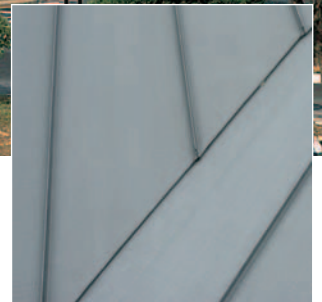


Continuous support systems

# STANDING SEAM



Felda auditorium (Malaysia) - Architect(s): BEP Akitek - contractor(s): Swissma Building Technologies



- Suitable for virtually any architectural design
- Offers architects great design flexibility thanks to its numerous possibilities for roof and facade shapes
- Fast and easy to install.

A Umicore brand



# Description of the system

The standing seam technique is a popular traditional technique that uses a single folded or double folded seam. This unique system offers durability and economic viability, while being well suited to contemporary architecture.

- The use of profiling and seaming machines for the closure of longitudinal seam joints significantly reduces installation time. This reduction makes for a more cost-effective solution, particularly when considering very large surface areas.
- The low height of the seams (25 or 32 mm) contributes to the modernity, lightness and regularity of the roof and facade, while highlighting its architectural purpose. When dealing with more complex designs this system presents a more technologically advanced appearance.
- The standing seam technique is particularly suitable for very large roof and facade surfaces and for structures located in regions of harsh climate, which are often subject to strong winds, heavy rain and snowfall (mountain or continental climate).

Cutaan Laser Centrum, Aalter (Belgium)  
Architect(s): H. Vermoorte

Saeronam Church, Daejeon (South Korea)  
Architect(s): Junglim Architecture Co., Ltd.



# Description of the system

## Panels and material

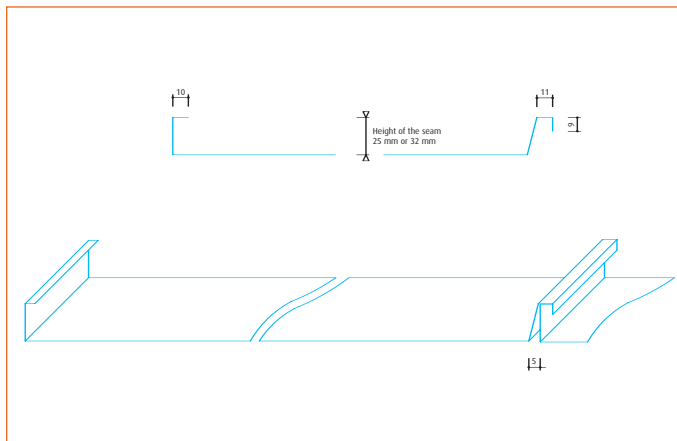
### ■ Standard panel dimensions

The height of the seam is 25 or 32 mm. For exposed windy areas and facades, the overall width equals 500 mm.

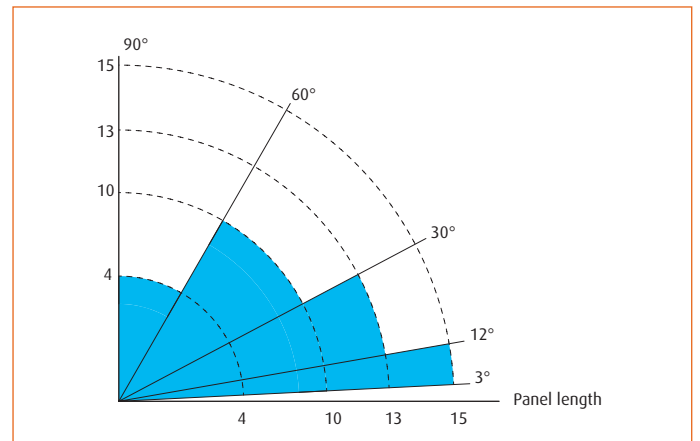
Height of the seam	Centre-to-centre distance
	500 mm coil width
H = 25 mm	430 mm
H = 32 mm	416 mm

VM ZINC® has a theoretical thermal expansion coefficient of 2.2 mm/m per 100°C of temperature variation. Correct management of expansion of the material depends on the proper positioning of the fixing clips (fixed and sliding), as well as the maximum lengths of sheets and long strips.

When working on roofs, the maximum length of the panels depends on the slope of the roof. Standard lengths are 10 m. Lengths greater than 13 m have been successfully installed without any problem, however, we advise that you consult VM ZINC® before specifying such a system.



### Panel length / slope



### ■ Material description

The roofing material used is ZINC PLUS (aspect to be defined) minimum 0.7 or 0.8 mm thick. The characteristics of the metal alloy are electrolytic high-grade zinc according to EN 1179 (European standard) of 99.995% pure zinc, alloyed with copper and titanium.

The dimensional tolerances are in accordance with EN 988 (European standard).

#### • VM ZINC PLUS Protective underside coating:

The 60-micron lacquer allows direct laying of titanium zinc roofing on incompatible supports like plywood, thanks to the protective underside coating. Direct contact between the zinc and highly abrasive supports like some plywood calls for contractors to place building paper or slip-sheets between the zinc and the support to protect the 60-micron lacquer (see chapter V p.4).

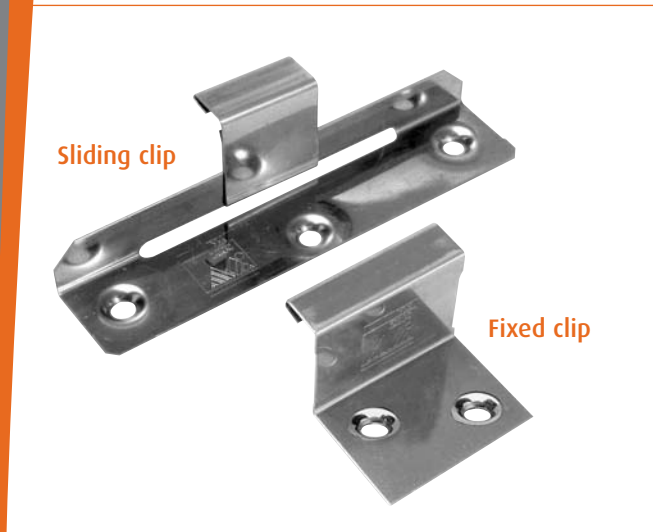
#### • DELTA VM ZINC Separation membrane:

As an alternative to VM ZINC PLUS, DELTA VM ZINC Separation membrane may be used (see chapter V p.5).

