



## **StoVentec R in solid and timber frame construction**

Application guideline

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## Solid construction

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It is to be noted that the details, illustrations, general technical information and drawings contained in this document are only general proposals and details which merely describe basic functions schematically. No precise dimensions are included. The applicator/customer is independently responsible for determining the suitability and adequacy of the product in question. Neighbouring works are described only schematically. All specifications and information must be adjusted or agreed in the light of local conditions and do not constitute work, detail or assembly plans. The respective technical specifications and information on the products contained in the Technical Data Sheets and system descriptions/approvals must be observed.

# Timber frame construction

## System information

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## Overview of system structures

### StoVentec R

1



**Limited combustibility**  
**Solid substrate with stainless steel/  
 aluminium sub-construction**  
 See page 6.

2



**Non-combustible**  
**Solid substrate with stainless steel/  
 aluminium sub-construction**  
 See page 6.

3



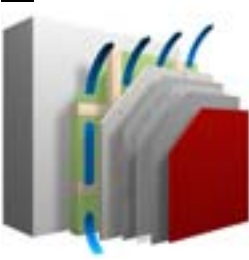
**Normal combustibility\***  
**Timber stud construction with timber  
 sub-construction**  
 See page 30.

4



**Limited combustibility\***  
**Planked timber stud wall with stain-  
 less steel/aluminium sub-construction**  
 See page 30.

5



**Limited combustibility**  
**Solid substrate with timber frame  
 sub-construction**  
 See page 31.

\* Limited combustibility in case of use on full-surface, closed, non-combustible timber frame construction substrates with a timber sub-construction.

## System description

### StoVentec R Ventilated rainscreen cladding system

|                    |   |
|--------------------|---|
| <b>Application</b> | <ul style="list-style-type: none"> <li>• Onto all solid, load-bearing anchorage substrates</li> <li>• Onto external walls in timber frame construction</li> <li>• Existing and new buildings</li> </ul>   |
| <b>Properties</b>  | <ul style="list-style-type: none"> <li>• Low system weight, with render layer approx. 5 kg/m<sup>2</sup></li> <li>• Levels unevenness by means of a flexible stainless steel/aluminium sub-construction</li> <li>• Very high crack resistance</li> <li>• Improves sound insulation by up to 10 dB</li> <li>• Highly mechanically resistant</li> <li>• Highly effective thermal insulant</li> <li>• Suitable for refurbishing moisture-soaked masonry due to the evacuation of moisture through air circulation</li> <li>• Can be used in almost all climate zones</li> <li>• Can also be implemented as ceiling and curved facade cladding</li> <li>• Limited combustibility or non-combustible (A2-s1, d0 in accordance with DIN EN 13501-1)</li> <li>• Frost-resistant in accordance with DIN 52104</li> <li>• Diffusion-open system structure</li> <li>• Optimal building physics through back-ventilation</li> <li>• Resistant to microorganisms (algae, fungi), particularly in conjunction with a complementary paint system</li> </ul> |
| <b>Appearance</b>  | <ul style="list-style-type: none"> <li>• Organic and silicone resin or mineral renders</li> <li>• Variety of shades: Tintable in accordance with the StoColor System</li> <li>• No limitation to the lightness value in case of an organic system coating</li> <li>• StoDeco Profiles</li> <li>• StoDeco Rustications</li> <li>• Sto-Glass Mosaic</li> <li>• Sto-Natural Stone Tiles</li> <li>• StoSilt Cera Glazed Brick Slips</li> <li>• Sto-Brick Slips</li> <li>• Ceramic cladding</li> <li>• For mixed facade systems with various top coats</li> <li>• Also for curved facades (radius from 1.50 m)</li> </ul>  |
| <b>Application</b> | <ul style="list-style-type: none"> <li>• Coordinated system components</li> <li>• Efficient installation through use of StoSilo technology and construction site logistics</li> <li>• Simple board working, quick installation</li> <li>• Complete detail solutions</li> <li>• Simple installation of the carrier boards with handsaw, cutting knife, hand and table circular saws and easy fixing with screws or staples</li> </ul>  |
| <b>Approval</b>    | The relevant valid European and/or national approvals apply.  |

## System description

### General application and planning information

The basis for planning and installing a StoVentec R Facade and/or ceiling cladding are the valid system approvals. The sub-construction must be dimensioned in the working drawings through a verifiable project-based structural analysis and based on a project-related wind load calculation. If necessary, the load-bearing capacity and stability of the anchorage substrate must be proven in advance as an architectural service through building diagnostics. Possible irregularities in the vertical sub-construction are structurally dependent, can occur with all ventilated facade claddings and are not product-specific. These irregularities are no defects. Hairline cracks over the board joints in the system coating cannot be excluded, but do not impair the stability, functionality and suitability for use of the system. An increased exposure to spray water and permanent soaking of the system can result in blistering of the carrier board and must be prevented through structural or maintenance measures. The field demarcation joints must be observed. Structural expansion joints must be incorporated into the system.

### Simple installation of the carrier boards



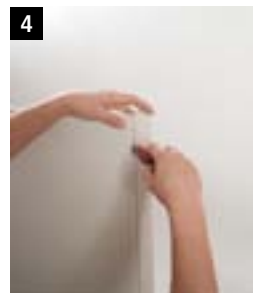
The fitting boards are measured and scored as needed.



With a cutting blade and metal ruler, cut the fabric on the board front side and score the expanded glass granulate.



Break the board at the cut.



Then the rear-side mesh must be cut through.



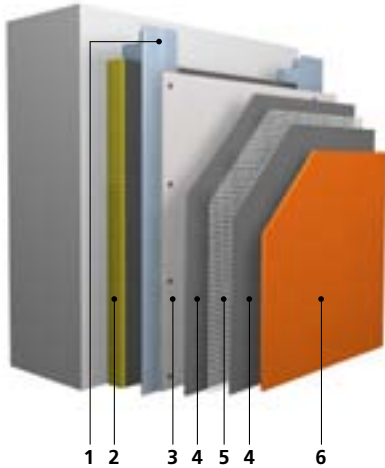
For exact board joints, the breaking edge should be reworked with an abrasive grid.

#### Tip

Use carbide-tipped blades with circular hand or table saws.

## System structure

### In solid construction, limited combustibility



#### 1 Sub-construction

Thermal-bridge-optimised sub-construction made of stainless steel wall brackets and aluminium profiles to fix the render carrier boards. Anchoring in the load-bearing substrate through means permitted under the building code.

#### 2 Insulation: Sto-Mineral Fibre Board 033 or 035 RSC Fix fleece-laminated

Fleece-laminated insulation board made of mineral wool in accordance with DIN EN 13162, non-combustible A1 or A2 -s1, d0 in accordance with DIN EN 13501-1, application area WAB (exterior wall insulation behind facing) in accordance with national standards. Variable thickness: depending on insulation requirements.  
Alternative: Sto-Glass Wool Board 032 RSC Fix

#### 3 Carrier board: StoVentec Carrier Board

Carrier board made of expanded glass granulate, mesh-reinforced on both sides, 12 mm thick, format 1.20 x 0.80 m and 1.20 x 2.40 m; low weight approx. 6 kg/m<sup>2</sup>, limited combustibility, frost-resistant.

#### 4 Base coat: StoArmat Classic / StoArmat Classic plus

Organic, cement-free, ready-to-use base coat, suitable for machine application.  
Alternative: Sto-RFP, StoLevell Classic

#### 5 Reinforcing mesh: Sto-Glass Fibre Mesh

Alkali-resistant reinforcing mesh, fulfils the highest demands for non-cracking and impact resistance.  
Alternative: Sto-Shield Mesh AES for protection against electro-smog as shield and reinforcement mesh.

#### 6 Top coat finishing render: StoLotusan K/MP, Stolit K/R/MP, StoSilco K/R/MP

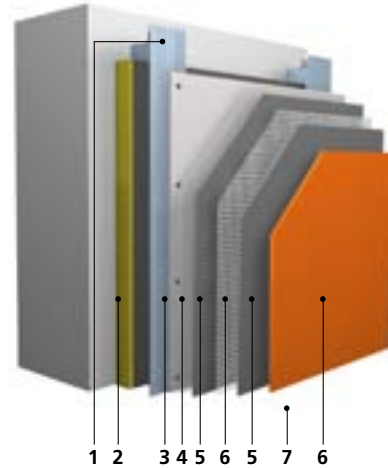
Organic and silicone resin-bonded, cement-free, ready-to-use finishing renders. Highly weather-resistant, highly flexible, mechanically resistant. Film-conserved to improve durability against microorganisms (algae, fungi). Tintable in accordance with the StoColor System.

#### Alternative finishes\*): ceramic cladding, glass mosaic, natural stone panels:

Frost-resistant, and can be affixed directly on site, for varied design possibilities.

\*) only in combination with a priming paint coat of Sto-Primer and StoLevell Uni mineral base coat (see also page 4, right column)

### In solid construction, non-combustible



#### 1 Sub-construction

Thermal-bridge-optimised sub-construction made of stainless steel wall brackets and aluminium profiles to fix the render carrier boards. Anchoring in the load-bearing substrate through means permitted under the building code.

#### 2 Insulation: Sto-Mineral Fibre Board 033 or 035 RSC Fix fleece-laminated

Fleece-laminated insulation board made of mineral wool in accordance with DIN EN 13162, non-combustible A1 or A2 -s1, d0 in accordance with DIN EN 13501-1, application area WAB (exterior wall insulation behind facing) in accordance with national standards. Variable thickness: depending on insulation requirements.  
Alternative: Sto-Glass Wool Board 032 RSC Fix

#### 3 Carrier board: StoVentec Carrier Board A

Carrier board made of expanded glass granulate with fire-retardant coating on the back side, mesh-reinforced on both sides, 12 mm thick, format 1.20 x 0.80 m and 1.20 x 2.40 m; low weight approx. 6 kg/m<sup>2</sup>, in the StoVentec R system with mineral system coating, non-combustible A2-s1, d0 in accordance with DIN EN 13501-1, frost-resistant.

#### 4 Priming coat for carrier boards: Sto-Primer

Apply a full-surface priming coat to the carrier boards with good filling properties and hiding power through water-dilutable primer.

#### 5 Base coat: StoLevell Uni

Mineral adhesive and base coat, suitable for machine application.

#### 6 Reinforcing mesh: Sto-Glass Fibre Mesh

Alkali-resistant reinforcing mesh, fulfils the highest demands for non-cracking and impact resistance.  
Alternative: Sto-Shield Mesh AES for protection against electro-smog as shield and reinforcement mesh.

#### 7 Intermediate coating: StoPrep Miral (not shown)

Filled, pigmented, mineral priming coat

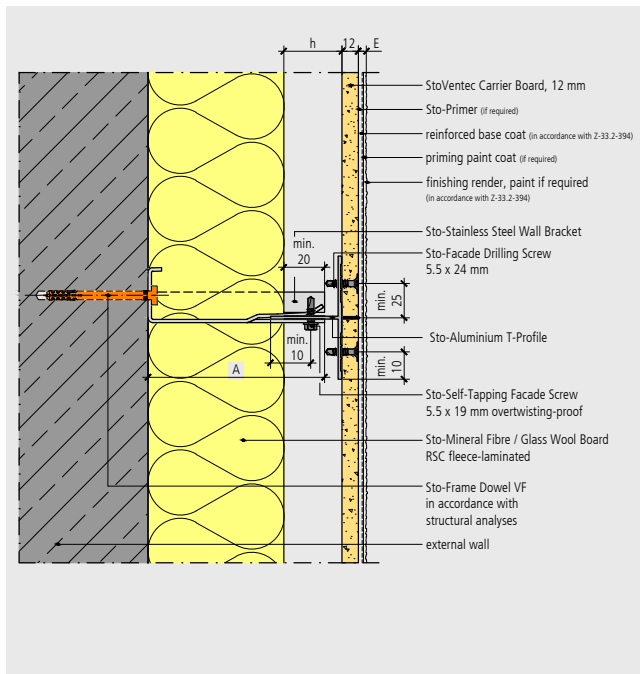
#### 8 Top coat finishing render: StoMiral K/R

Mineral finishing render in accordance with EN 998-1

#### Alternative finishes: ceramic cladding, glass mosaic, natural stone panels

Frost-resistant, and can be affixed directly on site, for various design possibilities.

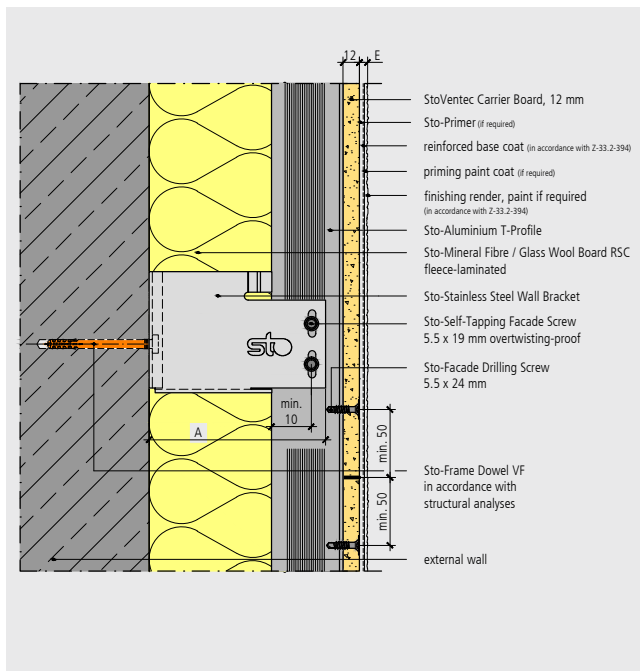
## System sections



$h$  = ventilation airspace  $20 \text{ mm} \leq h \leq 150 \text{ mm}$  in accordance with national standards

As part of system planning, select  $h$  to be at least 30 mm

$E$  = system coating thickness



## Installation requirements

- If the substrate is load-bearing and able to bear the load of the StoVentec R Facade, a suspended, ventilated insulation system can be properly installed based on a project-related wind load calculation as well as a project-related structural analysis. The system is ideal for problematic substrates; even large unevenness in the anchorage substrate can be compensated for.
- Doors, windows, roller shutter boxes, parapets, horizontal surface caps and window sills must be installed before the facade cladding. The planned system structure must be taken into account when determining an adequate projection of parapets and horizontal surface caps as well as window sills.
- The building shell tolerance must be determined and the required wall bracket projections specified as compared to the initial planning.
- As part of his working drawings and before installation of the StoVentec R Facade, the applicator must specify and coordinate, as needed, the application of the sub-construction and the required formation of details and system connections, based on the system approval and project-based structural analysis and taking into account project-specific conditions.

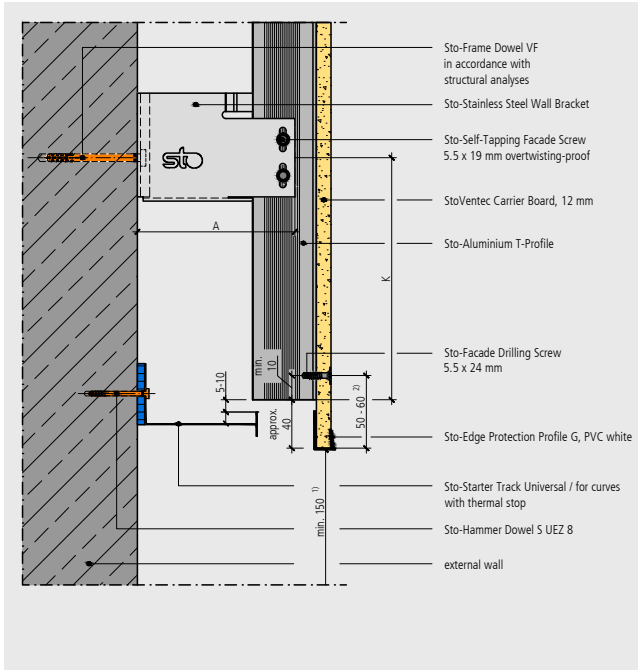
### Information

Additional system and detail drawings as facade and ceiling claddings are available at [www.sto.de](http://www.sto.de).

