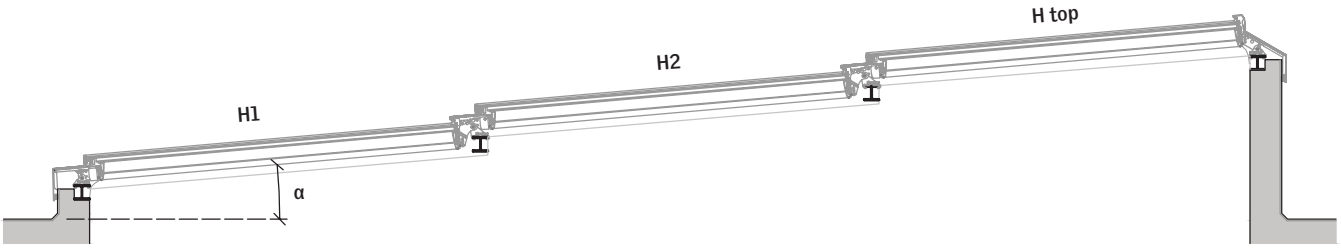


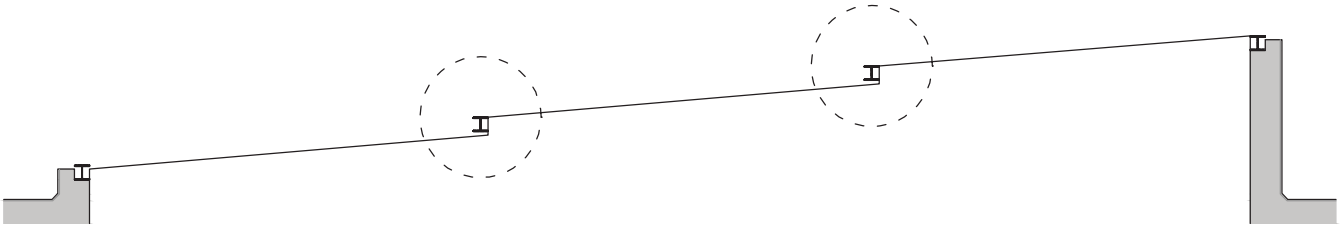


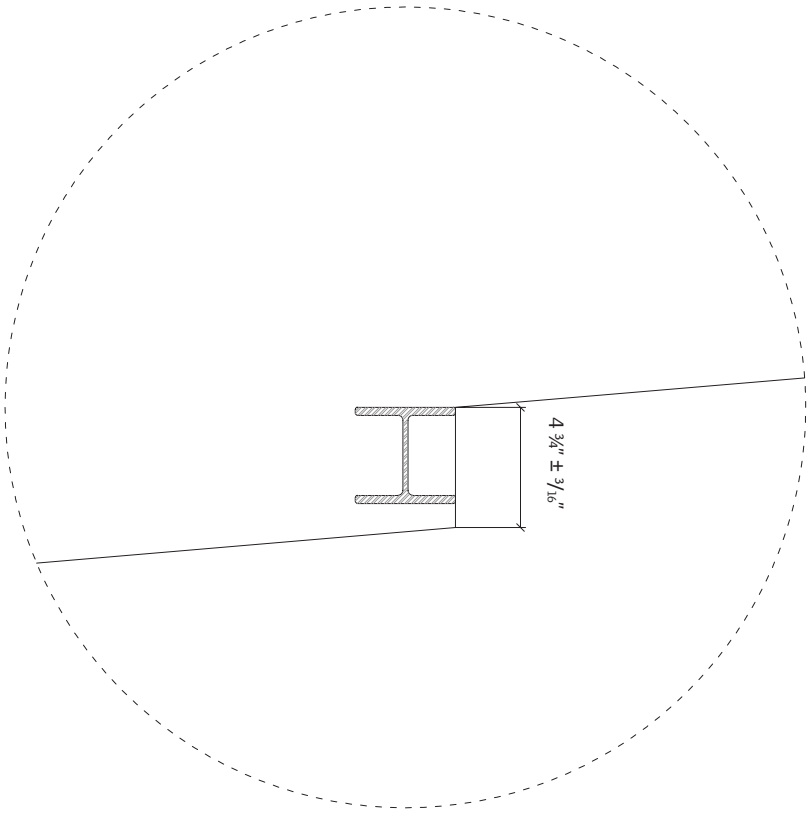


Building site measurements – Cross-section, Gable

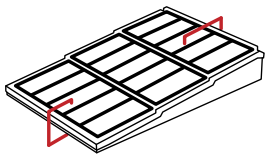
When designing the gable construction, it is important to be aware of the requirements to the step measurements to secure the correct installation of steel and flashings.







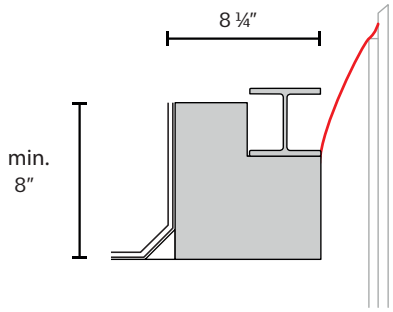
Sub-construction variants



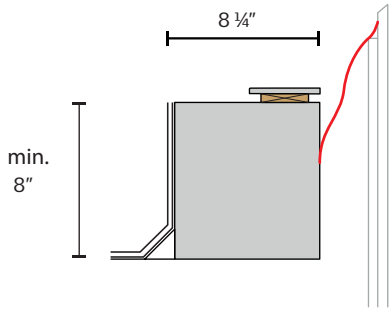
Cross-section / Top and bottom

Options of sub-constructions for Step Longlight 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 or wood batten.