**Note:** the "PLUS" or "+" added to the brand name indicates a patented protection on the underside of the VM ZINC coils.

# Description of the system

## Fixing system



Clips have a dual function:

- Ensuring the mechanical resistance of the entire roof.
- Allowing free expansion of the metal.

The VM ZINC® clips are made of 304 stainless steel. The thickness of the fixing clip is 0.5 mm.

The sliding clips have a moving component, which is 0.4 mm thick, and a 70-mm long slot to allow free movement of the VM ZINC® panel under expansion and contraction.

The sliding component of these clips must be carefully positioned within the slot at the time of installation. In general, the sliding component is positioned in the middle of the slot.

The clips resistance to tearing is 50 daN.

It is recommended that screws be used to secure the clips. Three screws per sliding clip is recommended. The use of nails offers significantly less resistance, but in the event of using nails contractors are advised to use ring shank nails.

Shaw Foundation Symphony stage (Singapore) - Architect(s): CPG Consultants  
contractor(s): Sheet Metal International Systems



# Description of the system

## Position of clips

### ■ Clip spacing

For standing seam roofing, the correct positioning of the clips (fixed or sliding clips) is fundamental for effective expansion control. The number of clips required will depend upon anticipated wind loads. Towards the edge or corners of the roof, where windloads are increased, it is necessary to increase the number of clips.

Please consult VM ZINC® for advice.

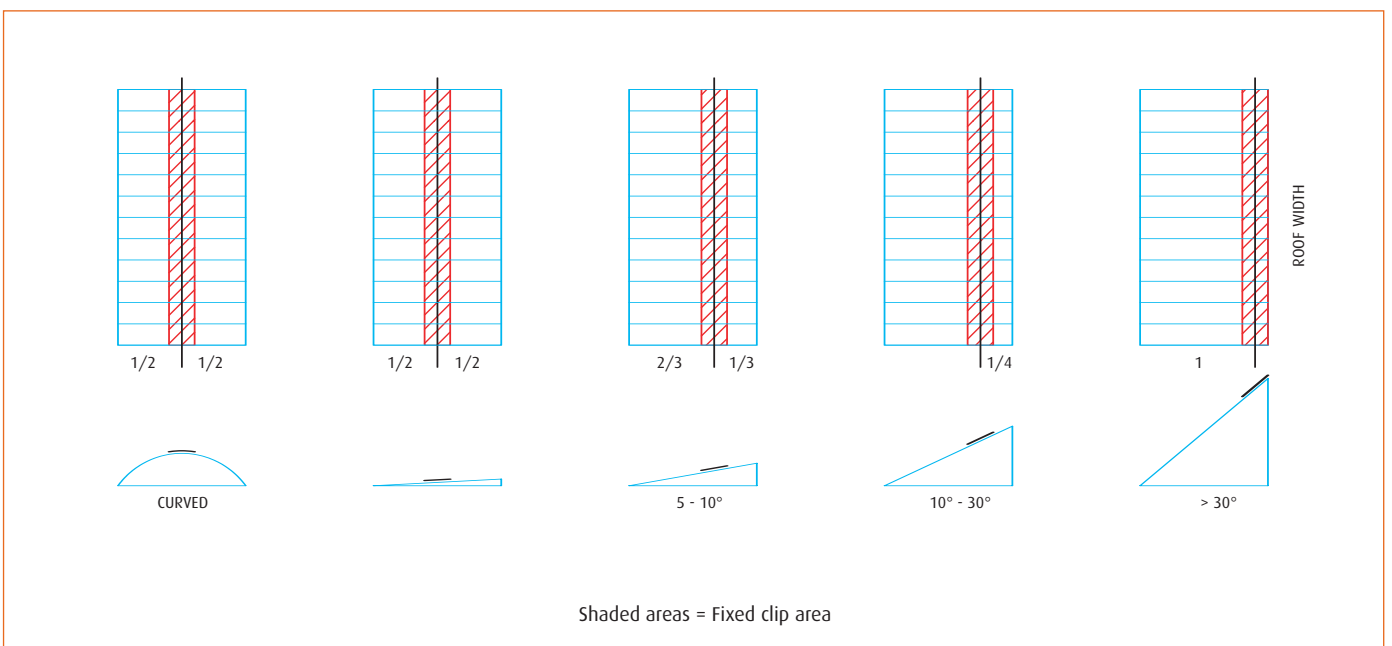
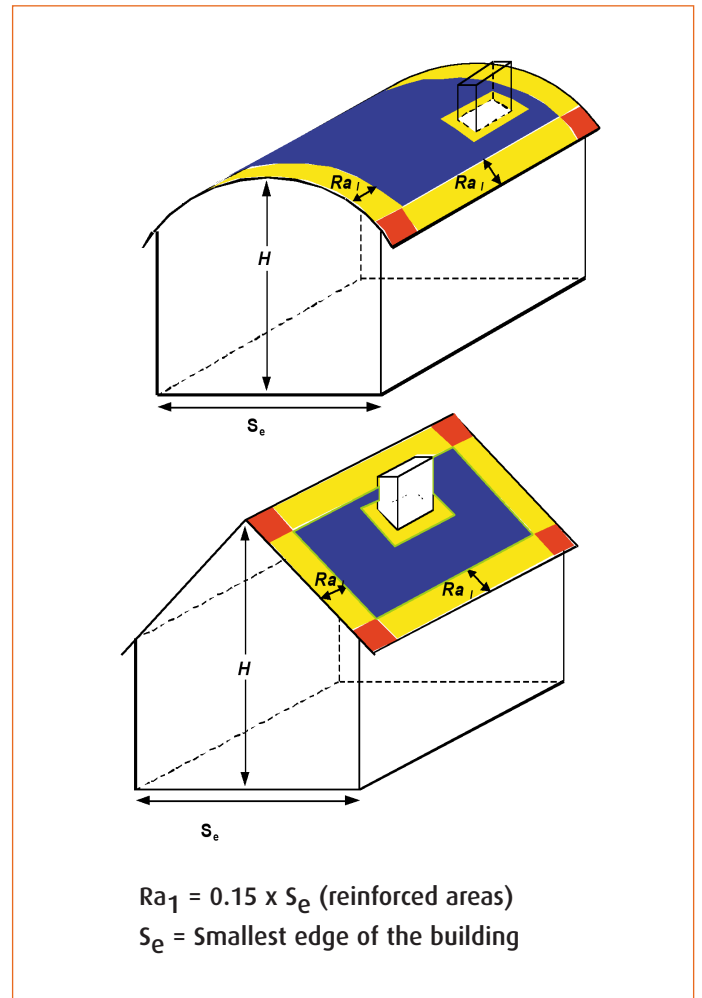
### ■ Centre to centre distance between clips