## Sub-construction / insulation

### Measuring the facade

#### 1) Determining the base point

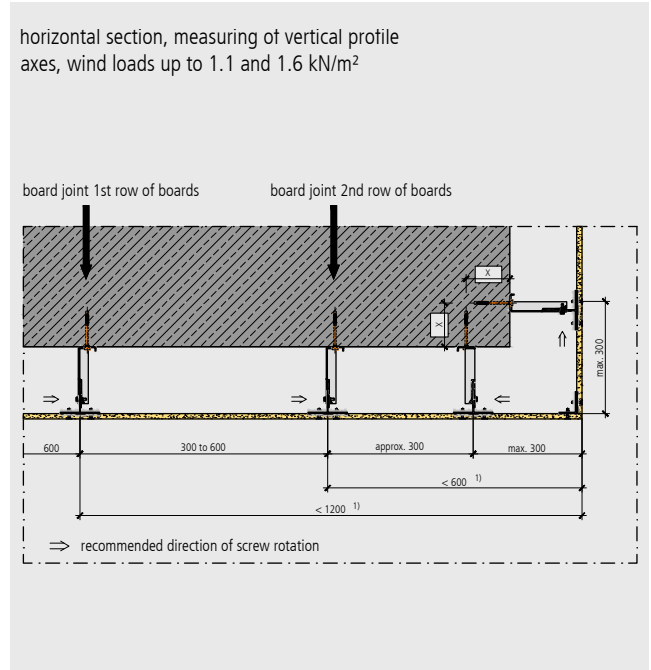


<sup>1)</sup> The base point of the facade above the upper surface or the roof surfaces is determined in such a way that

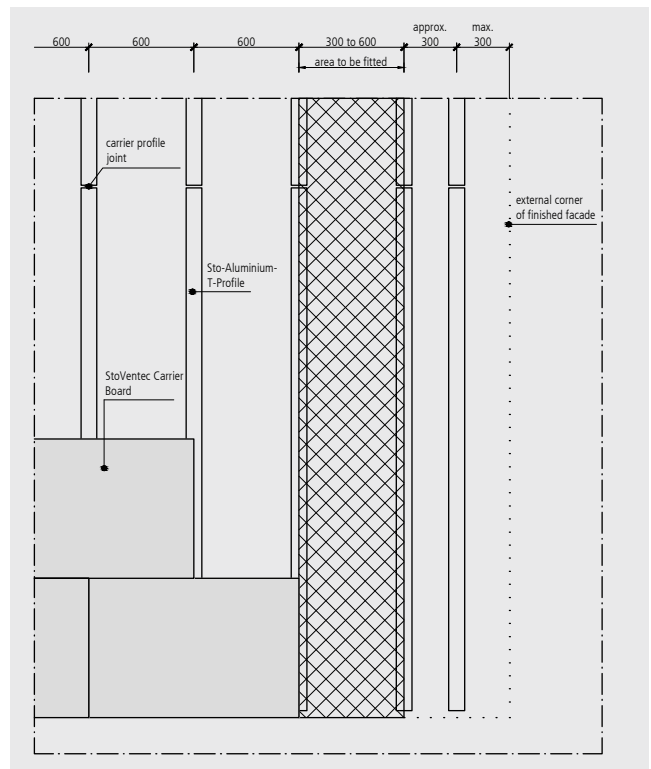
- system ventilation is permanently ensured and
- the facade cladding is not constantly soaked by spray water from neighbouring horizontal surfaces.

<sup>2)</sup> > 50 mm: additional screw connection required

#### 2) Marking the profile axes



<sup>1)</sup> Consideration of the building shell tolerances as well as board projection of the external corner of the facade





## Sub-construction / insulation

### Facade areas with wind loads of up to 1.6 kN/m<sup>2</sup>

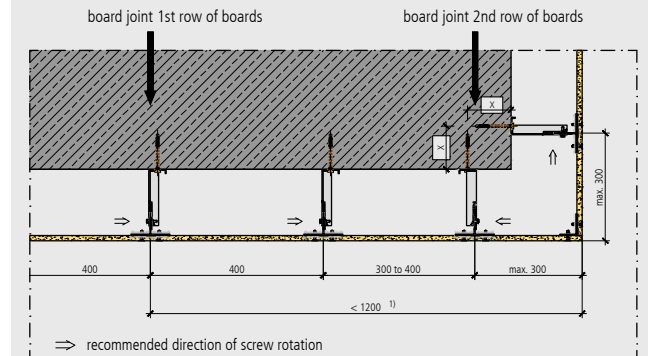
The vertical profile axes must be marked according to the wind load calculation and project-based structural analyses at a regular interval of 60 cm.

- The profile axes should be marked, starting from the external corner.
- After the external corner, mark first the 2nd and 3rd profile axes on the bare wall. The distance from the later external corner of the facade cladding to the 2nd profile axis is to be less than 60 cm, the distance to the 3rd profile axis less than 120 cm. The existing building shell tolerances must be observed and also considered in the board projection to the facade external corner.
- Vertical joints of the carrier boards are arranged on the 2nd and 3rd profile axes for later board installation.
- When determining the 1st profile axis after the external corner, the permitted dowel edge distance X and support distance of the carrier board of maximum 30 cm must be observed. If necessary, install corner brackets or corner carriers for mounting the wall brackets.
- Between the 2nd and 3rd profile axis or in the middle of the facade, an area to be fitted of between 30 and 60 cm must be considered, if needed.
- Determine the existing building shell tolerances for the entire facade surface at the marked profile axes using a reference line or laser. The required wall bracket projections must be specified.
- Observe the arrangement of the field demarcation and building expansion joints. Additional profile axes must be planned.
- Additional profile axes needed for window and other system connections as well as internal corners must also be installed to secure the boards, and each carrier board or partial board must be screwed to at least two carrier profile axes.

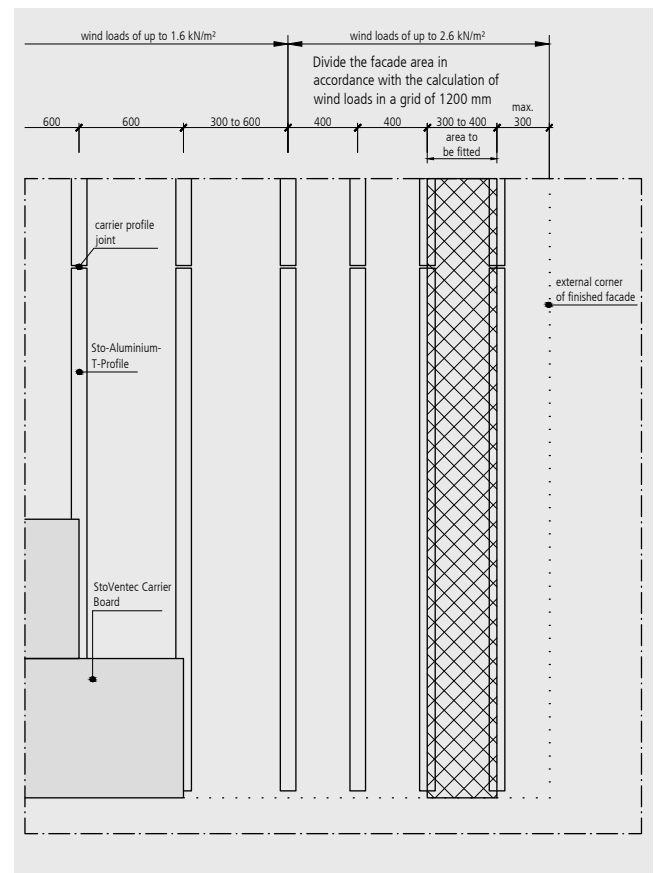
#### Notes

- It is generally recommended to mark the carrier profile and not the dowel axes on the anchorage substrate.
- The wind loads applicable to the facade area must be determined according to national requirements.

horizontal section, measuring of vertical profile axes, wind loads exceeding 1.6 to 2.6 kN/m<sup>2</sup>



<sup>1)</sup> Consideration of the building shell tolerances as well as board projection of the external corner of the facade



## Sub-construction / insulation

### Facade areas with wind loads between 1.6 and 2.6 kN/m<sup>2</sup>

- The vertical profile axes must be marked according to the wind load calculation and project-based structural analyses at a regular interval of 40 cm.
- The profile axes should be marked, starting from the external corner.
- After the external corner, mark first the 3rd profile axes on the bare wall. The distance from the later external corner of the facade cladding to the 3rd profile axis is to be less than 120 cm. The existing building shell tolerances must be observed and also considered in the board projection to the facade external corner. Mark the 2nd profile axis from the 3rd axis toward the external corner at a distance of 40 cm.
- When determining the 1st profile axis connection to the external corner, observe the permitted dowel edge distance X and support distance of the carrier board of maximum 30 cm. If necessary, install corner brackets or corner collar carriers for mounting the wall brackets.
- Vertical joints of the carrier boards are arranged on the 1st and 3rd profile axis for later board installation.
- Between the 1st and 2nd profile axis, in the middle of the facade or next to facade areas with an axis spacing of 60 cm, an area to be fitted with an axis spacing between 30 and 40 or 60 cm must be considered, if needed.
- Determine the existing building shell tolerances for the entire facade surface at the marked profile axes using a reference line or laser. The required wall bracket projections must be specified.
- Observe the arrangement of the field demarcation and building expansion joints. Additional profile axes must be planned for.
- Additional profile axes needed for window and other system connections as well as internal corners must also be installed to secure the boards, and each carrier board or partial board must be screwed to at least two carrier profile axes.

#### Notes

- It is generally recommended to mark the carrier profile and not the dowel axis on the anchorage substrate.
- The wind loads applicable to the facade area must be determined according to national requirements.

### 3) Arranging the wall brackets



The arrangement of the wall brackets as fixed and sliding points in accordance with the project-based structural analysis must be determined on the already marked exterior profile axes.



The arrangement of the wall brackets is transferred to the centre line using a chalked string.



The offset of the profile to the dowel axis of approx. 20 mm must be observed.

#### Tip

In areas with horizontal axis spacing of the carrier profiles of 40 cm it is recommended to mount the wall brackets so that the carrier profiles can be screwed to the wall brackets starting from the external corner and moving toward the middle of the facade.

## Sub-construction / insulation

### Installation – wall brackets



For installation of the wall brackets, the drill holes must be made by impact or turning, depending on the wall structure and dowels and in accordance with the dowel approval. The specified minimum hole depth must be observed. The drill hole must be blown out in accordance with the specifications in the dowel approval.



Insert the wall brackets into the drill hole in pass-through installation, if necessary backed with thermal block elements, as fixed or sliding point with facade screw dowels (dowel collars), taking into account the required tolerance compensation with the corresponding projection in accordance with structural specifications.



The wall brackets must be aligned perpendicularly.



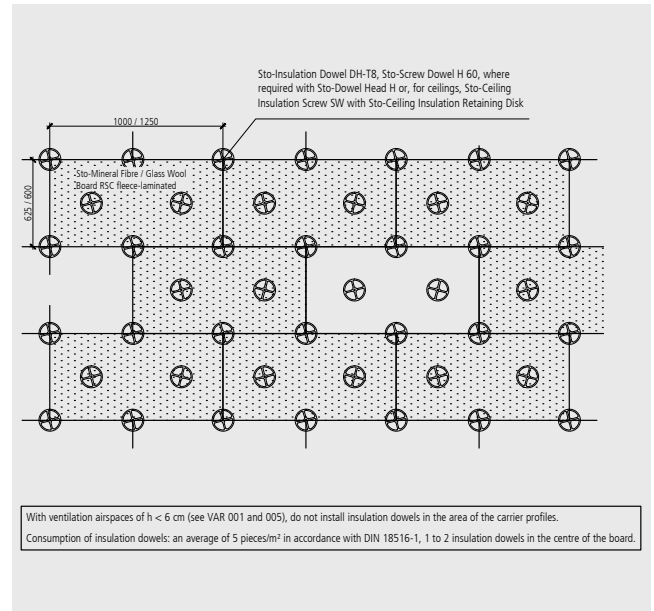
The dowel screws are tightened so that the full surface of the dowel collar rests on the wall bracket and the screw head on the dowel collar. Galvanised screw heads must be painted or levelled out at the connection to the dowel collar with a flexible, permanently elastic bitumen-oil combination coating, depending on the dowel approval.

#### Tip

##### Sto-Facade Screw Dowels for Sto-Stainless Steel Wall Brackets

- When setting the facade screw dowels, the specifications of the dowel approval must be observed.
- Select the facade screw dowels according to the anchorage substrate in accordance with the project-based structural analysis.

### Installation – insulation



#### Tip

For insulants with the corresponding approval, the dowel insertion technique can be used upon project-related coordination with the insulation manufacturer. The specifications of the insulation and dowel supplier must be observed.

#### Information

##### Properties:

- Insulation board made of mineral or, alternatively, glass wool in accordance with DIN EN 13162, Application area WAB (exterior wall insulation behind facing) in accordance with national standards
- Insulant preferably with external fleece lamination
- Non-combustible A1 or A2-s1, d0 in accordance with DIN EN 13501-1
- Insulant continuously water-repellent and permanently dimensionally stable
- Thermal conductivity rated value, e. g. 0.032 or 0.035 W/(m\*K) in accordance with national standards

##### Note on installation:

With a ventilation airspace of less than 6 cm, no insulation dowels can be set near vertical profile axes, since the gutters of the vertical carrier profiles go into the insulation level. Required insulation dowels must be placed next to the profile axes.

## Sub-construction / insulation



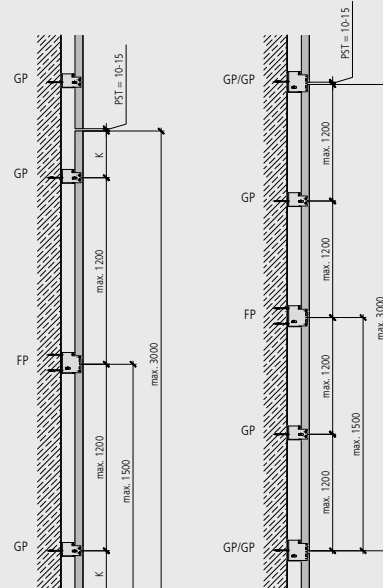
Insulation is carried out before the vertical carrier profiles are installed. Place the insulation boards in a bond pattern without gaps, score and press them over the wall brackets. As an alternative, the insulation around the wall bracket can be cut on the back side. Then the insulation board can be pressed onto the wall bracket. By tapping the front edge of the wall bracket with a sledge hammer, the fleece can be pierced at the required spot.



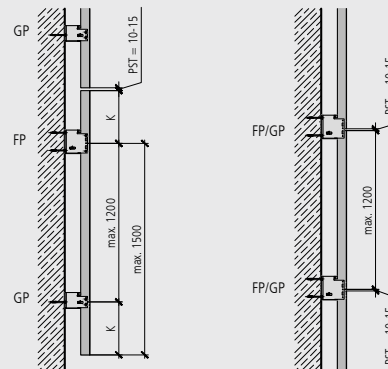
Secure the insulation boards in accordance with DIN 18516-1 in the middle against slipping with 5 Sto-Insulation Dowels DH-T8 per m<sup>2</sup>. Back-ventilation of the insulation must be excluded. When setting the insulation dowels, the anchorage depth of at least 20 mm must be observed. The insulant must not be compressed. Installation-related gaps in the insulation must be stuffed with the original insulation material.