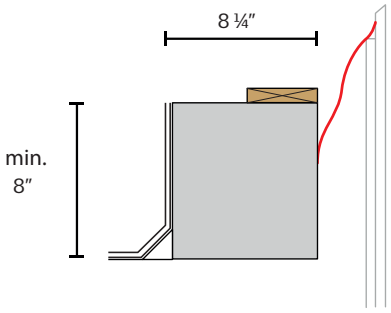
Steel with steel profile



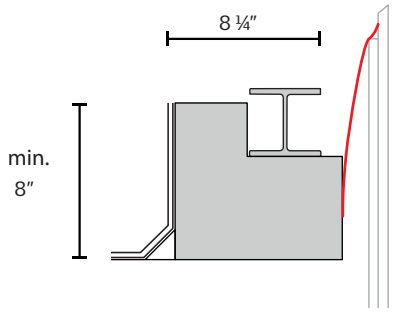
Steel with flat steel



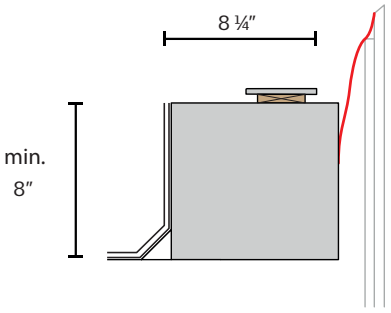
Steel with wooden batten



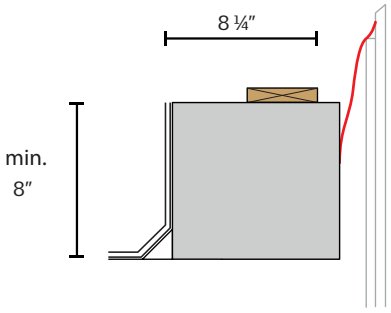
Concrete with steel profile



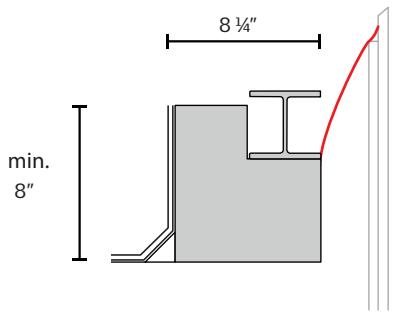
Concrete with flat steel



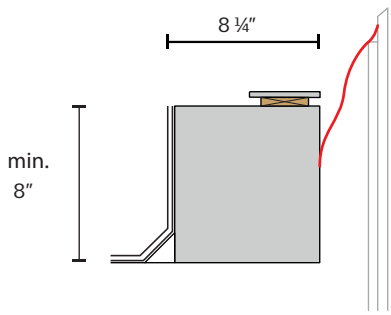
Concrete with wooden batten



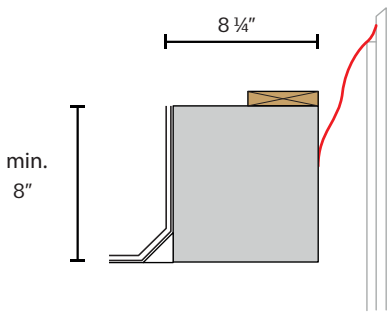
Wood with steel profile

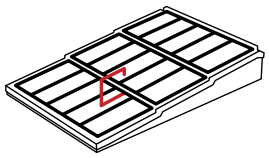