- 330 mm on the main part of the roof.
- 165 mm at the perimeter on a distance equal to  $\frac{1}{3}$  of the projected roof ( $Ra_1$ ), minimum of 3 clips to ensure wind resistance.

If your project is higher than 30 meters and/or if it is in an area where wind speed is higher than 170 km/h once a year, please consult VM ZINC.

### ■ Fixed clip positions

Use the chart below to determine the location of the fixing clips on your project.



# Area of application

## ■ Type of roof and facade

All shapes: flat, curved, concave, convex, conical, domes.

## ■ Climate

Standing seam is adaptable to all climates, as long as the design team makes sure that the loads due to climatic constraints and to the effect of wind is compatible with the performance of VM ZINC® systems.

For buildings higher than 30 meters with high windload or in a specific area, please consult VM ZINC®.

## ■ Pitches

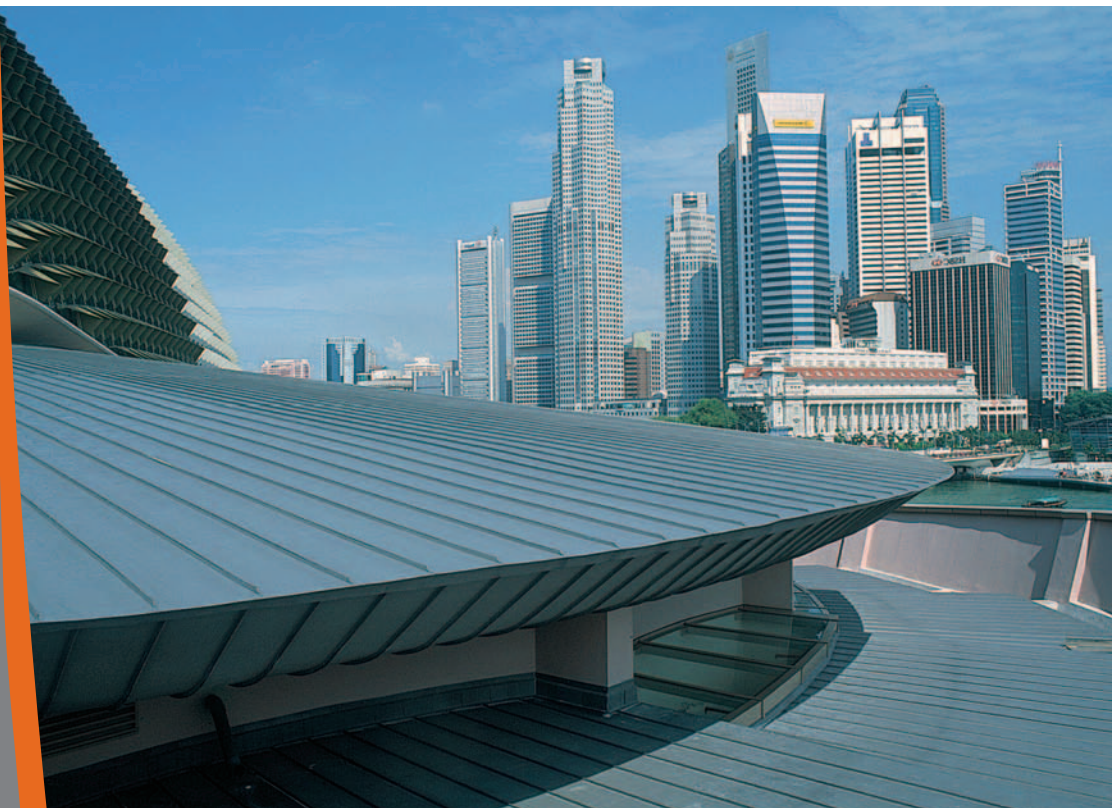
Minimum pitch  $\geq 3^\circ$  (5%).

## ■ Support

It must be rigid and continuous for all parts where VM ZINC® is installed: under sheets as well as under all box gutters, flashing, etc. There should be no more than a 5 mm difference in height (flush tolerance) between its components at their junction. There should be no protruding elements on the support, e.g., screws that could damage the underside of the zinc.

The support must also meet loading requirements in conformity with a minimum pull-out strength of 50 daN for each clip (fixed and sliding), provided that the entire support transmit the cumulated load of all fixing clips to the structure. For this purpose, the support must rest on at least 3 bearing elements minimum.