## Installation – vertical carrier profiles

### Possible rod diagram for wind loads of up to 2.2 kN/m<sup>2</sup>



### Rod diagram for wind loads of up to 2.2 kN/m<sup>2</sup>



#### Key

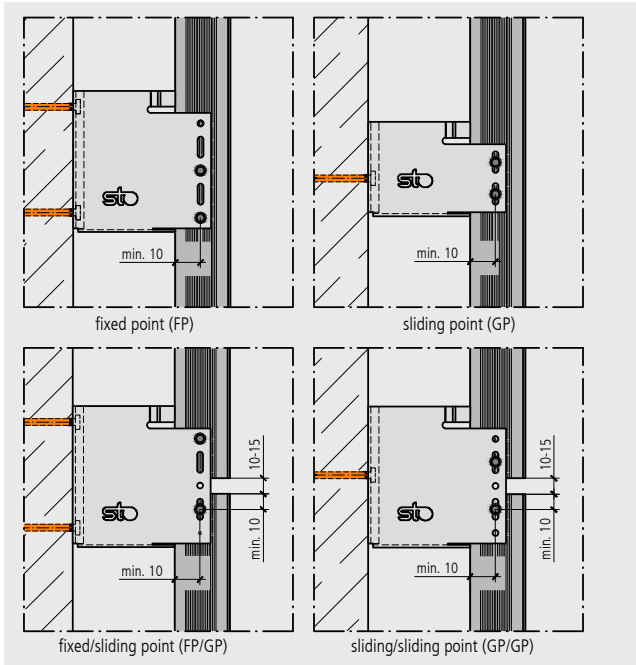
|       |                               |
|-------|-------------------------------|
| GP    | = sliding point               |
| FP    | = fixed point                 |
| GP/GP | = sliding point/sliding point |
| FP/GP | = fixed point/sliding point   |
| K     | = collar arm                  |
| PST   | = carrier profile joint       |

### Information

The profile span permitted specifically for the building concretises the project-based structural analysis. For wind loads above 2.2 kN/m<sup>2</sup>, the possible span of the carrier profiles is reduced to a maximum of 800 mm, subject to structural analyses.

## Sub-construction / insulation

### Installation – vertical carrier profiles



#### Requirements on vertical carrier profiles in accordance with system approval:

- Material thickness at least 2 mm
- Aluminium alloy EN AW 6063 in accordance with DIN EN 755-2 (tensile strength  $R_m \geq 245 \text{ N/mm}^2$ , elasticity limit  $R_{p0.2} \geq 195 \text{ N/mm}^2$ )
- Sto-Aluminium T-Profile 90 x 52.7 x 2.7 mm
- Maximum rod length of carrier profile 3 m
- Maximum vertical support interval of the carrier profile 1.2 m, with wind loads above 2.2 to 2.6 kN/m<sup>2</sup> maximum 0.8 m
- Approved deflection of the profile collar arm: collar arm length/300.
- Positioning of the fixed point in the middle of the profile rod or at a maximum of 1.5 m from the rod end

The project-related structural systems to be used are determined through the respective project-based structural analyses. The diagrams show a selection of possible arrangements, depending on the building geometry, structural requirements, anchorage substrates and system projections.

#### Tip

- For each facade surface, align the first and last axis to be plumb and install it on the wall brackets according to the structural analyses. Then install a horizontal reference line for orientation of the remaining profiles. Alternatively, use a laser.
- Set the profiles, starting from the external corners and moving toward the centre of the facade.
- If aluminium/Niro rivets are used as connectors, suitable riveters and rivet jigs must be used to ensure the T-profiles are installed without bending.



In case of a ventilation airspace of < 5 cm, score the insulant at the stem of the vertical T-profiles. For installation lengths of less than 3 m, cut the T-profiles using a mitre saw. Attach the vertical T-profiles. Align the vertical T-profiles on the reference line.



Screw on the T-profiles according to the structural analyses as fixed and sliding points with self-tapping screws 5.5 x 19 mm that cannot be over-tightened (alternatively, rivet with aluminium/Niro rivets according to structural analyses). For fixed points, screwing/riveting is carried out in the middle and lower round hole, subject to structural analyses.



For sliding points, the connection is made in the centre in the oblong holes of the wall brackets.

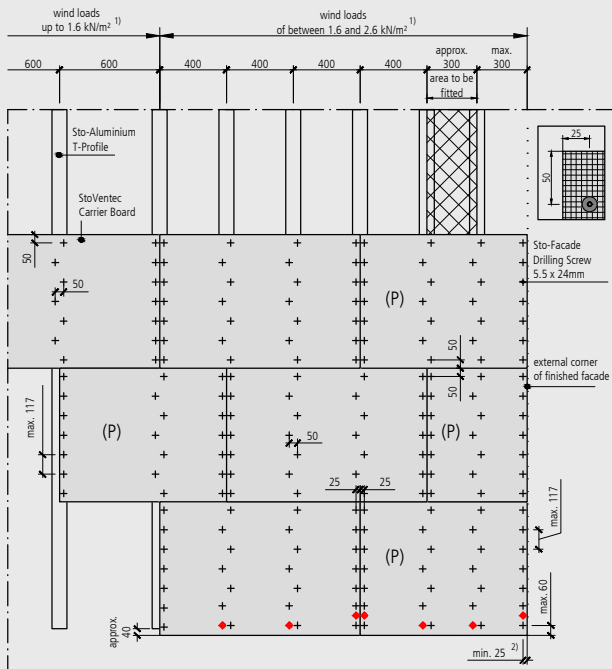


The profile joints between freely projecting carrier profiles or on fixed/sliding or sliding/sliding points are carried out with a joint width of 10 – 15 mm to cater for lengthwise thermally-induced expansion.



# Carrier board

## Fixing diagram - StoVentec Carrier Board 1200 x 800 x 12 mm, wind load of between 1.6 and 2.6 kN/m<sup>2</sup>



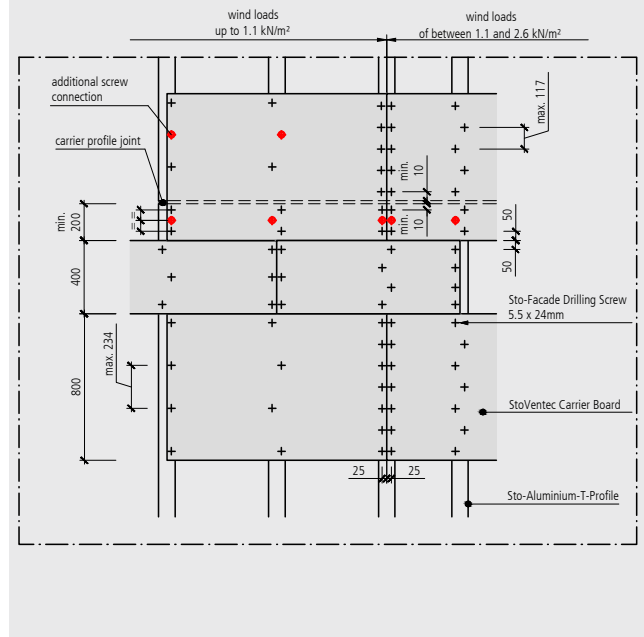
- ⊕ additional screw connection of horizontal system end with vertical edge spacing of screws > 50 mm
- (P) fitting panel

- 1) Wind loads take into account approx. threefold safety factor built into experimentally defined failure loads of StoVentec Carrier Board
- 2) measured from board edge (see external corner details)

### Information

- Always install carrier boards in a bond pattern, without any cross joints (offset vertical board joint by at least one profile axis).
- In case of screw edge spacing of 6 cm additional screw connections are required at the lower and upper system end (depicted in red).

## Offset of carrier profile joint / horizontal board joint



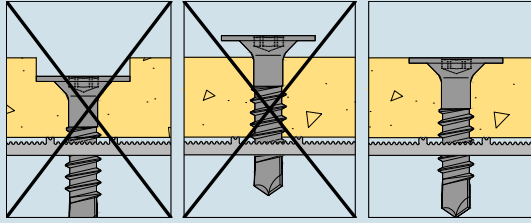
### Information

- A vertical distance of at least 20 cm must be maintained between the horizontal board joint and the joint of the vertical carrier profiles.
- Make sure that the carrier boards are fixed with at least 3 screws to each carrier profile above and below the board joint; additional screws may be necessary (depicted in red).
- If needed, a horizontal board strip at a height of 40 cm must be installed in the cladding.

# Carrier board

## Important note

Turn screws until flush



1 Mark the upper edge of the first board row exactly horizontally on the carrier profile with a chalk line (approx. 76 cm above the lower edge of the carrier profile). Align the first board row on the plumb line, secure against slipping and attach the StoVentec Carrier Board onto the carrier profiles with Sto-Facade Drilling Screws. Always arrange vertical board joints in the middle of the vertical profiles without joint bridges.



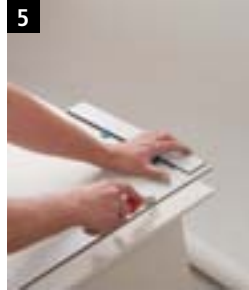
2 Screw the Sto-Facade Drilling Screws through the carrier board into the carrier profile flush with the surface without pre-drilling, maintaining the specified vertical and horizontal screw and screw edge intervals in accordance with the fixing diagram. Start the screw connection in one corner or in the middle of the board to prevent bending. Subsequent boards must be placed tightly against each other without an open joint.



3 Press the board tightly against the carrier profile when inserting the screws. Turn in the screws alternately to the profile web above the intermediate profiles. Each carrier board is immediately screwed in completely to ensure that it stays in place. Each entire or fitted board must be screwed to at least two vertical carrier profiles.



4 The fitting boards are measured and scored as needed.



5 With a cutting blade and metal ruler, cut the fabric on the board front side and score the expanded glass granulate.



6 Break the board at the cut.



7 Then the rear-side mesh must be cut through.



8 For exact board joints, the breaking edge should be reworked with an abrasive grid.

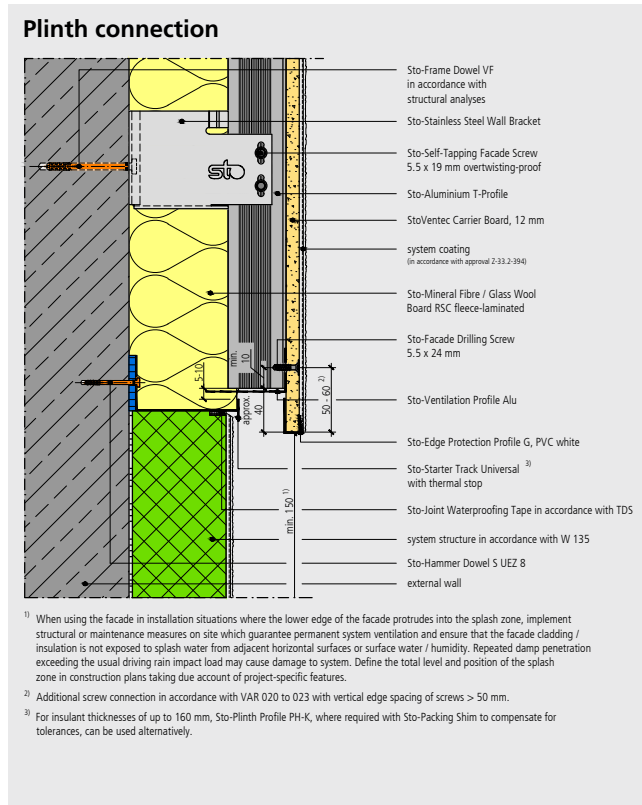
## Tip

Use carbide-tipped blades with circular hand or table saws.



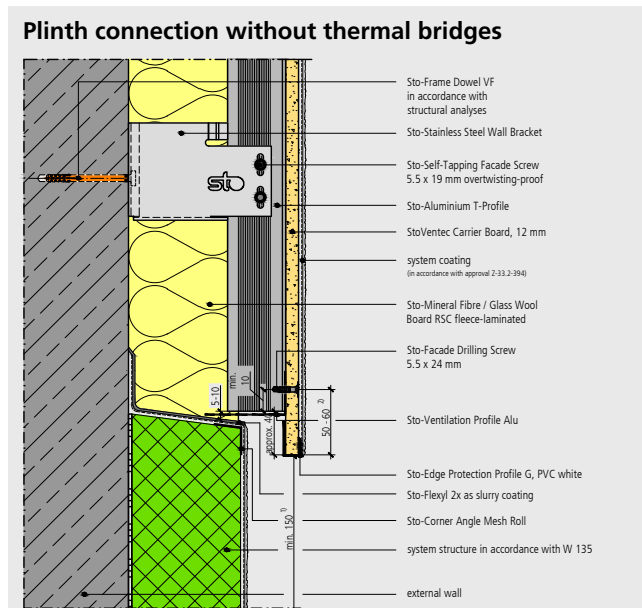
# Plinth

## Plinth formation



### Information

Use the Sto-Starter Track for Curves for curved facade surfaces.



## Installation – starter track



Before starting the installation work, the plinth height must be determined (see also page 8) and marked with a plumb line. The plinth and perimeter insulation is installed according to the Sto specifications and application guidelines.



The connection joint between the starter track and plinth insulation is sealed against driving rain with the Sto-Joint Sealing Tape.



The Sto-Starter Tracks Universal are mounted horizontally according to the insulation thickness and must rest neatly on the bare wall. Sto-Packing Shims are used to compensate for unevenness in the wall. The starter tracks are fixed at intervals of approx. 33 cm with Sto-Hammer Dowels. Avoid twisting the tracks.



The starter tracks should be fixed to the exterior holes, if possible. Attach Sto-Starter Track Connectors to facilitate installation of the starter tracks.



Use the Sto-Starter Track Universal Corner Pieces at the building corners. The corner pieces can be adapted to the angle of the external corner.

# Plinth

## Installation – ventilation and edge protection profile



### Product tip

#### Sto-Ventilation Profile Alu

Profile for securing system ventilation and small animal protection in the plinth area and the lower end of the system (dimensions 30 x 40 mm and 40 x 100 mm)



The ventilation profile is fixed to the vertical carrier profiles using the lower facade drilling screw when the carrier board is fixed with screws. A board projection of approx. 4 cm must be considered here.



### Product tip

#### Sto-Edge Protection Profile G

For vertical and lower horizontal outer edges of the carrier board in the window and plinth area



The edge protection profile is clipped onto the lower edge of the carrier board.



A joint of 5 to 10 mm is formed between the starter track and the Sto-Aluminium T-Profile.



The profile mesh is to overlap at the profile joints. The Sto-Edge Protection Profile G must be mounted at an offset to the board joints.



For the ventilation profile, the insulation at the upper edge of the starter track is scored as needed.



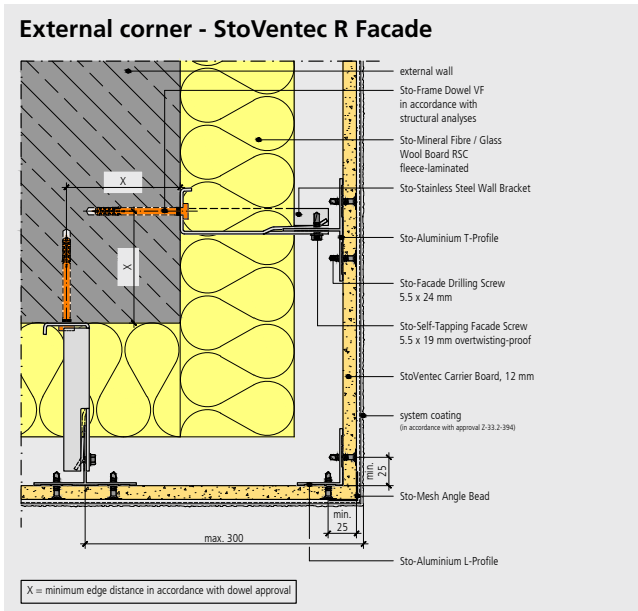
A joint of approx. 1 mm must be formed between the individual profile rods.