Wood with flat steel



Wood with wooden batten

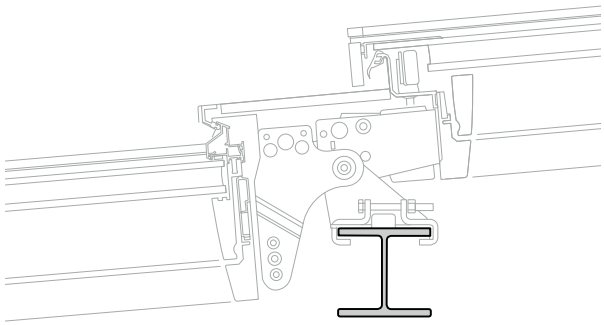




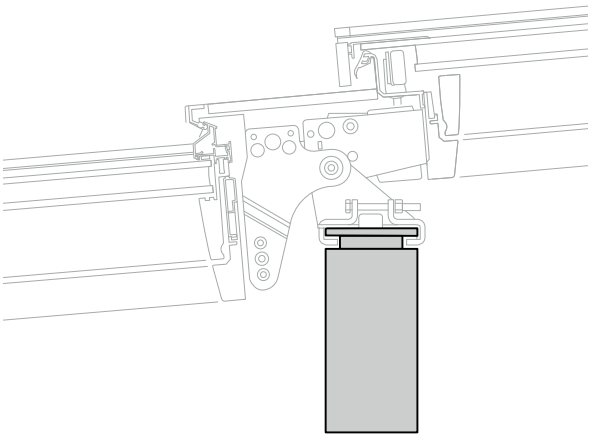
Cross-section, middle

Options for sub-construction middle section.

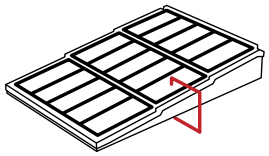
Steel profile



Beam with flat steel

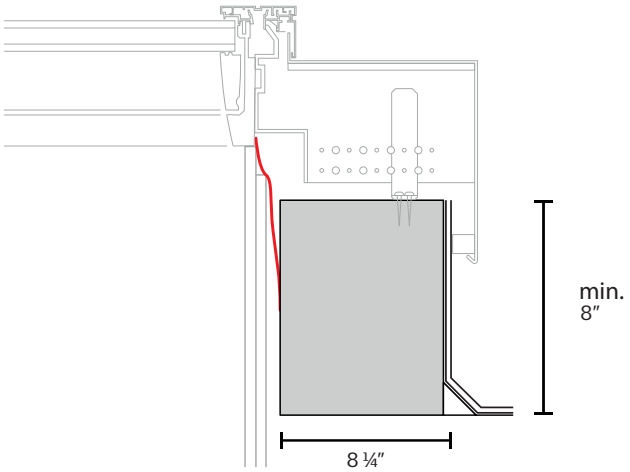


*The load bearing beams can also be mounted perpendicular to the modules. In that case none of the numbers in this brochure will be correct. The new calculations shall be obtained from a VELUX Commercial sales office.