Esplanade - Theatre on the bay (Singapore)  
Architect(s): DP Architects PTE Ltd.  
Contractor(s): Bluescope Lysaght Singapore



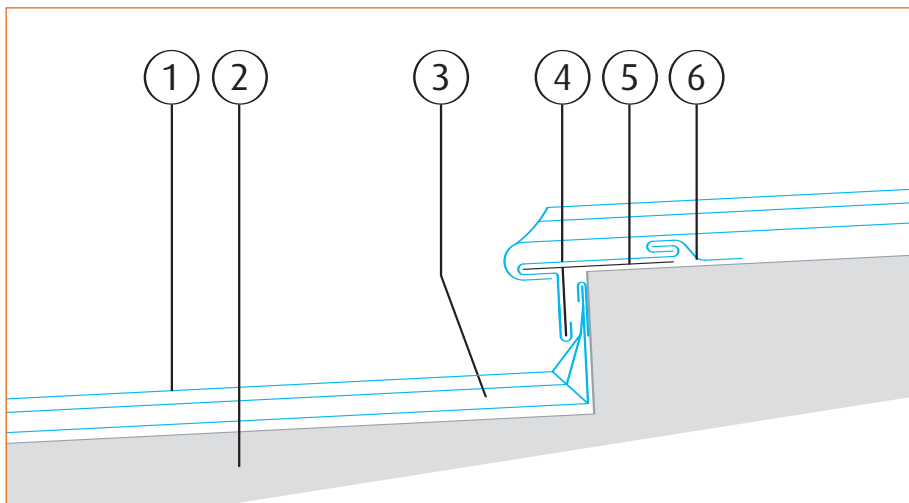
# Details

## Transversal junctions

When the length of the roof slope exceeds the maximum recommended length, it is necessary to join the sheets using transversal junctions. Several techniques exist depending on the pitch of the roof.

■ **Step (or drip):** for pitches of  $3^\circ$  (5%) or more:

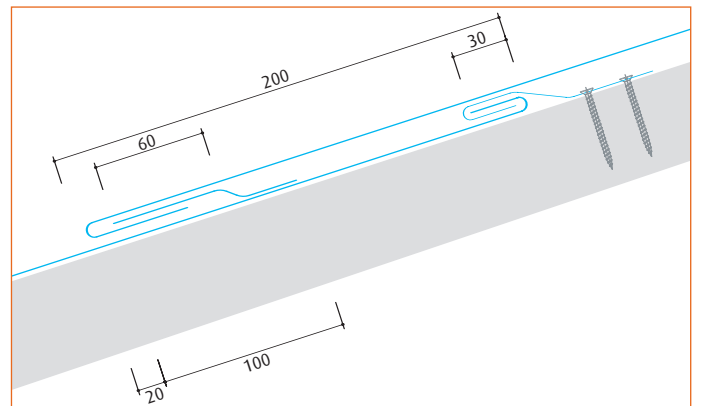
The step height will be a minimum of 8 cm for Standing Seam.



- 1 VM ZINC PLUS standing seam roofing
- 2 Structure
- 3 Turned down standing seam
- 4 Eaves strip
- 5 Galvanized steel stiffener
- 6 Sheet clip

■ **Double welt:** for pitches of  $8^\circ$  (15%) or more:

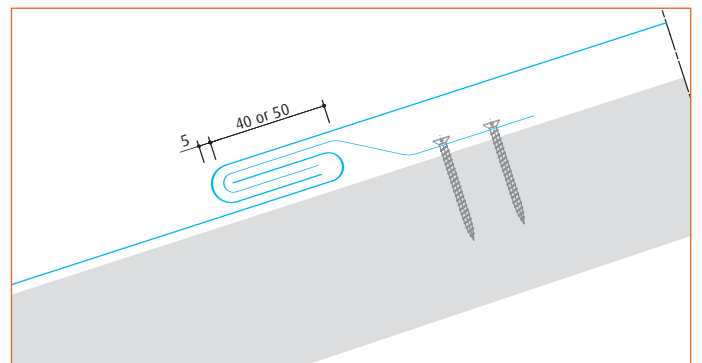
The double welt can be used in the standing seam technique for pitches of 15% and above. The minimum length of the overlap is 200 mm with a securing clip at the top. The overlap should be increased according to climatic conditions such as wind and rain.



■ **Single welt:** for pitches  $> 25^\circ$  (47%) or more:

The single welt or single lock cross-welt with an overlap of 50 mm can be adopted for pitches greater than 47% (25°) in the standing seam technique.

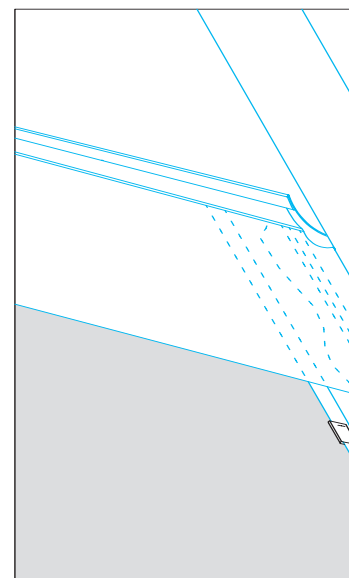
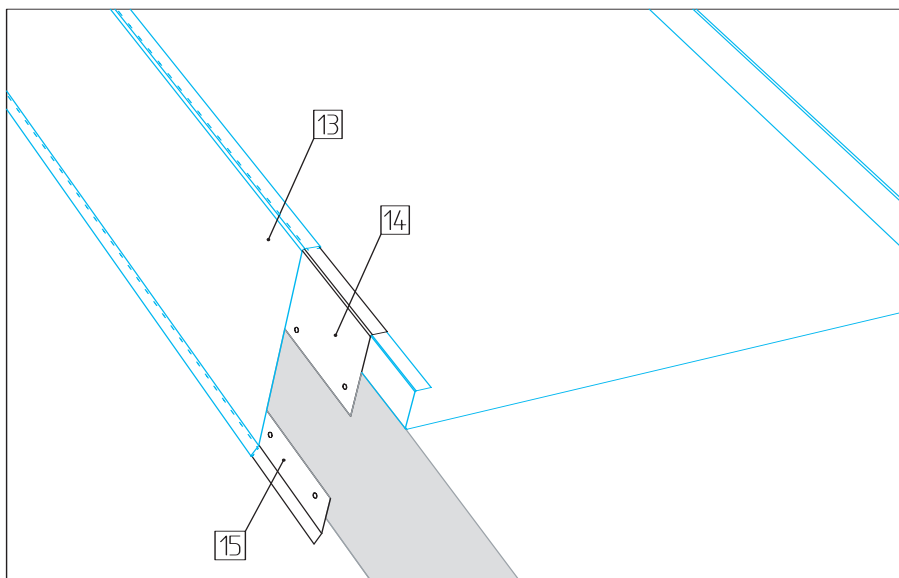
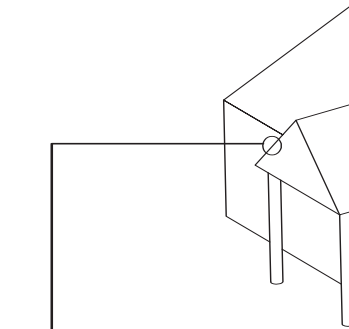
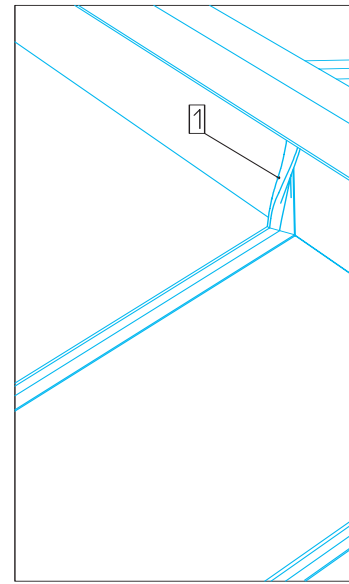
VM ZINC® recommends using the double welt over the single welt for standing seam techniques as it provides greater water resistance.