The ventilation profile is inserted into the insulation before the boards are mounted and must cover the entire ventilation airspace.

# Corner formations

## External corner – StoVentec R Facade



Then the carrier boards are placed against the second facade surface, oriented and screwed to the T- and L-profiles.



Once all carrier boards in the corner area are installed, their projection on the back side is measured.



To brace the external corner, taking into account a tolerance-related board projection, vertical Sto-Aluminium L-Profiles (rod length maximum 3 m) are installed on the back side of the already installed carrier boards of the first facade surface. The L-profiles are fixed with Sto-Facade Drilling Screws.



The projection is transferred to the front side.



The L-profiles must be oriented plumb across the entire building height.



Score the marked overlap on the front and back side with a cutter blade and break it off.



The L-profiles must be set flush to the aligned T-profiles of the second facade surface.

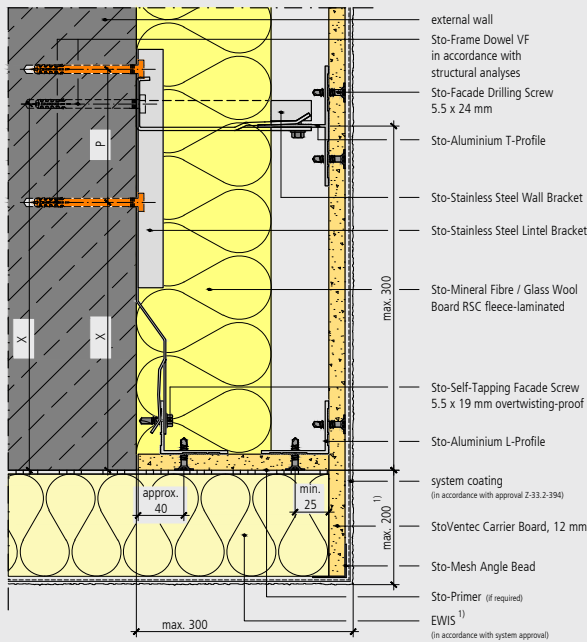


The board edge can be smoothed with an abrasive grid if necessary. Note: If the system structure exceeds 20 cm, Sto-Stainless Steel Corner Brackets or Corner Collar Carrier are generally required at the external corner (see detail drawings VAR 201 or VAR 202).

## Corner formations

### External corner – StoVentec R Facade/EWIS

#### External corner - StoVentec R Facade/EWIS



P = minimum pair spacing in accordance with dowel approval  
 X = minimum edge distance in accordance with dowel approval

<sup>1)</sup> EWIS on the basis of EPS or speed lamella



Before installing the facade insulation, the horizontal Sto-Stainless Steel Lintel Brackets must be dowelled into the building shell. The lintel brackets must be backed with Sto-Thermal Stop Elements, if needed.



The Sto-Aluminium L-Profile (rod length maximum 3 m) oriented toward the building shell must be installed to the lintel brackets plumb and flush using Sto-Facade Self-Tapping Screws. Fixed and sliding points must be formed. Align the L-Profile toward the building shells outer edge taking the carrier board thickness (12 mm) into account.



When insulating the facade, the cavity between the L-profile and bare wall is stuffed with insulation.



Fix the second vertical L-profile (rod length maximum 3 m) aligned with the already installed L-profile to the back of the facade boards with Sto-Facade Drilling Screws. The carrier board of the suspended, ventilated rainscreen cladding facade should project beyond the planned outer edge of the EWIS, taking the building shell tolerances into account.



Cut the StoVentec Carrier Boards as the system's side end closers to the corresponding width and fix them to the L-profiles with facade drilling screws.



Depending on the external wall insulation system, the carrier board of the side system end closer is primed across the entire surface with Sto-Primer. The insulation board of the external wall insulation system is affixed to the bare wall and the end boards as specified by the system supplier.

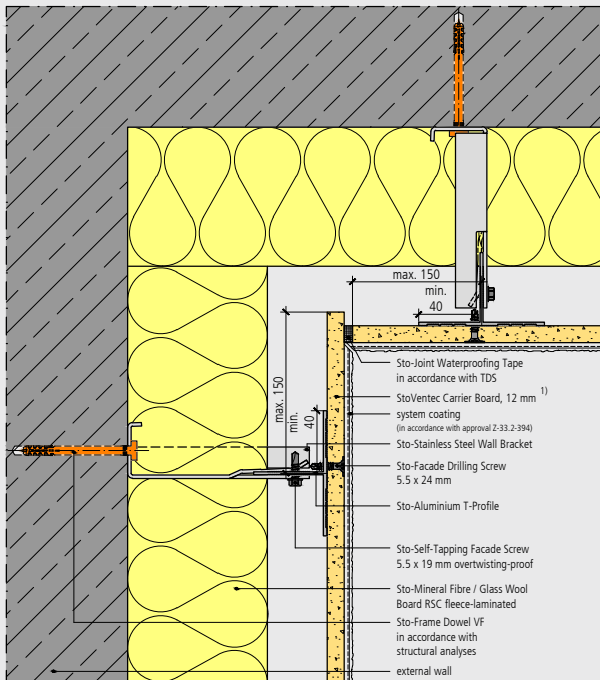


After the EWIS is bonded, the protruding facade panel must be cut off in accordance with the description "External corner – StoVentec R Facade" (see page 19, fig. 7/8) and the board edge smoothed.

## Corner formations

### Internal corner

#### Internal corner of the StoVentec R Facade



1) Screw each board / partial board to at least 2 profile axes



The Sto-Joint Sealing Tape must be pre-affixed in the area of the internal corner.

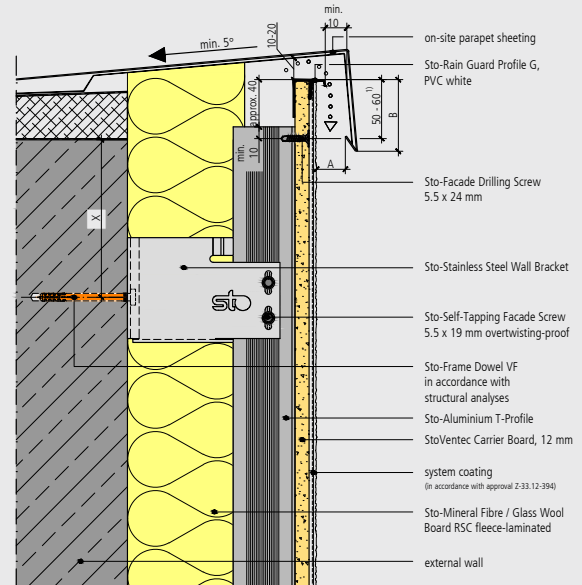


Push the adjacent StoVentec Carrier Board tightly against the first and screw it to the sub-construction with Sto-Facade Drilling Screws. A struck joint is carried out as part of the system coating.

## Roof connection

### Parapet connection

#### Ventilation connection to parapet with open shadow joint



| building height | A          | B           | (in accordance with trade regulations for metalwork in the roofing trade) |
|-----------------|------------|-------------|---|
| < 8 m           | min. 20 mm | min. 50 mm  |   |
| 8-20 m          | min. 30 mm | min. 80 mm  |   |
| > 20 m          | min. 40 mm | min. 100 mm |   |

1) additional screw connection in accordance with VAR 020 to 023 with vertical edge spacing of screws > 50 mm



Once the upper StoVentec Carrier Boards are installed, the Sto-Rain Guard Profile G is clipped onto the upper board edge.



Alternatively, the rain guard profile can already be clipped on so that it projects on one side before installation of the upper carrier board. When the next board is installed, it is pushed into the protruding profile of the board that has already been screwed on.

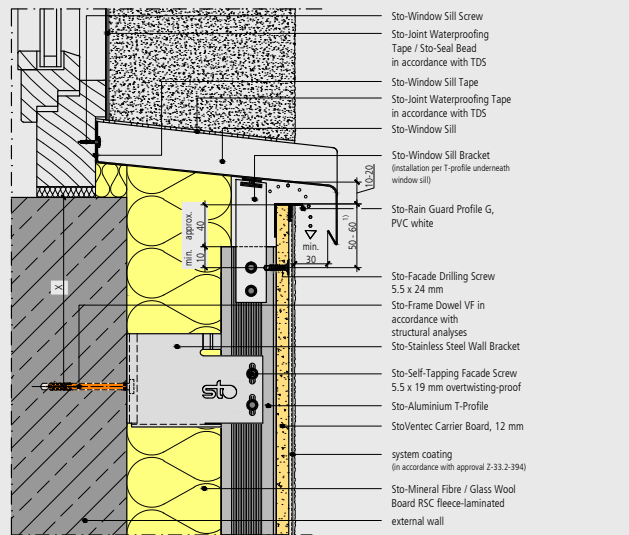
#### Tip

The Sto-Roof Vent Profile G can be used as an alternative to the Sto-Rain Guard Profile G.

# Windows and doors

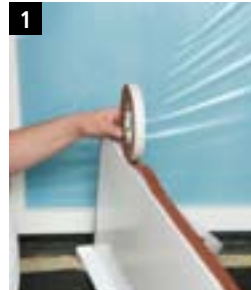
## Window sill

### Ventilation connection to window sill with open shadow joint



X = minimum edge distance in accordance with dowel approval.  
 Recommendation: horizontal ventilation joint on both sides, approx. 5 cm narrower than nominal width of window sill.  
 Wind-proofing, window waterproofing, and fixing in accordance with RAL and/or window manufacturer's specifications.  
 Installation of window sill in accordance with installation principles defined in RAL directive RAL-GZ 695

<sup>1)</sup> additional screw connection in accordance with VAR 020 to 023 with vertical edge spacing of screws > 50 mm



The Sto-Window Sill Tape must be attached to the screw-on stem of the Sto-Window Sill Profi.



Then the window sill is placed onto the frame and screwed in.



The window sills must be affixed below the window sill and screwed to the stem of the vertical carrier profile or anchored to the structure.



The StoVentec Carrier Boards must be scored precisely on the side at the upstand profile, notched and connected with Sto-Joint Sealing Tape. The Sto-Upstand Profile Saw can be used to notch the carrier board. If there is a T profile joint at the level of the window lintel, the facade board must be notched in a way that there is a vertical spacing of at least 20 cm between the horizontal board joint and the T profile joint.



Clip the Sto-Rain Guard Profile G onto the upper edge of the carrier board under the window sill as the upper system end (see parapet connection).

### Product tip

#### Sto-Window Sill Profi

- Absolutely watertight
- Weather-resistant
- Corrosion-resistant

### Information

- When determining the window sill projection, the building tolerances must be considered.
- The ventilation gap on both sides can be made approx. 5 cm narrower than the width of the window sill.
- Additional window sill anchors and expansion profiles must be installed according to the specification of the system supplier.

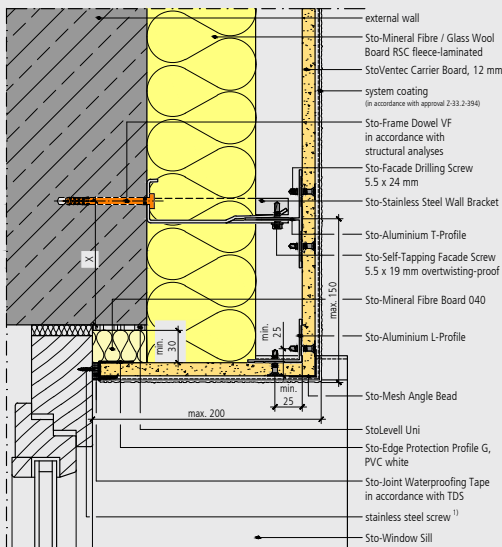
### Tip

The Sto-Roof Vent Profile G can be used as an alternative to the Sto-Rain Guard Profile G.

# Windows and doors

## Window reveal

### Reveal formation - StoVentec R Facade with mineral wool insulation and bare reveal



X = minimum edge distance in accordance with dowel approval  
 Apply the reveal panel to the upstand profile using Sto-Joint Waterproofing Tape in accordance with TDS.  
 wind-proofing, window waterproofing, and fixing in accordance with RAL and/or window manufacturer's specifications

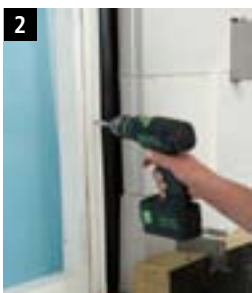
<sup>1)</sup> Verify admissibility of screw connection on window frame prior to installation.

### Information

For correct waterproofing and installation of the windows and doors, the specifications according to RAL must be observed.



The Sto-Joint Sealing Tape must be affixed to the back side of the Sto-Edge Protection Profile G.



After the desired visible window frame width is defined, the edge protection profile is screwed perpendicularly to the window frame.  
 Note: Obtain the building owner's approval before screwing the edge protection profile to the window frame.



The reveal insulation is supplemented and affixed to the load-bearing substrate as needed.



The Sto-Joint Sealing Tape must be attached to the window sill edge profile.



Align the vertical Sto-Aluminium L-Profile plumb and flush as a corner angle to the edge protection profile and fixed to the facade board on the back side with Sto-Facade Drilling Screws.

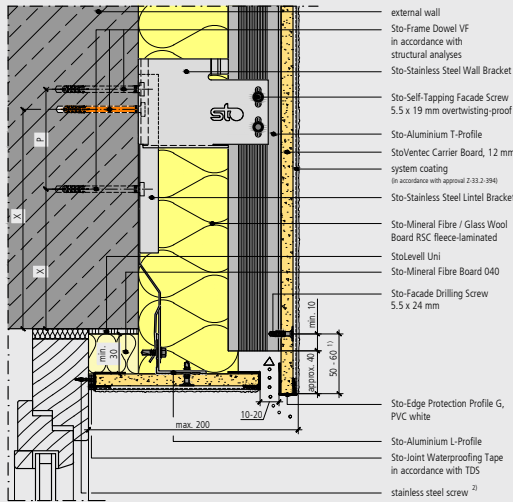


The StoVentec Carrier Board must be cut to size as a reveal panel, fitted and pushed into the edge protection profile. After that, the reveal panel is fixed to the L-profile with Sto-Facade Drilling Screws. The protruding facade panel must be cut off in accordance with the description "External corner, StoVentec R Facade" (see page 19, fig. 7/8) and the board edge smoothed.

# Windows and doors

## Window lintel

### Lintel formation, StoVentec R Facade with mineral wool board and bare lintel



P = minimum pair spacing in accordance with dowel approval  
 X = minimum edge distance in accordance with dowel approval  
 Wind-proofing, window waterproofing, and fixing in accordance with RAL and/or window manufacturer's specifications  
<sup>1)</sup> additional screw connection in accordance with VAR 020 to 023 with vertical edge spacing of screws > 50 mm  
<sup>2)</sup> Verify admissibility of screw connection on window frame prior to installation.

### Information

The lintel sub-construction must be attached before installation of the insulation. When measuring the lintel sub-construction, the thickness of the lintel board must be taken into account.



The Sto-Joint Sealing Tape must be affixed to the back side of the Sto-Edge Protection Profile G.



After the desired visible window frame width is defined, the edge protection profile is screwed horizontally to the window frame.  
 Note: Obtain the building owner's approval before screwing the edge protection profile to the window frame.



Before installation of the facade insulation, the vertical Sto-Stainless Steel Lintel Brackets are anchored to the structure. The lintel brackets are backed with Sto-Thermal Stop elements if needed.



The Sto-Aluminium L-Profile is oriented horizontally to the edge protection profile, taking the carrier board thickness (12 mm) into account.



The L-profile (rod length maximum 3 m) must be attached to the lintel brackets flush with the edge protection profile using Sto-Facade Self-Tapping Screws. Fixed and sliding points must be formed.