Longitudinal section

In the gable construction for Step Longlight 5-25° pitch, the height of the sub-construction must be at least 8″ measured from finished roof surface. It is important that the surface of the gable construction is suitable for fixation of screws.

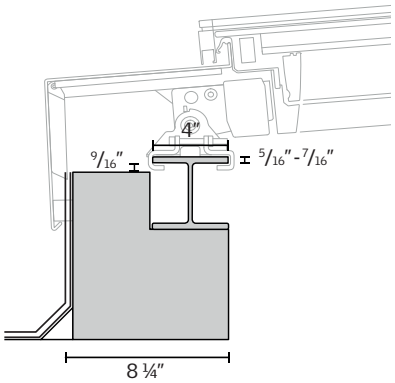


Securing modular skylights to the sub-construction

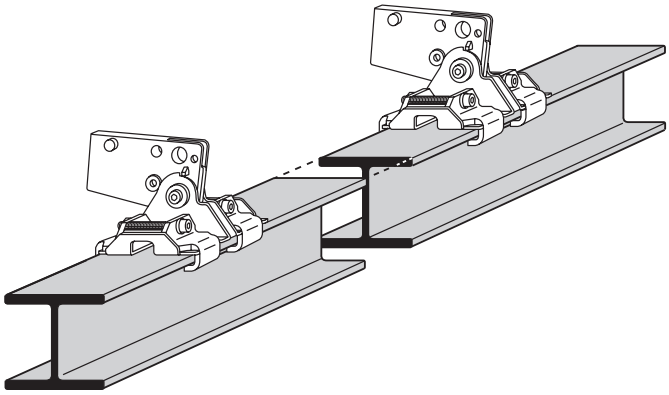
The sub-construction can be finished at the top and bottom with steel profile, which provides a level and stable surface for the skylight modules and forms a base for fitting mounting brackets with clamps.

Using steel profile

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



Steel, concrete or wood construction with steel profile

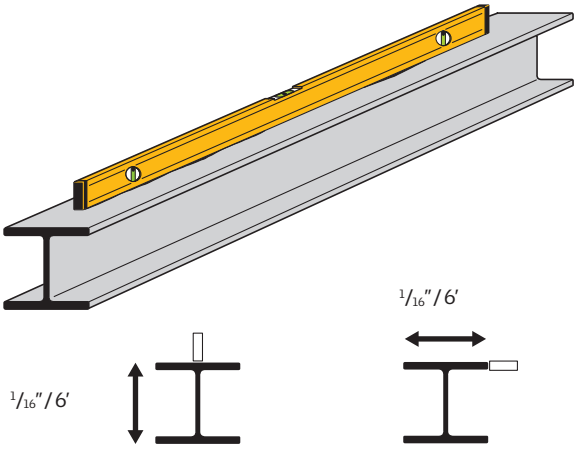


Connestion of steel profiles must not collide with clamps

The number, size, and type 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 $^{1}/_{16}$" per 6' horizontally and vertically.



The following standard steel profiles are suited for installation of VELUX modular skylights in Step Longlight 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 x16
	UB 305 x 102 x 33	W 4 x 13
		S 8 x 23
		S 8 x 18.4

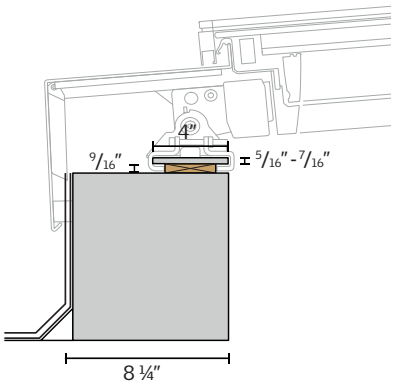
In case a stronger construction is needed, the steel profile can be replaced with a stronger profile. In this case, longer installation bolts must be ordered separately from a VELUX Commercial sales office.

The following profiles can be combined with the longer bolts.