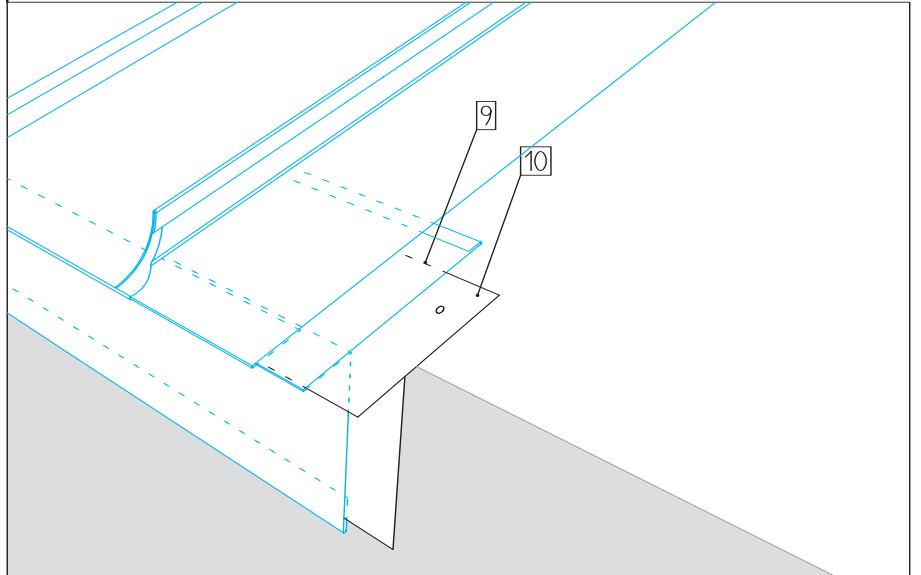
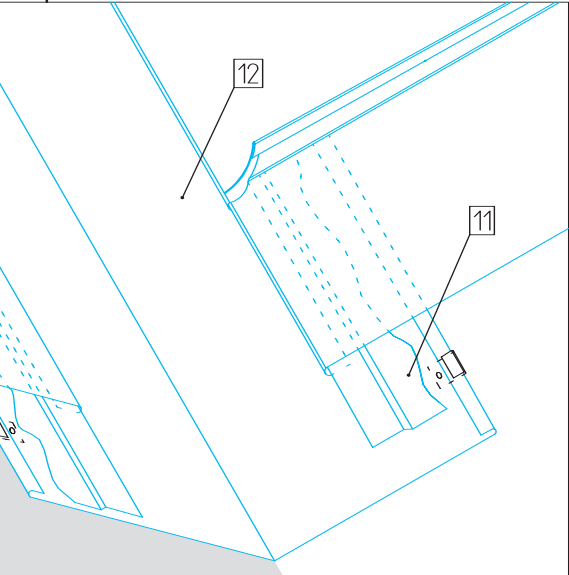
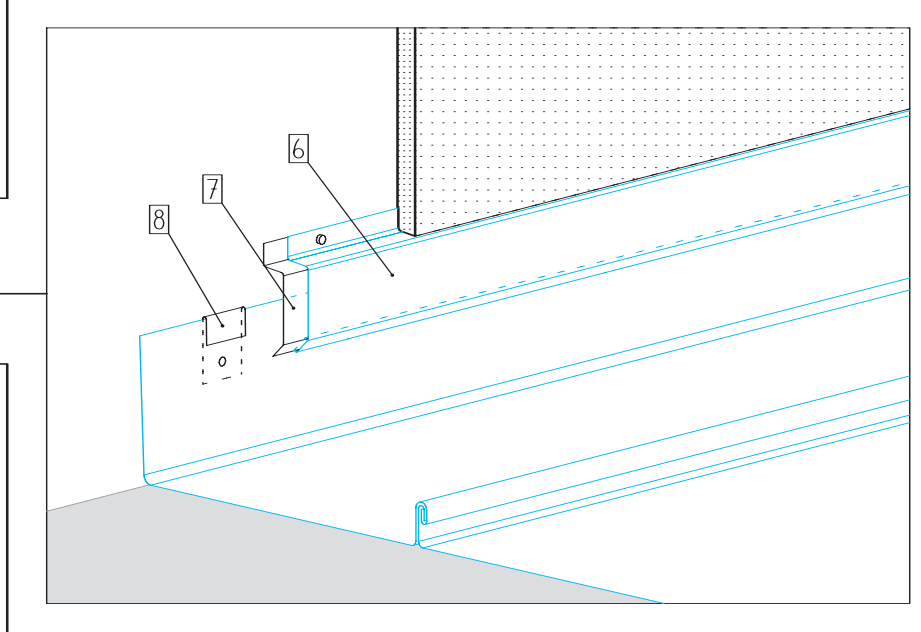
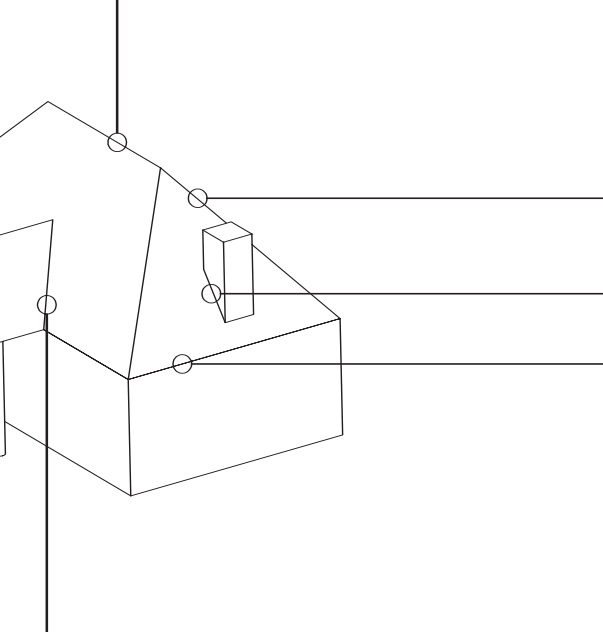
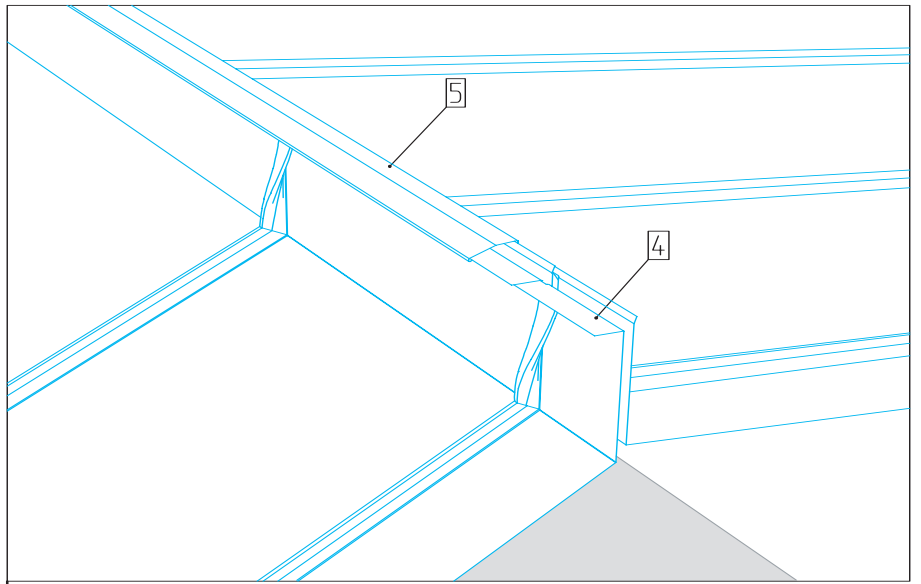
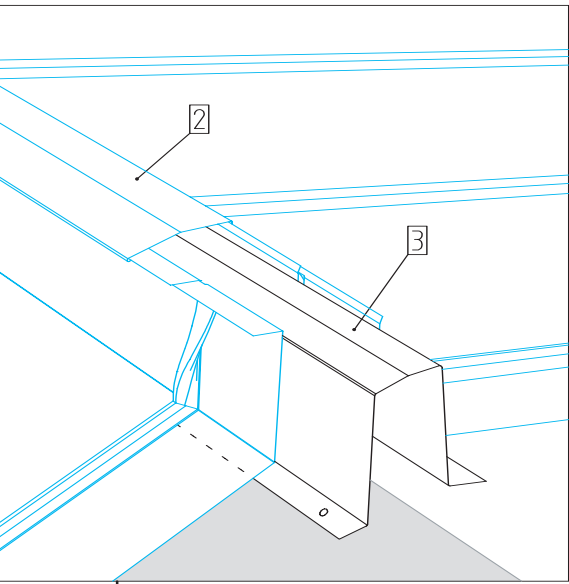
# Details