The lintel insulation is supplemented and affixed to the load-bearing substrate, as needed.



## Windows and doors



The StoVentec Carrier Board must be cut to size as a lintel board, fitted and pushed into the edge protection profile. When cutting the lintel board, the ventilation airspace which ensures system ventilation must be observed.

If there is a T profile joint at the level of the window lintel, the facade board must be notched in a way that there is a vertical spacing of at least 20 cm between the horizontal board joint and the T profile joint.



A Sto-Edge Protection Profile G is clipped onto the front edge of the lintel board to create a ventilation joint in the window lintel as an open shadow joint.



The width of the ventilation joint should be selected between 10 and 20 mm. Alternatively, instead of the edge protection profile, the Sto-Roof Vent Profile G can be used.

After that, the lintel board is fixed to the L-profile with Sto-Facade Drilling Screws.



After installation of the the lintel board, the back-side projection of the facade board is measured, transferred to the front side, scored with the cutter blade and broken off. The board edge must be smoothed as needed.

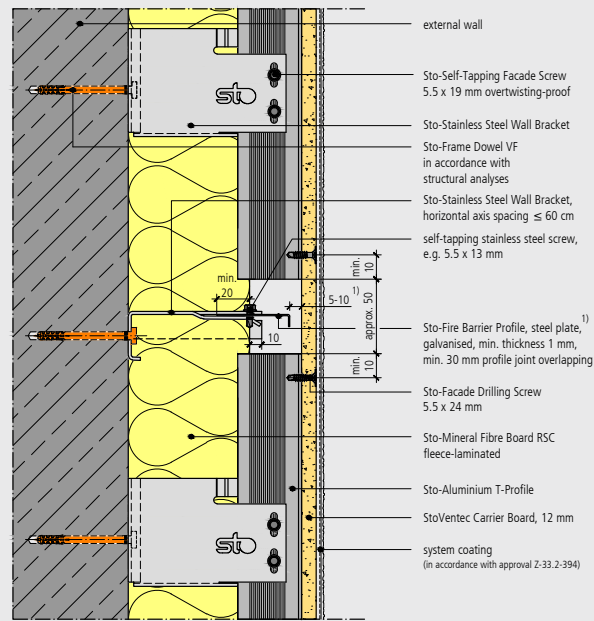


An edge protection profile is installed as the lower end of the facade board.

# Fire barriers

## Horizontal fire barrier

### Horizontal fire barrier in the area of the joints of the vertical carrier profiles<sup>1)</sup>



<sup>1)</sup> Free flow cross-section in the area of the fire barrier 50-100 cm<sup>2</sup>/m, due compliance with prevailing national specifications.

<sup>1)</sup> For insulation materials with a melting point below 1000°C, the fire barrier must be formed between the bare wall and the facade cladding.

### Information

To install fire barriers in ventilated facade constructions, the following building code specifications in the respective current version and edition must be considered:

- National standards

The specific design and location of the fire barriers must be coordinated with the fire protection expert responsible for the building project.



When measuring the vertical sub-construction, the location of the horizontal fire barriers must be marked in the area of the profile joints. Before installing the thermal insulation, horizontally oriented stainless steel wall brackets must be placed at horizontal intervals of no more than 60 cm for later mounting of the horizontal fire barrier, as described under "Installation of the wall brackets".



Once the facade insulation is installed, the insulant is scored along the fire barrier profile.



The fire barrier profiles made of galvanised steel sheet (thickness at least 1 mm) are pushed into the wall brackets. Have the profile joints overlap by at least 3 cm. The fire barrier profile can be installed with the vertical leg upward or downward, depending on the installation situation.



The fire barrier profile must be embedded at least 2 to 3 cm into the mineral wool insulation (melting point above 1000°C).



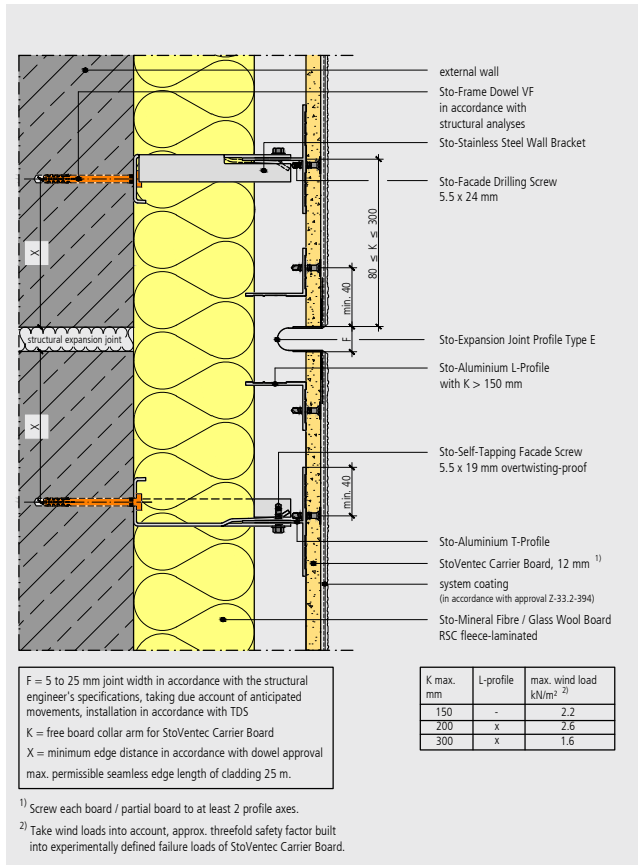
The fire barrier profile is oriented to the back side of the StoVentec Carrier Board and screwed onto the wall brackets without bending.



The fire barrier profile must be oriented so that the ventilation airspace in the area of the fire barrier is reduced to 5 to 10 mm, in compliance with country-specific regulations.

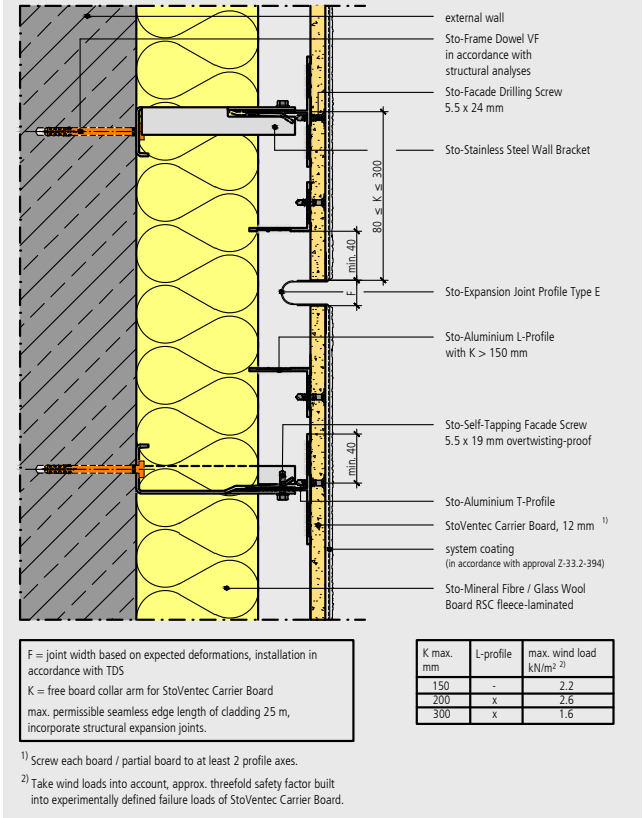
# System joints

## Structural expansion joints



## Field demarcation joints

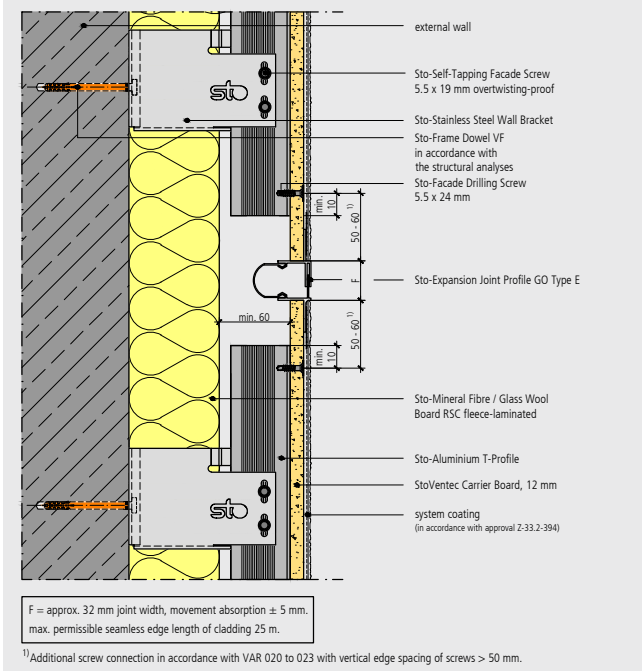
### Vertical field demarcation joint



### Structural expansion or field demarcation joints

- The maximum permitted seamless vertical and horizontal edge length is 25 m on solid anchorage substrates with render-coated systems. For surface applications of Sto-Glass Mosaic, Sto-Natural Stone Tiles, StoSilt Cera and ceramic or other anchorage substrates (e.g. steel or wood), the permitted seamless edge length must be cleared with the system supplier.
- Structural expansion joints must be incorporated into the system. The joint width must be adapted to the expected deformations.
- In the area of field demarcation and structural expansion joints, the entire system, including the sub-construction, must be completely separated.
- For vertical structural expansion and field demarcation joints, a profile axis must be installed on both sides in the sub-construction.

### Horizontal field demarcation joint



# Reinforcement

## Details

### Information

In case of a mineral system coating, a priming coat with Sto-Primer is applied to the carrier boards across the entire surface as well as underneath the edge protection profiles before the diagonal reinforcement and the mesh angle beads are installed.

### Diagonal reinforcement connected to openings (windows, doors, niches)

In corners of recesses, openings and niches, a diagonal reinforcement must be carried out with the Sto-Reinforcing Patch before the full-surface system reinforcement. In case of an organic coating, the diagonal reinforcement is not required if the carrier boards are notched at least 20 cm in the connection area.



#### Lintel and reveal area

Depending on the details, the mesh of the Sto-Seal Bead, Sto-Edge Protection Profile G or the Sto-Glass Fibre Mesh, cut to joint depth, is embedded into the base coat at reveals (windows, doors etc.).

#### Reinforcement of reveal/lintel/internal corner

The internal corners between the reveal and lintel are reinforced with Sto-Glass Fibre Mesh, with the reinforcing mesh overlapping by at least 10 cm.



#### Reveal and external corners of the building

The corners are formed with the Sto-Mesh Angle Bead.

Set the mesh angle bead and embed it full-surface into the base coat.



#### Edge protection profile reinforcement

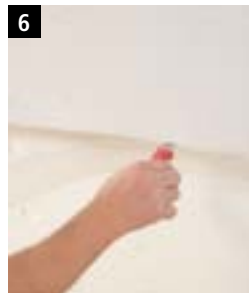
Apply the base coat to the carrier board underneath the mesh of the Sto-Edge Protection Profile G.



Embed the mesh of the edge protection profile into the base coat and have it overlap in the area of the profile joints.



Embed the surface mesh into the base coat and have it protrude over the lower edge of the edge protection profile.



The projecting surface mesh is cut off with the cutter blade at the lower edge of the edge protection profile.

## Reinforcement

### Full-surface reinforcement



#### Base coat

Apply a base coat of StoArmat Classic / StoArmat Classic plus / StoLevell Classic or Sto-RFP / StoLevell Uni manually or by machine. Finished layer thicknesses should be 1.5 – 5 mm, depending on the base coat.

The minimum application temperature of +5°C must be observed in accordance with the Sto Technical Data Sheets.



#### Embedded mesh

Embed the reinforcing mesh into the moist base coat. The mesh strips must overlap by 10 cm.



Cut the reinforcing mesh along the corner edge with a sharp cutter at an angle of 45°. Cut the reinforcing mesh off cleanly and accurately at the reveal and external and internal corners of the building.

Before application of the base coat, check all edges for mesh projections and cut them off if necessary.



Then apply the base coat so that it fully covers the surface.

#### Information

If a mineral system coating is used, a full-surface priming coat with Sto-Primer is applied to the carrier boards over the entire facade surface before reinforcement.

## Top coats

### Possible surfaces

All cement-free, ready-to-use or mineral finishing renders from Sto in accordance with European or national approval are suitable for use on StoVentec R as it is a coordinated system. For mineral finishing renders, an intermediate coating is recommended. Mineral finishing renders must be coated twice with a levelling coat. The minimum application temperature of +5°C must be observed in accordance with the Sto Technical Data Sheets. For organic system coatings, no limitation to the lightness value is required. Mineral finishing renders with lightness values below 15% require a project-related release from Sto.

Alternative decorative surfaces, such as glass mosaic, natural stone panels or ceramic cladding, can be used in accordance with national specifications. They lend facades an individual appearance.



Stolit Effect with Sto-Terrazzo Effect



Stolit Milano



StoVentec M



Stolit K 6.0 trowelled appearance



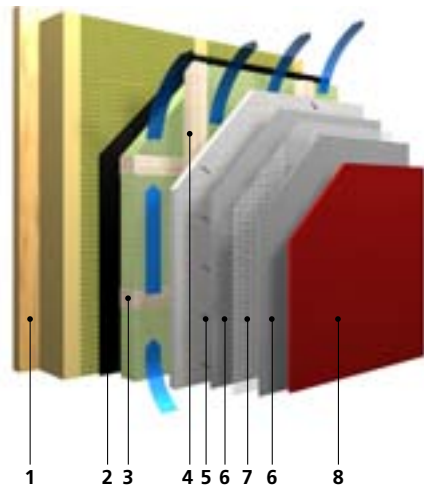
Effect coating: Stolit K 3.0 with silicon carbide F14



Effect coating: Stolit Effect with Sto-Glass Pearls

## System structure

### In timber frame construction, normal combustibility



#### 1 Wall structure

External walls in timber frame construction with or without external boarding.

#### 2 Wind protection sheeting

A diffusion-open wind protection sheeting must be attached to the insulated timber stud (alternatively, to the timber supporting lathing).

#### 3 Horizontal timber supporting lathing with insulation between the boards: Sto-Mineral Fibre Board 033 or 035 RSC Fix fleece-laminated

Fleece-laminated insulation board made of mineral wool in accordance with DIN EN 13162, non-combustible A1 or A2 -s1, d0 in accordance with DIN EN 13501-1, area of application WAB (exterior wall insulation behind facing) in accordance with national standards. Thickness variable: depending on insulation requirements.

Alternative: Sto-Glass Wool Board 032 RSC Fix

#### 4 Timber secondary supporting frame

At least 60 x 30 mm if screwed  
at least 80 x 30 mm if stapled

#### 5 Carrier board: StoVentec Carrier Board

Carrier board made of expanded glass granulate, mesh-reinforced on both sides, 12 mm thick, format 1.20 x 0.80 m and 2.40 x 1.20 m; low weight approx. 6 kg/m<sup>2</sup>, frost-resistant. Fixing with stainless steel Sto-Facade Screws or approved stainless steel staples.

#### 6 Base coat: StoArmat Classic / StoArmat Classic plus

Organic, cement-free, ready-to-use base coat, suitable for machine application.