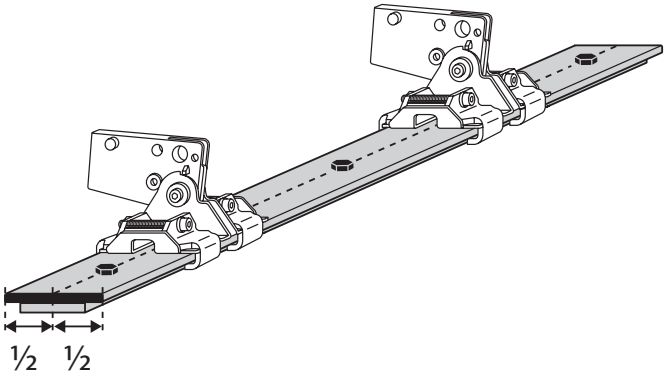
EU steel beams	British steel beams	US steel beams
INP 240, 260, 280	UB 305 x 127 x 37	S 10 x 25.4
IPE 220, 240	UB 305 x 127 x 42	
HE120A	UB 356 x 127 x 33	
HE120B		

Using flat steel profile

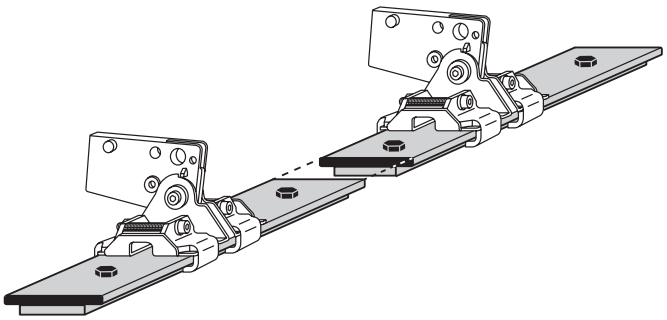
When the sub-construction is finished with a flat steel profiles, the steel profile must be 4″ in width and 5/16″ - 7/16″ in height. In addition there must be at least 9/16″ free space underneath the steel both vertically and horizontally to give room for the clamps.



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

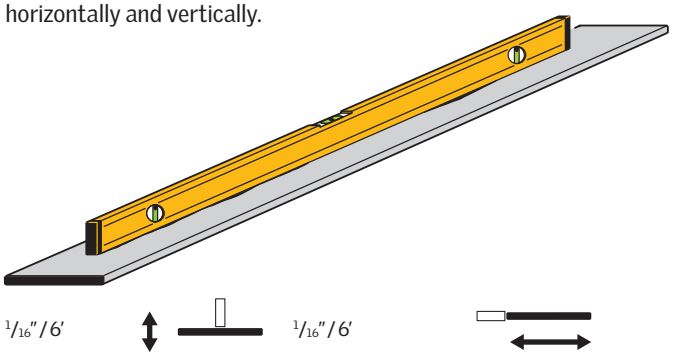


- Connection of flat steel profiles must not collide with clamps

The number, size, and type 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 1/16″ per 6′ horizontally and vertically.



The following standard flat steel profiles are suited for installation of VELUX modular skylights in Step Longlight 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 ½
110 x 10	
120 x 8	
120 x 10	

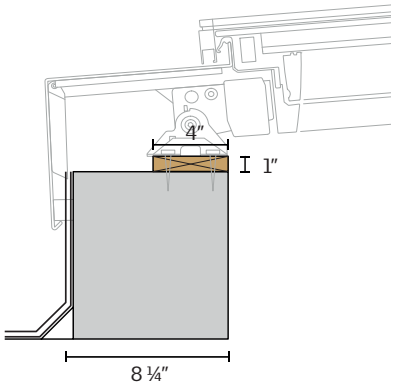
Using wooden battens

The sub-construction for the Step Longlight can also be finished with the use of an alternative wooden batten on which the mounting brackets of the modular skylight can be secured directly, without having to use the mounting clamps.

The skylight modules are mounted on the batten using screws through the bottom and top mounting brackets.