## Roofing

- 1** VM ZINC® turned down standing seam
- 2** Top ridge flashing in VM ZINC®
- 3** Galvanized steel ridge flashing
- 4** Hip capping
- 5** VM ZINC® top flat hip slider
- 6** Flashing strip
- 7** Fillet support
- 8** Securing clip
- 9** Eave flashing
- 10** Galvanized steel stiffener
- 11** Soldered VM ZINC® fixing strip
- 12** Valley
- 13** VM ZINC® edge flashing
- 14** Galvanized steel fixing strip
- 15** Galvanized strip



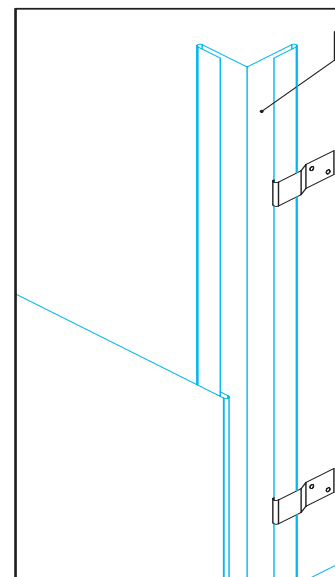
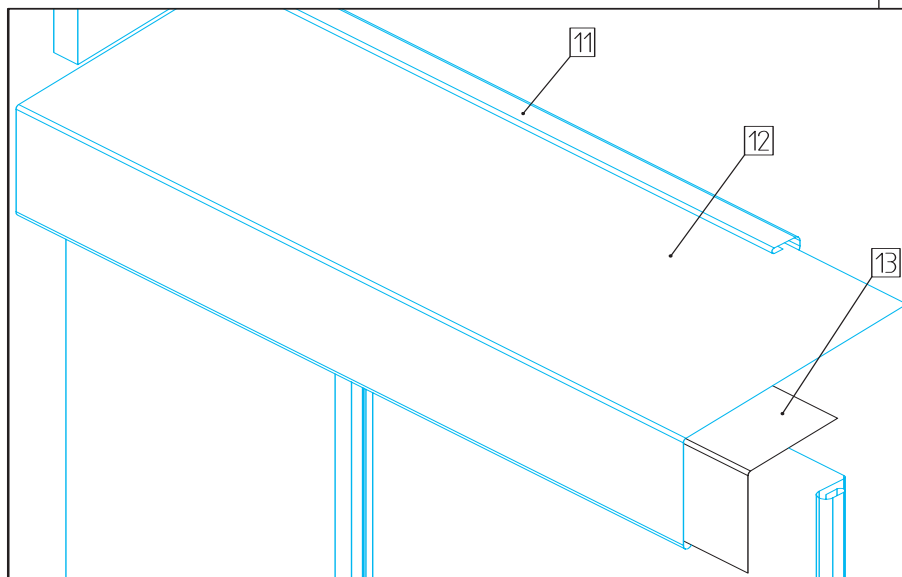
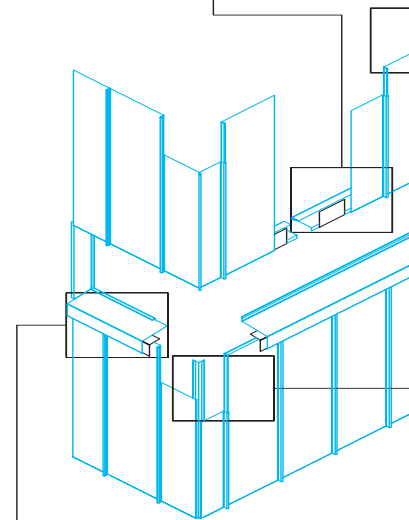
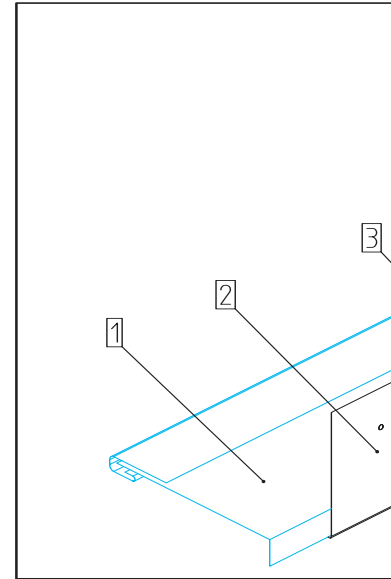