Alternative: Sto-RFP, StoLevell Classic

#### 7 Reinforcing mesh: Sto-Glass Fibre Mesh F

#### 8 Top coat finishing render:

StoLotusan K/MP, Stolit K/R/MP, StoSilco K/R/MP

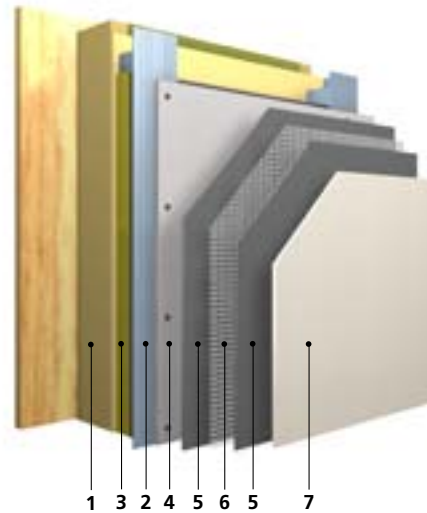
Organic and silicone-resin-bonded, cement-free, ready-to-use finishing renders. Highly weather-resistant, highly elastic, mechanically resistant. Film-conserved for improved resistance to microorganisms (algae, fungi). Tintable in accordance with the StoColor System.

#### Alternative finishes\*): ceramic coverings, glass mosaic, natural stone panels

Frost-resistant, and can be affixed directly on site, for various design possibilities.

\*) only in combination with a priming paint coat of **Sto-Primer** and **StoLevell Uni** mineral base coat

### In timber frame construction, limited combustibility



#### 1 Wall structure

External walls in timber frame construction with full-surface, non-combustible boarding.

#### 2 Sub-construction

Sub-construction consisting of stainless steel wall brackets and aluminium profiles to fix the render carrier boards. Anchoring in the timber stud through means permitted under the building code.

#### 3 Insulation: Sto-Mineral Fibre Board 033 or 035 RSC Fix fleece-laminated

Fleece-laminated insulation board made of mineral wool in accordance with DIN EN 13162, non-combustible A1 or A2 -s1, d0 in accordance with DIN EN 13501-1, application area WAB (exterior wall insulation behind facing) in accordance with national standards. Thickness variable: depending on insulation requirements.

Alternative: Sto-Glass Wool Board 032 RSC Fix

#### 4 Carrier board: StoVentec Carrier Board

Carrier board made of expanded glass granulate, mesh-reinforced on both sides, 12 mm thick, format 1.20 x 0.80 m and 2.40 x 1.20 m; low weight approx. 6 kg/m<sup>2</sup>, in the StoVentec R system limited combustibility B 1 in accordance with DIN 4102, frost-resistant. Fixing with stainless steel Sto-Facade Screws or approved stainless steel staples.

#### 5 Base coat: StoArmat Classic / StoArmat Classic plus

Organic, cement-free, ready-to-use base coat, suitable for machine application.

Alternative: Sto-RFP, StoLevell Classic

#### 6 Reinforcing mesh: Sto-Glass Fibre Mesh F

#### 7 Top coat finishing render:

StoLotusan K/MP, Stolit K/R/MP, StoSilco K/R/MP

Organic and silicone resin-bonded, cement-free, ready-to-use finishing renders. Highly weather-resistant, highly elastic, mechanically resistant. Film-conserved to improve resistance against microorganisms (algae, fungi). Tintable in accordance with the StoColor System.

#### Alternative finishes\*): ceramic coverings, glass mosaic, natural stone panels

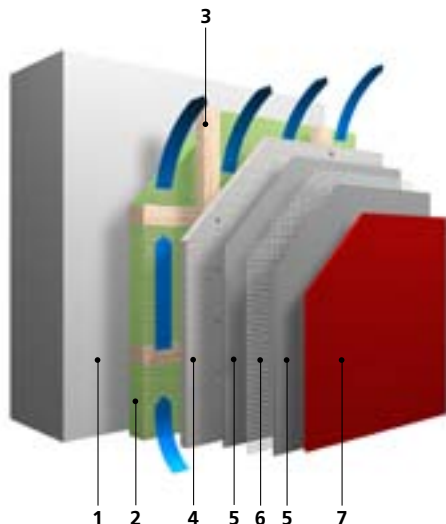
Frost-resistant, and can be affixed directly on site, for various design possibilities.

\*) only in combination with **Sto-Primer** priming coat and **StoLevell Uni** mineral base coat

Note: When used on full-surface, non-combustible substrates in timber frame construction, the StoVentec R system is of limited combustibility.

## System structure

### Solid walls with timber sub-construction, limited combustibility



#### 1 Solid wall

#### 2 Horizontal wood supporting lathing with insulation between the boards: Sto-Mineral Fibre Board 033 or 035 RSC Fix fleece-laminated

Fleece-laminated insulation board made of in accordance with DIN EN 13162, non-combustible A1 or A2 -s1, d0 in accordance with DIN EN 13501-1, area of application WAB (exterior wall insulation behind facing) in accordance with national standards. Variable thickness: depending on insulation requirements.

Alternative: Sto-Glass Wool Board 032 RSC Fix

#### 3 Timber secondary supporting frame

At least 80 x 30 mm if screwed  
at least 60 x 30 mm if stapled

#### 4 Carrier board: StoVentec Carrier Board

Carrier board made of expanded glass granulate, mesh-reinforced on both sides, 12 mm thick, format 1.20 x 0.80 m and 2.40 x 1.20 m; low weight of approx. 6 kg/m<sup>2</sup>, in the StoVentec R system of limited combustibility, frost-resistant. Fixed with stainless steel Sto-Facade Screws or approved stainless steel staples.

#### 5 Base coat: StoArmat Classic / StoArmat Classic plus

Organic, cement-free, ready-to-use base coat, suitable for machine application.

Alternative: Sto-RFP, StoLevell Classic

#### 6 Reinforcing mesh: Sto-Glass Fibre Mesh F

#### 7 Top coat:

##### StoLotusan K/MP, Stolit K/R/MP, StoSilco K/R/MP

Organic and silicone-resin-bonded, cement-free, ready-to-use finishing renders. Highly weather-resistant, highly elastic, mechanically resistant. Film-conserved for improved resistance to microorganisms (algae, fungi). Tintable in accordance with the StoColor System.

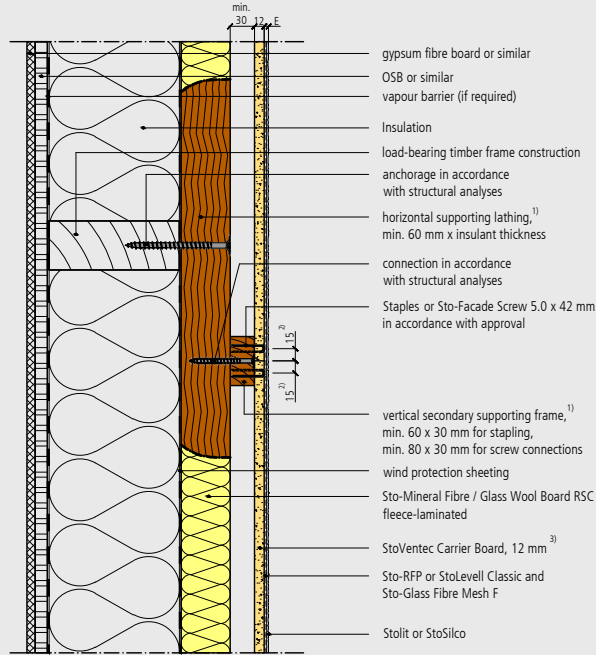
#### Alternative finishes\*): ceramic claddings, glass mosaic, natural stone

Frost-resistant, and can be affixed directly on site, for varied design possibilities.

\*) only in combination with a priming coat of **Sto-Primer** and **StoLevell Uni** mineral base coat

# System sections

## Horizontal projection with board joint



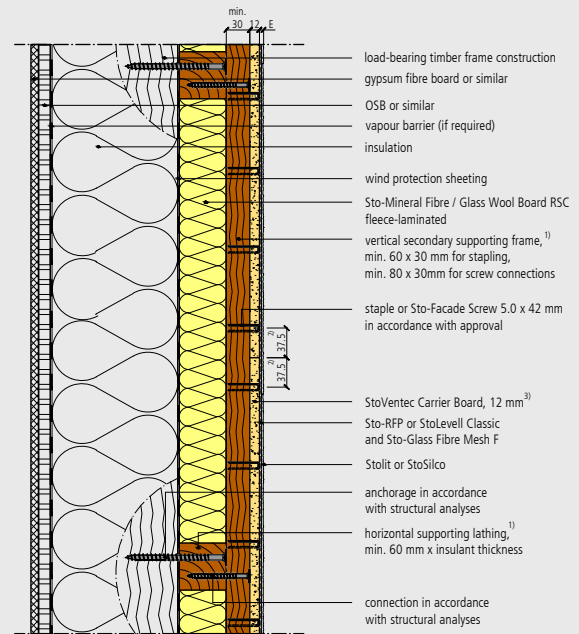
E = thickness of system coating depending on render system

<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5

<sup>2)</sup> with 20mm screw

<sup>3)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board

## Vertical projection with board joint



E = thickness of system coating depending on render system

<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5

<sup>2)</sup> with 40 - 60mm screw

<sup>3)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board

- If the substrate is load-bearing and able to bear the load of the StoVentec R Facade, a suspended, ventilated insulation system can be properly installed based on a project-related wind load calculation as well as a project-related structural analysis.
- The minimum application temperature for the system coating (except for Sto-QS Products) is +5°C.
- Doors, windows, roller shutter boxes, parapets, horizontal surface caps and window sills must be installed before the facade cladding. The planned system structure must be taken into account when determining an adequate projection of parapets and horizontal surface caps as well as window sills.
- As part of his working drawings and before installation of the StoVentec R Facade, the applicator must specify and coordinate, as needed, the application of the sub-construction and the required formation of details and system connections, based on the system approval and project-based structural analysis and taking into account project-specific conditions.

### Information

The wind protection sheeting can be applied both onto and also underneath the horizontal supporting lathing.

### Information

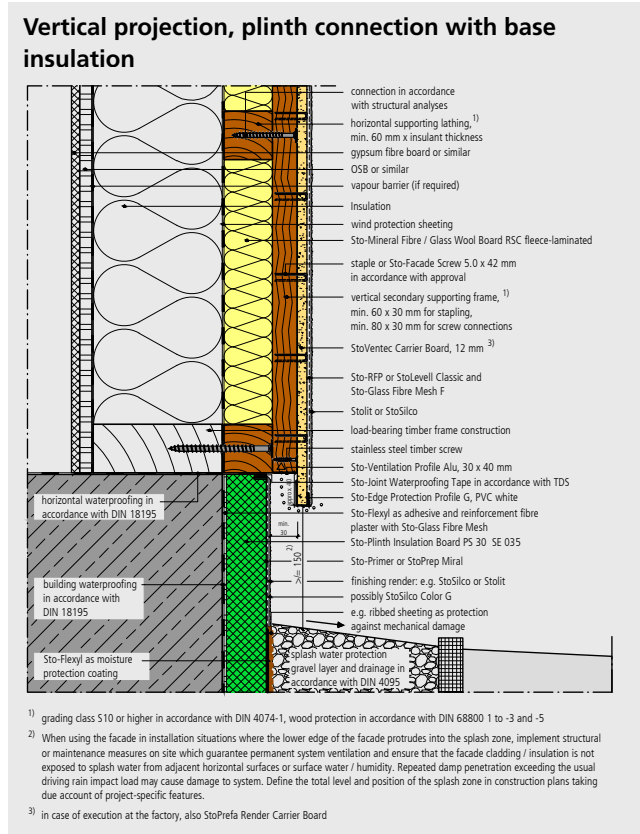
Additional system and detail drawings are available at [www.sto.de](http://www.sto.de).



## Sub-construction / insulation

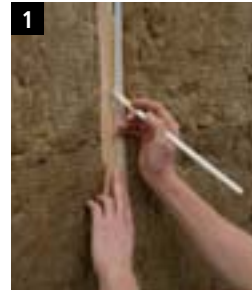
### Measuring the facade

1) Base point, supporting lathing / insulation, wind protection sheeting

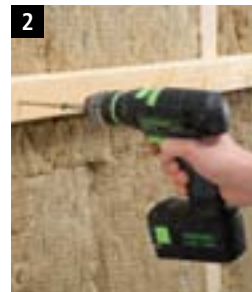


The base point of the facade above the upper surface or the roof surfaces is determined in such a way that

- system ventilation is permanently ensured and
- the facade cladding is not constantly soaked by spray water from neighbouring horizontal surfaces.



Measure the horizontal supporting lathing.



Screw the horizontal supporting lathing according to the specifications of the structural analysis. The spacings between the horizontal lathings must be transferred to the Sto-Mineral Wool or Sto-Glass Wool Board RSC. **The secondary supporting frame must correspond at least to grading class S10 in accordance with DIN 4074-1, with wood protection in accordance with DIN 68800 -1 to -3 and -5.**



Place Sto-Mineral Wool or Sto-Glass Wool Board RSC fleece-laminated between the supporting lathing and exert light pressure. The insulation boards are protected from sliding down and falling out through the vertical secondary supporting frame. Additional dowelling is normally not required. The insulant must be installed without gaps. Make sure that it firmly rests against the building wall.



The wind protection sheeting can be applied both onto and also underneath the horizontal supporting lathing.

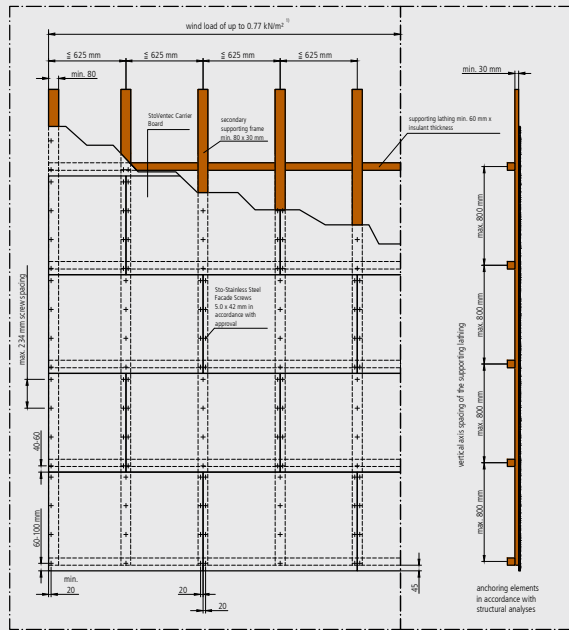
#### Tip

Due to the simpler connections in the window area, we recommend installing the wind protection sheeting underneath the horizontal supporting lathing.