There are 4 holes in each mounting bracket, 2 x $^{3}/_{16}$" and 2 x $^{5}/_{16}$".

These screws are not included in the VELUX delivery, and the correct dimensions must be ensured by the customer.

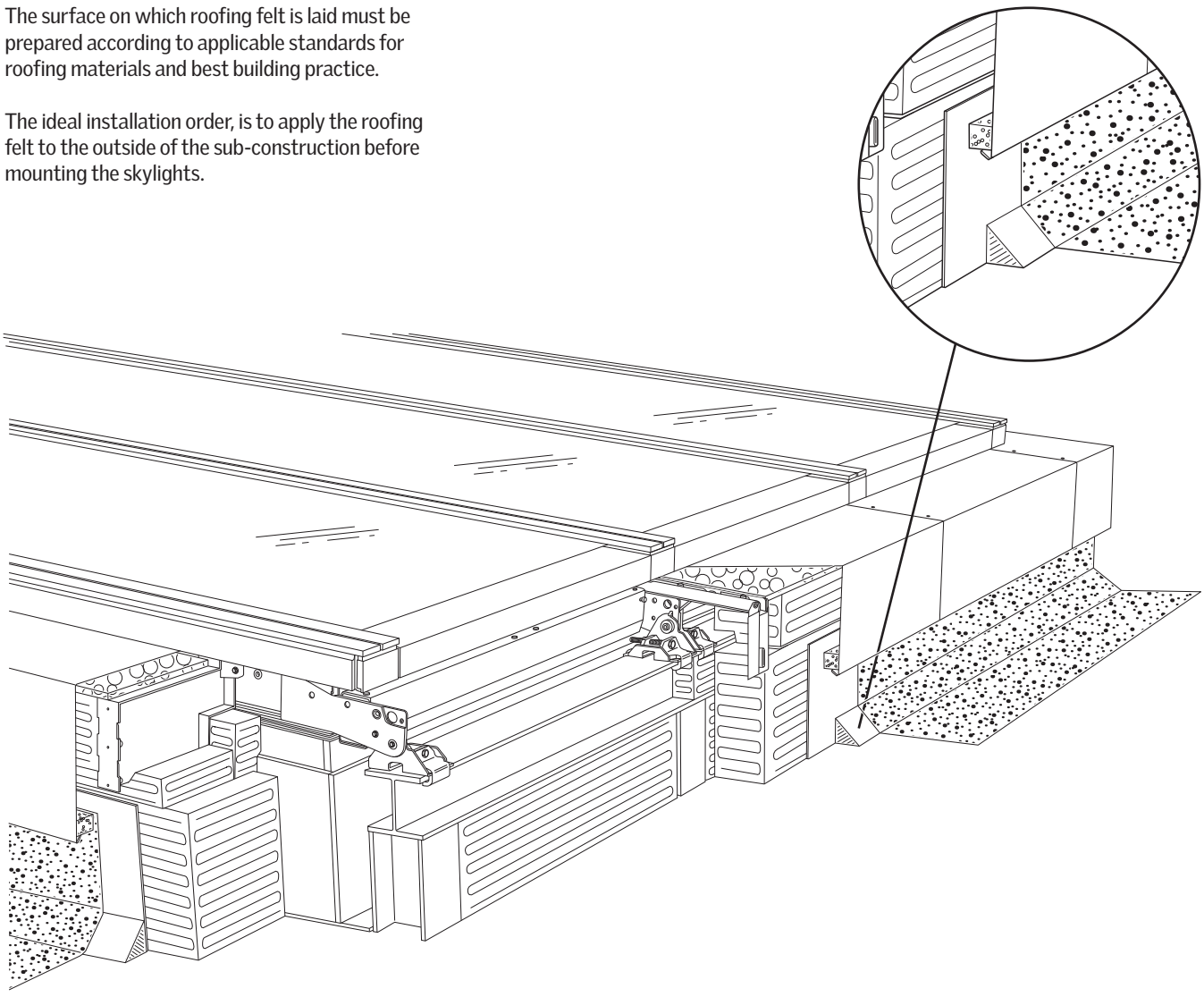


Steel, concrete or wood construction with wooden batten

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.