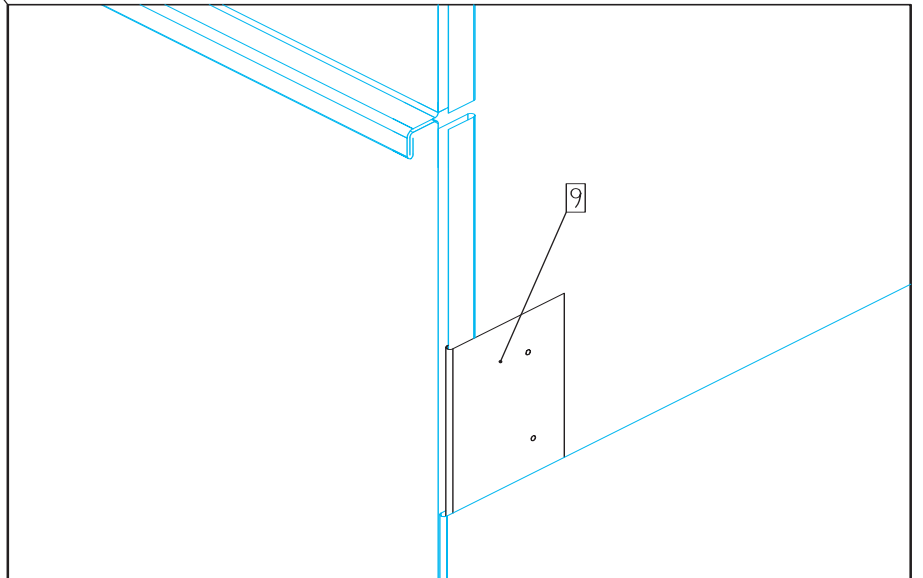
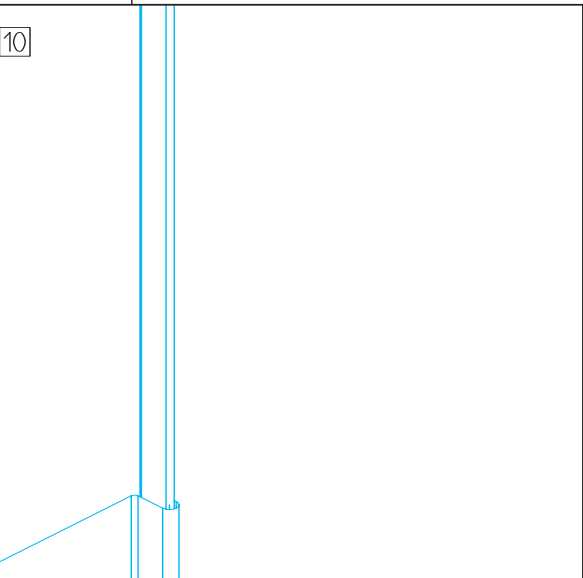
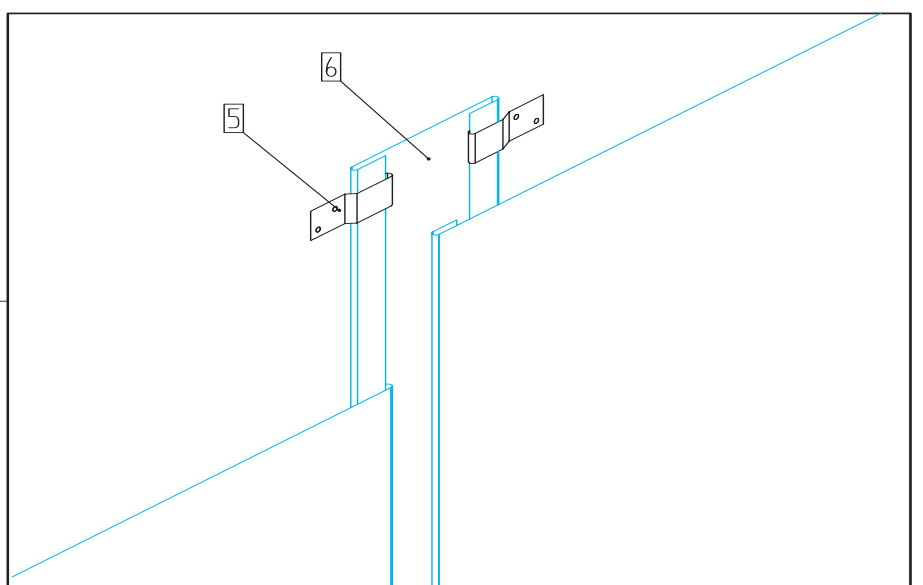
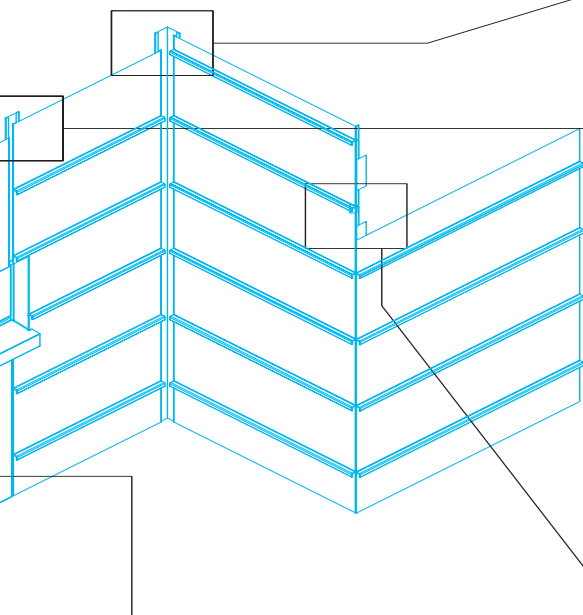
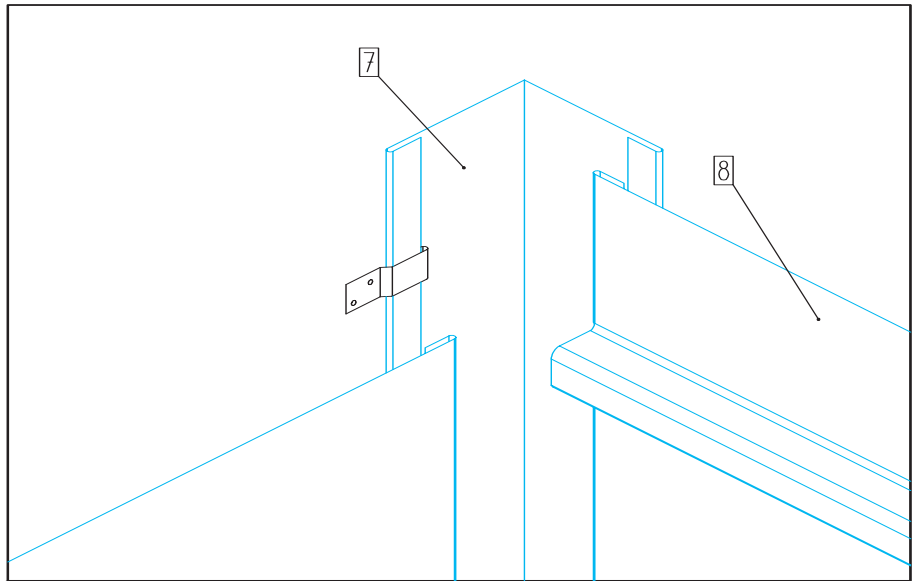
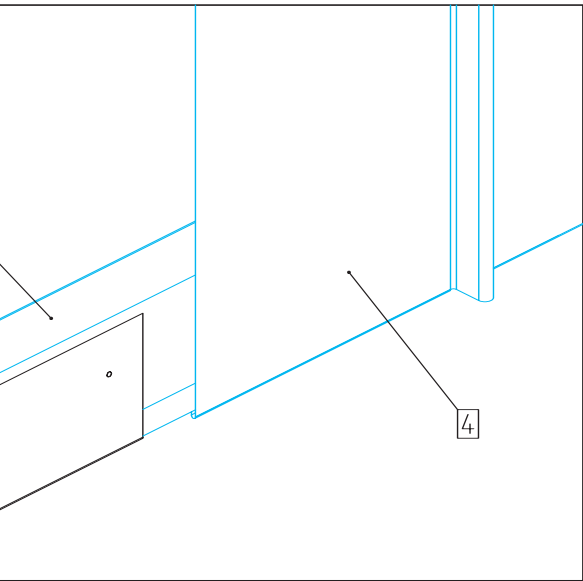


# Details

## Facade

- 1 VM ZINC® window flashing
- 2 Galvanized strip
- 3 Folded strip
- 4 VM ZINC® vertical standing seam
- 5 Sheet clip
- 6 VM ZINC® inverted flat slider
- 7 Corner flashing
- 8 VM ZINC® horizontal standing seam
- 9 Galvanized strip
- 10 Corner flashing
- 11 Folded strip
- 12 VM ZINC® window sill flashing
- 13 Galvanized steel strip





The sole purpose of this document is to describe the main technical characteristics of VM ZINC® products manufactured by Umicore.

The specification and installation of these products are the sole responsibility of the architects and building professionals who must ensure these products are used in a way suited to the end purpose of the construction and that they are compatible with other products and techniques used.

The specification and installation of the products implies respecting the standards in force and the manufacturer's recommendations. In this regard, Umicore publishes and regularly updates specification and installation manuals for specific geographic areas and provides training courses. All the information on the latter can be obtained from the local VM ZINC® team.

Umicore can not be held responsible for any specification or use of its products that has not respected all these standards, recommendations and practices.

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