## Sub-construction / insulation

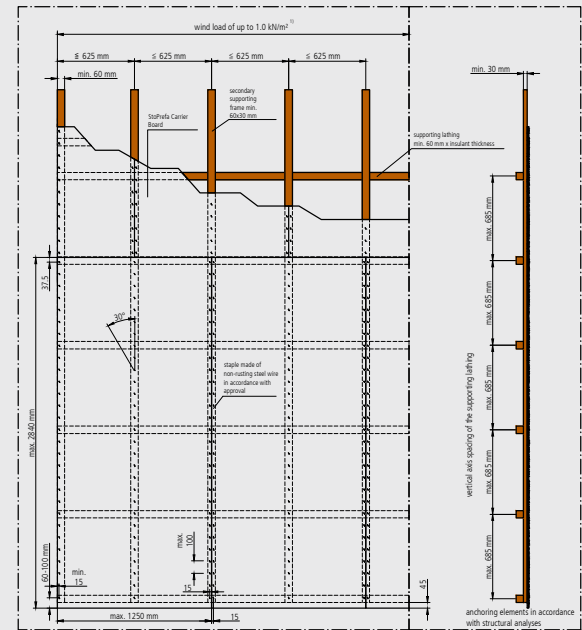
2) Arranging the secondary supporting frame fixing diagram for screws

**Measuring the vertical secondary supporting frame, wind loads of up to 1.0 kN/m<sup>2</sup>, axis spacing, max. 625 mm**

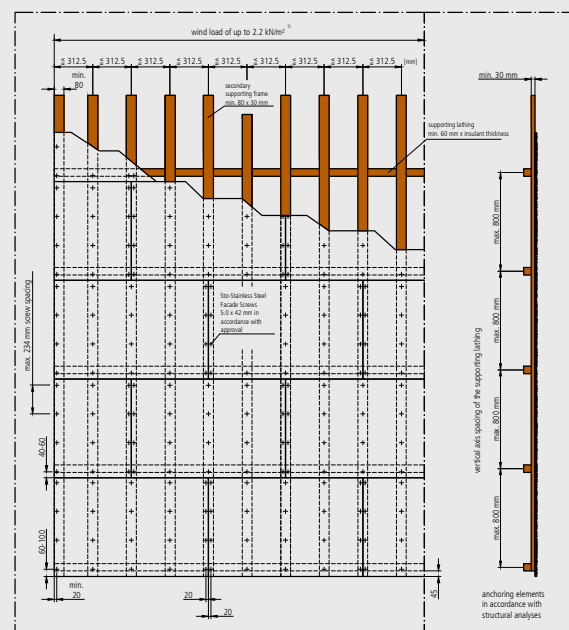


2) Arranging the secondary supporting frame fixing diagram for staples

**Measuring the vertical secondary supporting frame, wind loads of up to 0.77 kN/m<sup>2</sup>, axis spacing, max. 625 mm**



**Measuring the vertical secondary supporting frame, wind loads of up to 2.2 kN/m<sup>2</sup>, axis spacing max. 312 mm**



### Notes

- Always install the carrier boards in a bond pattern, without any cross joints (offset vertical board joint by at least one secondary supporting frame).
- The wind loads applicable for the facade area must be determined according to national requirements.

## Sub-construction / insulation

### Fixing overview

| Fixing  | Maximum wind load in the facade area | Horizontal axis spacing of the vertical carrier profiles |
|---------|--------------------------------------|--|
| Staples | 1.00 kN/m <sup>2</sup>               | ≤ 625 mm   |
| Screws  | 0.77 kN/m <sup>2</sup>               | ≤ 625 mm   |
| Screws  | 2.20 kN/m <sup>2</sup>               | ≤ 312.5 mm   |

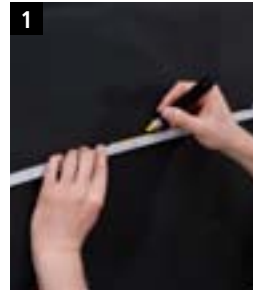
The vertical axes of the secondary supporting frame must be marked according to the wind load calculation and project-based structural analysis at a regular interval of 30 and 60 cm, respectively, and at 62.5 cm for staple fixing.

- The location of the secondary supporting frames should be marked, starting from the external corner.
- Fitting areas must be considered as needed.
- Determine the minimum width for facade areas with increased wind loads.
- Observe the arrangement of field demarcation and structural expansion joints.
- Additional secondary supporting frames must be installed if needed at window and other system connections as well as internal corners.

#### Note

The wind loads applicable to the facade area must be determined according to national requirements.

### 3) Installation – secondary supporting frame



Measure the vertical secondary supporting frame. If the StoVentec Carrier Board is stapled, the secondary supporting frame must be built at least 60 x 30 mm, if screwed at least 80 x 30 mm.




Install the vertical secondary supporting frame in accordance with the specifications of the structural analysis. The secondary supporting frame must correspond at least to grading class S10 in accordance with DIN 4074-1, with wood protection in accordance with DIN 68800 -1 to -3 and -5.



Additional secondary supporting frames must be installed at window and other system connections as well as internal corners if needed.

## Carrier board

### Carrier board fixing




**Product tip**

**StoVentec Carrier Board**

- Large board format: 1200 x 2400 x 12 mm
- Small board format: 800 x 1200 x 12 mm

**StoPrefa Carrier Board**

- Large board format: 1250 x 2600 x 12 mm



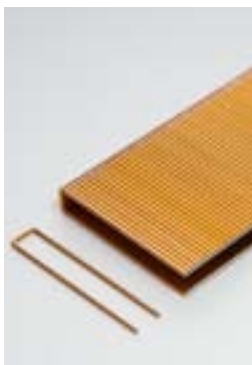
**Product tip**

**Sto-Facade Screw, stainless steel for timber sub-construction (5.0 x 42 mm)**

- Screw requirements\*) for board format 800 x 1200 x 12 mm wind loads of up to 0.77 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 60 cm: min. 13 screws/m<sup>2</sup> wind loads of up to 2.20 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 30 cm: min. 21 screws/m<sup>2</sup>

for board format 1200 x 2400 x 12 mm wind loads of up to 0.77 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 60 cm: min. 11 screws/m<sup>2</sup> wind loads of up to 2.20 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 30 cm: min. 19 screws/m<sup>2</sup>

\*) based on the structure, the number of screws per m<sup>2</sup> can increase, e.g. due to additionally required secondary supporting frame as well as details.



**Product tip**

**Staples**

- Staples in accordance with DIN 1052 or with the national technical approval as connectors in timber frame construction can be used to fix the StoVentec Carrier Board or the StoPrefa Render Carrier Board. The staples must be made of stainless steel wire (wire diameter:  $1.50 \text{ mm} \leq d_n \leq 1.90 \text{ mm}$ ) and have a crown width  $b_n = 11$  or 12 mm, a shank length  $L_s \geq 40 \text{ mm}$ , and a length of the resin coating  $L_H \geq 23 \text{ mm}$ . The suitability of the standardised staples must be proven in accordance with DIN 1052.

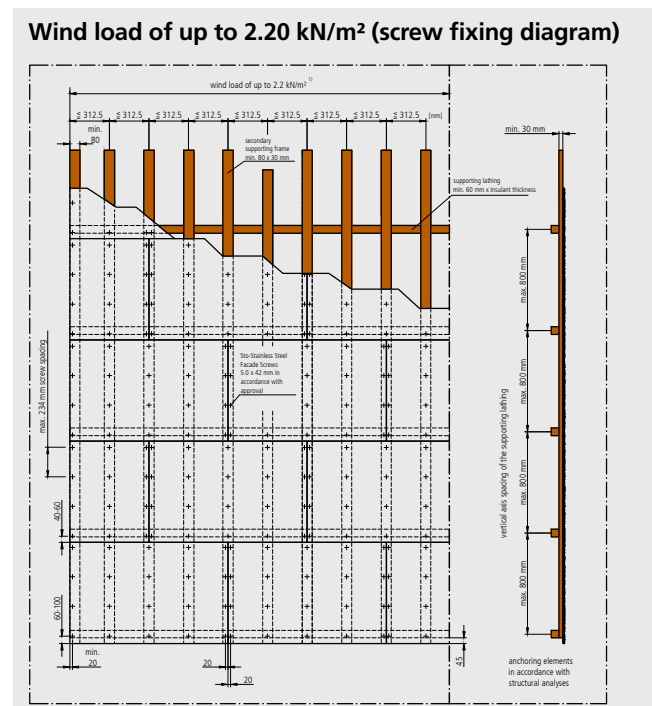
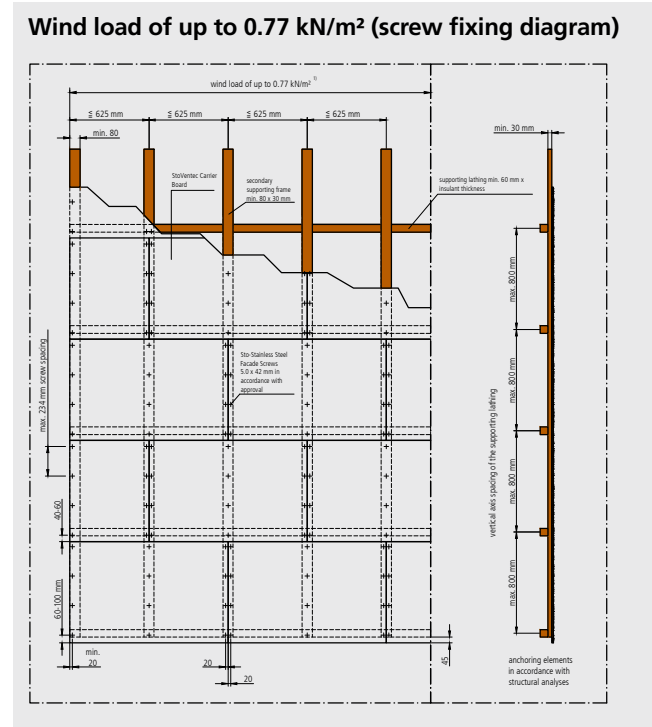
- Staple requirements\*) for board format 800 x 1200 x 12 mm; wind loads of up to 1.00 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 60 cm: min. 29 staples/m<sup>2</sup>

for board format 1200 x 2400 x 12 mm; wind loads of up to 1.00 kN/m<sup>2</sup>, axis spacing of secondary supporting frame 60 cm: min. 23 staples/m<sup>2</sup>

for board format 1250 x 2600 x 12 mm; (on edge) wind loads of up to 1.00 N/m<sup>2</sup>, axis spacing of secondary supporting frame 62.5 cm: min. 25 staples/m<sup>2</sup>

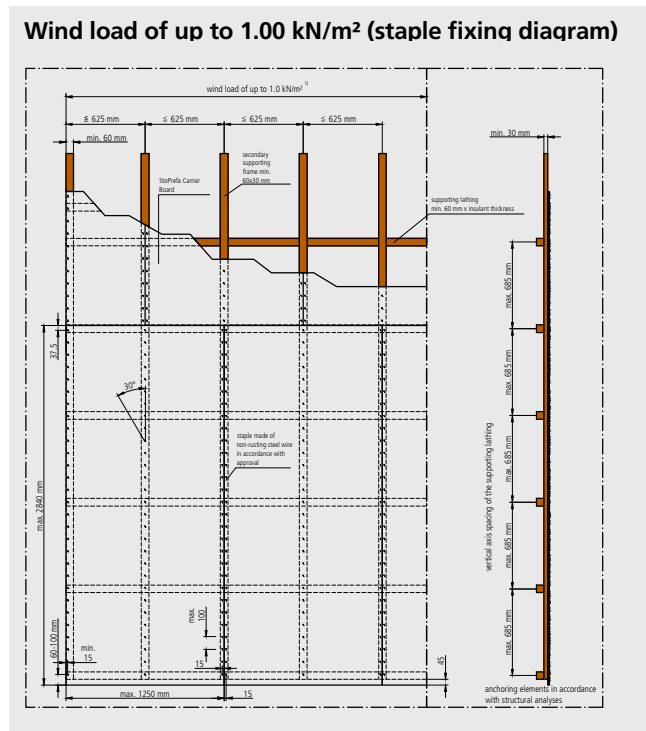
\*) based on the structure, the number of staples per m<sup>2</sup> can increase, e.g. due to additionally required secondary supporting frame as well as details.

### Carrier boards, screwed



# Carrier board

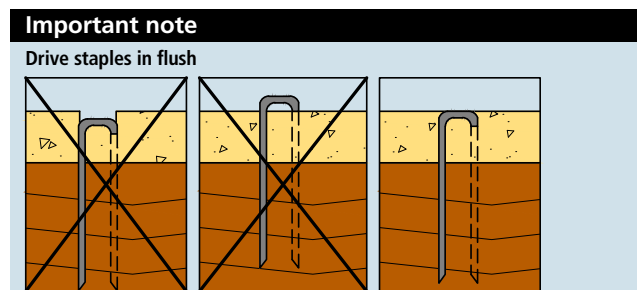
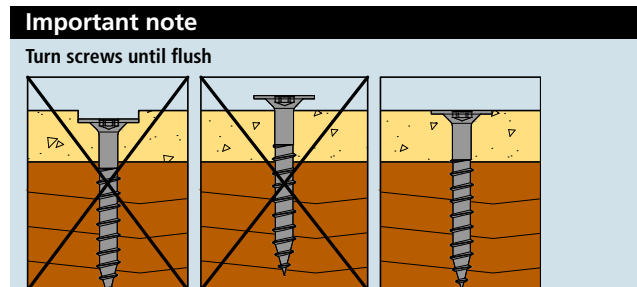
## Carrier boards, stapled



### Notes

- Always install the carrier boards in a bond pattern, without any cross joints (offset vertical board joint by at least one secondary supporting frame).
- The wind loads applicable for the facade area must be determined according to national requirements.

## Installation – carrier boards



Mark the upper edge of the first board row exactly on the secondary supporting frame. In doing so, plan for an approx. 4 cm board projection in the plinth area (see detail page 38). Align the first board row on a horizontal chalk line, secure it from shifting and screw or staple it to the secondary supporting frame. Always arrange vertical board joints in the middle of the secondary supporting frame without joint bridges.



Without pre-drilling, screw the screws, or drive the staples through the carrier board into the secondary supporting frame until they are flush with the surface while maintaining the specified screw intervals. Begin with a screw connection in one corner or in the middle of the board to prevent bending. Maintain vertical and horizontal distances from edges according to the respective fixing diagram. Abut the following boards without joints. Press the board tightly against the carrier profile while fixing it.



Measure and score the fitting boards as needed.

## Carrier board



With a cutting blade and metal ruler, cut the fabric on the board front side and score the expanded glass granulate.



Break the board at the cut.



Then the rear-side mesh must be cut through.



For exact board joints, the breaking edge should be reworked with an abrasive grid.

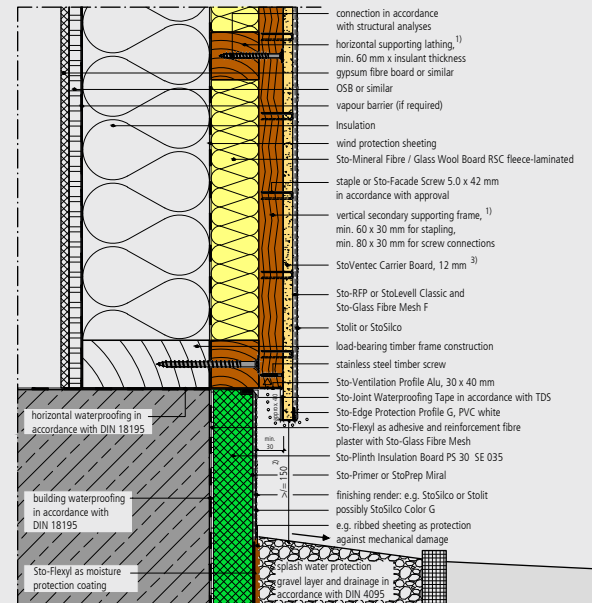
### Tip

Use carbide-tipped blades with circular hand or table saws.

## Plinth

### Plinth formation

#### Vertical projection, plinth connection with base insulation



<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 1 to -3 and -5

<sup>2)</sup> When using the facade in installation situations where the lower edge of the facade protrudes into the splash zone, implement structural or maintenance measures on site which guarantee permanent system ventilation and ensure that the facade cladding / insulation is not exposed to splash water from adjacent horizontal surfaces or surface water / humidity. Repeated damp penetration exceeding the usual driving rain impact load may cause damage to system. Define the total level and position of the splash zone in construction plans taking due account of project-specific features.

<sup>3)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board

# Plinth

## Installation – ventilation and edge protection profile



**Product tip**  
**Sto-Ventilation Profile Alu**  
Profile for securing system ventilation and small animal protection in the plinth area and the lower system end closers



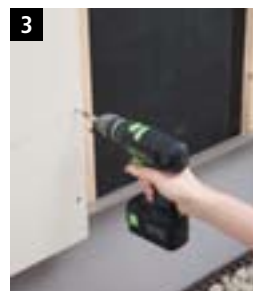
1 Attach the Sto-Ventilation Profile Alu 30 x 40 mm to the vertical secondary supporting frame in the front area before installing the boards. Profile joints must be created on the vertical secondary supporting frame.