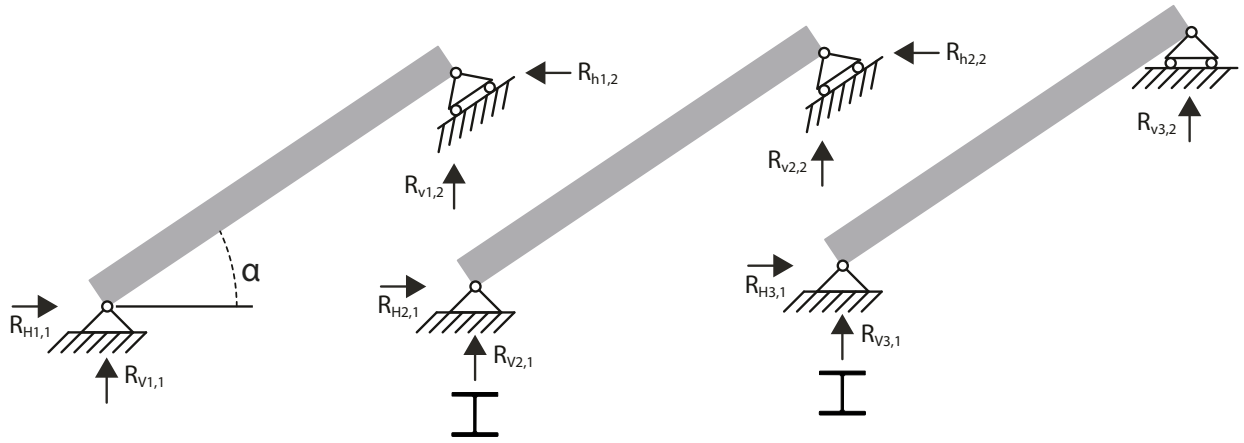
The ideal installation order, is to apply the roofing felt to the outside of the sub-construction before mounting the skylights.



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.

Static model of reactions

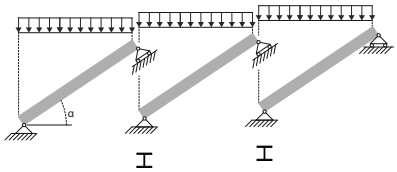


Characteristic loads

Fill out please

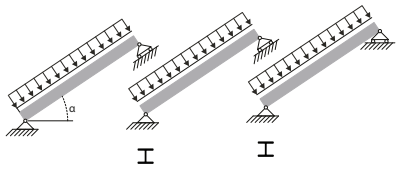
Name of your project:

Snowload pressure in psf



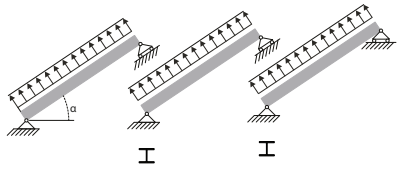
psf

Windload pressure in psf



psf

Windload suction in psf

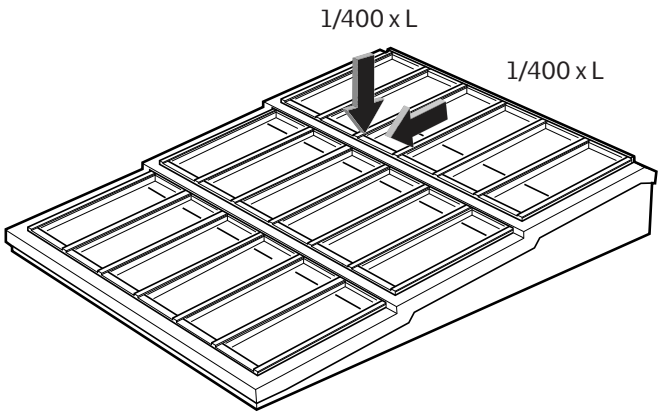


psf

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 deformations must be limited to 1/400 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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