**Product tip**  
**Sto-Edge Protection Profile G**  
For vertical and lower horizontal outer edges of the carrier board in the window and plinth area



2 The Sto-Ventilation Profile is fixed with stainless steel timber screws. Alternatively, the Sto-Ventilation Profile can also be fixed in combination with the board installation.



3 When installing the boards, a board projection of approx. 4 cm must be considered.



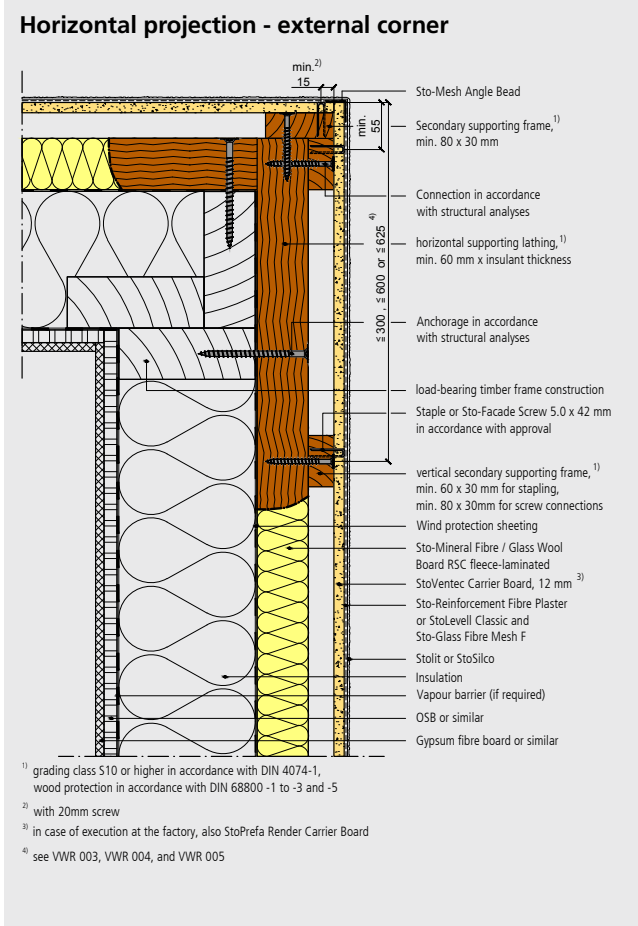
4 The edge protection profile is clipped onto the lower edge of the carrier board. The profile mesh is to overlap at the profile joints. The Sto-Edge Protection Profile G must be mounted at an offset to the board joints.



5 A joint of approx. 1 mm must be formed between the profiles.

# Corner formations

## External corner



Once all carrier boards in the corner area are installed, their projection on the back side is measured.



The projection is transferred to the front side.



Score the marked overlap on the front and back side with a cutter blade and break it off.



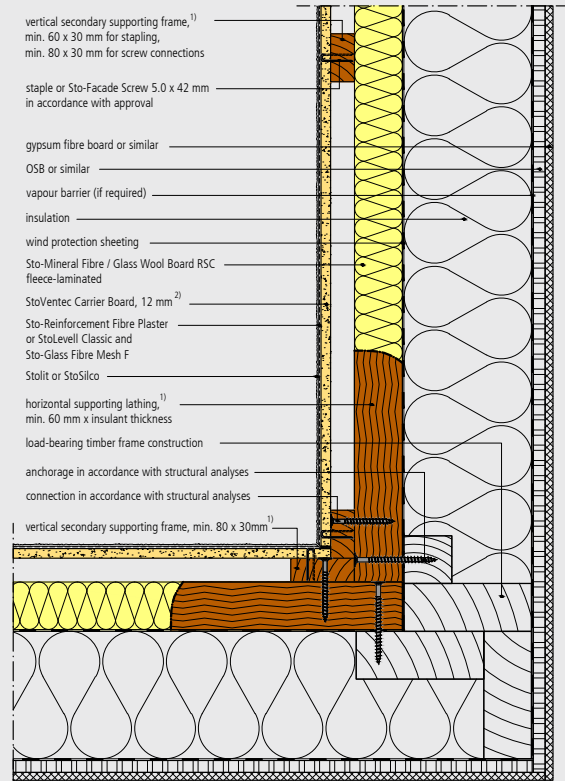
The board edge can be smoothed with an abrasive grid if necessary.



## Corner formations

### Internal corner

#### Horizontal projection - internal corner



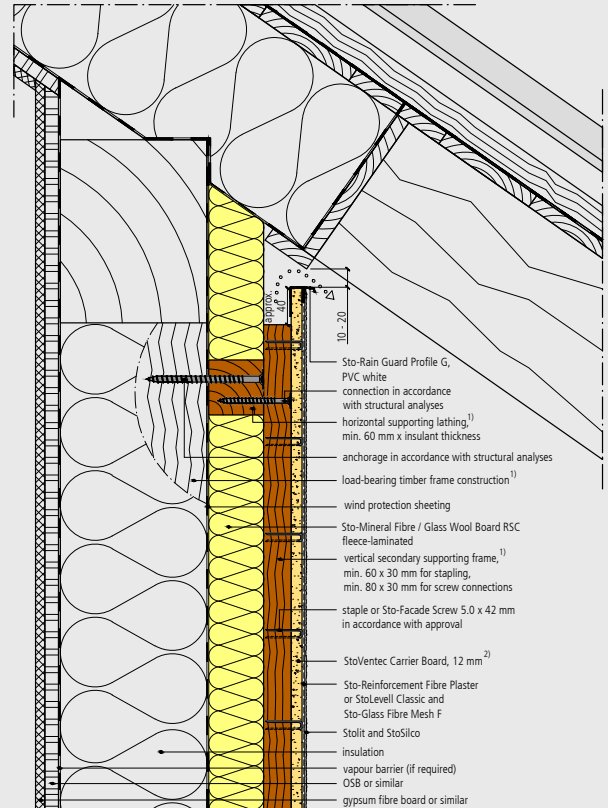
<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5

<sup>2)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board

## Roof connection

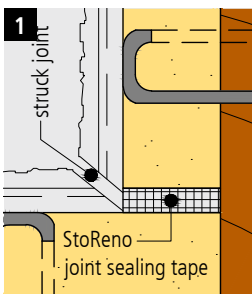
### Ventilation roof connection

#### Vertical cross-section, ventilation roof connection



<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5

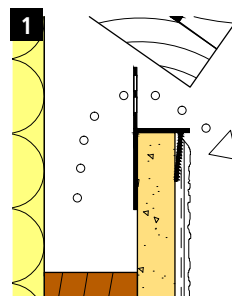
<sup>2)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board



The StoReno Joint Sealing Tape must be pre-affixed in the area of the internal corner.

#### Note

Push the adjacent carrier board tightly against it and fix to the sub-construction. Trowel grooves must always be performed as part of the system coating.



Variant with Sto-Roof Vent Profile G

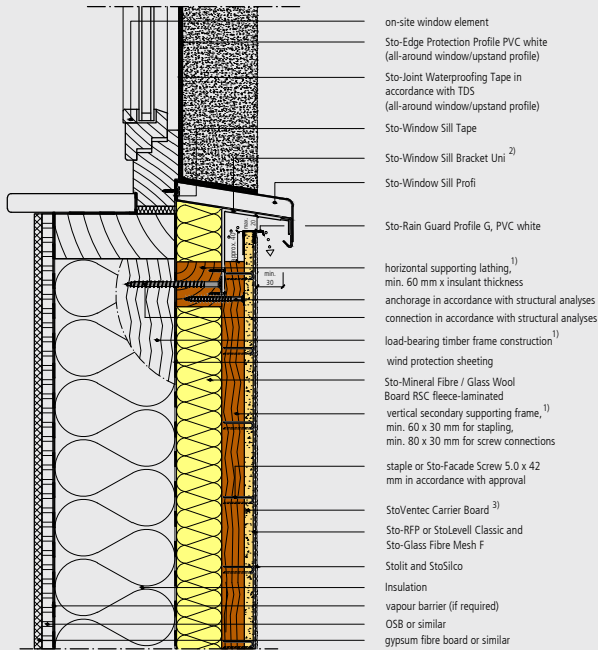
#### Note

When the upper carrier boards are installed, the rain guard profile is attached to the upper board edge. Alternatively, the rain guard profile can already be clipped on so that it projects on one side before installation of the upper carrier board. When the next board is installed, it is pushed into the protruding profile of the board that has already been screwed on.

# Windows and doors

## Window sill

### Vertical cross-section, ventilation connection window sill, open joint



Note: - The window sill must be installed in accordance with the installation principles defined in RAL directive RAL-GZ 695.  
 - Wind-proofing, window waterproofing, and fixing in accordance with RAL and/or manufacturer's specifications.

<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5

<sup>2)</sup> when ordering Sto-Window Sill Bracket Uni, the insulant thickness of the projection must be deducted!

<sup>3)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board



The Sto-Window Sill Tape must be attached to the screw-on stem of the window sill and guided approx. 5 cm around the corner on each side.



Then the window sill is placed onto the frame and screwed in.



The Sto-Window Sill Bracket Uni is screwed onto the horizontal supporting lathing below the window sill must be formed according to the detail on page 42 (top left).



The facade panels must be marked precisely on the upstand profile, notched and connected with Sto-Joint Sealing Tape. The Sto-Edge Profile Saw can be used to notch the carrier board.



Clip the rain guard profile onto the upper edge of the carrier board under the window sill as the upper system end.



### Product tip

#### Sto-Window Sill Profi

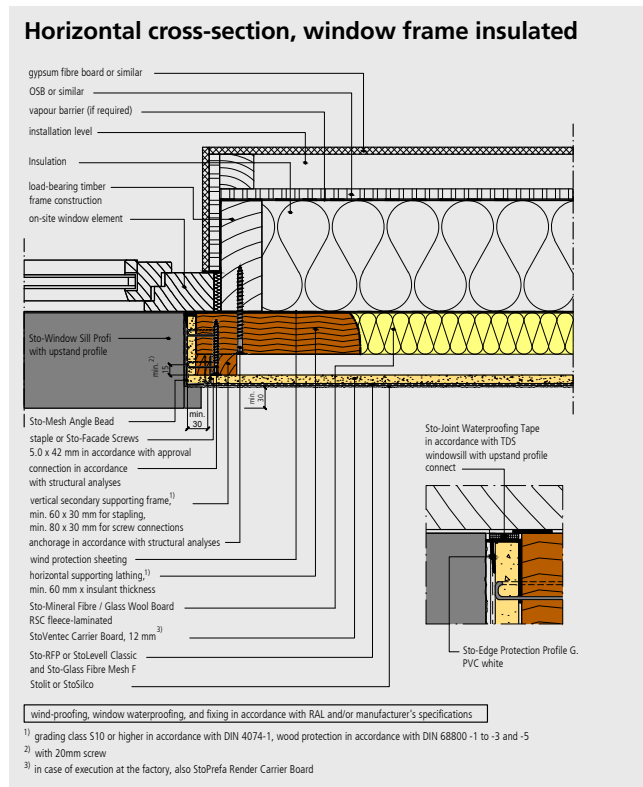
- Absolutely watertight
- Weather-resistant
- Corrosion-resistant

### Information

- When determining the window sill projection, the building tolerances must be considered.
- The ventilation gap on both sides can be made approx. 5 cm narrower than the width of the window sill.
- Additional window sill anchors and expansion profiles must be installed according to the specification of the system supplier.

# Windows and doors

## Window reveal



### Information

For the correct waterproofing and installation of the windows and doors, the specifications according to RAL must be observed.



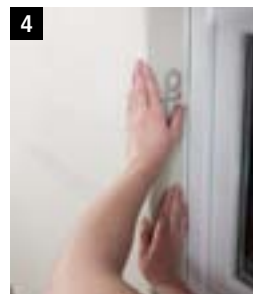
The Sto-Joint Sealing Tape must be affixed to the back side of the edge protection profile. Alternatively, the Sto-Window Sill Tape can also be used.



When measuring the StoVentec Carrier Board as reveal panel, the Sto-Joint Sealing Tape and edge protection profile must be considered.



The reveal panel, cut to fit, is pushed into the Sto-Edge Protection Profile G before installation.



Then the reveal panel with the clipped-on edge protection profile and affixed Sto-Joint Sealing Tape is installed in the reveal.  
Note: Marking the horizontal supporting lathing on the carrier board beforehand is recommended.



The reveal panel must be screwed to the horizontal supporting lathing and the vertical secondary supporting frame with Sto-Facade Screws 5.0 x 42 mm.



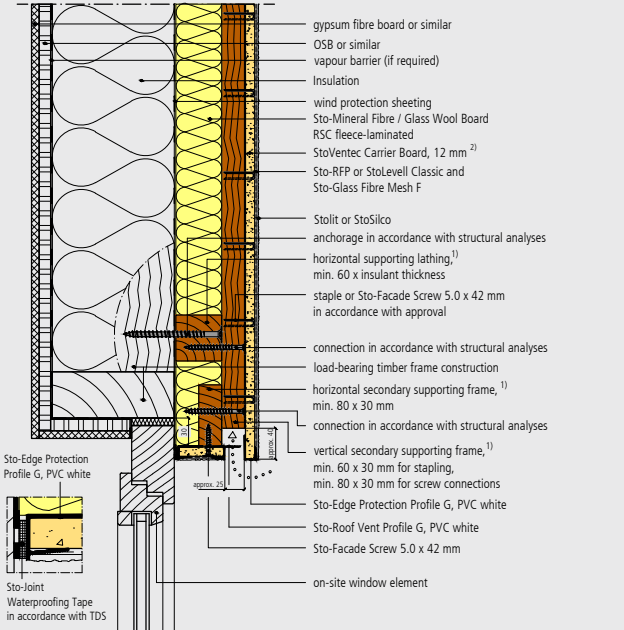
Alternatively, the reveal panel can also be stapled.

If necessary, the board edge can be ground with an abrasive grid.

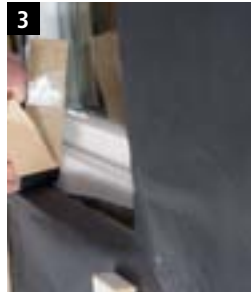
# Windows and doors

## Window lintel

### Vertical cross-section, lintel formation without shutters



wind-proofing, window waterproofing, and fixing in accordance with RAL and/or manufacturer's specifications  
<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 -1 to -3 and -5  
<sup>2)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board



If the wind protection sheeting is located on the horizontal supporting lathing, it is now affixed to be draught-proof. Then the StoVentec Carrier Boards can be mounted across the surface.



When measuring the lintel board, the Sto-Joint Sealing Tape, the Sto-Edge Protection Profile G and Sto-Roof Vent Profile G must be considered. The lintel board is cut to fit and pushed into the Sto-Edge Protection Profile G before installation.



The roof ventilation profile is likewise clipped onto the lintel board before installation.



The additional horizontal secondary supporting frame in the lintel area is installed, including the insulation above it.



The additional horizontal secondary supporting frame is screwed onto the vertical reinforcement secondary supporting frame.



Then the lintel board is installed with the clipped-on roof vent profile, edge protection profile and affixed Sto-Joint Sealing Tape.



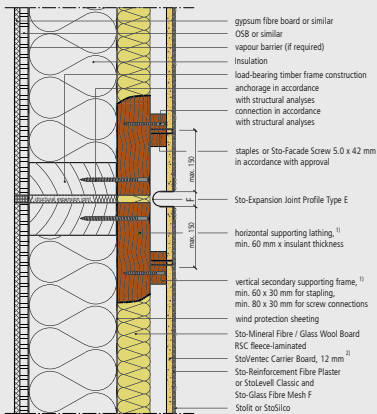
The lintel board is screwed to the horizontal secondary supporting frame with Sto-Facade Screws 5.0 x 42 mm.

**Note:** fixing with staples is not suitable in the lintel area.

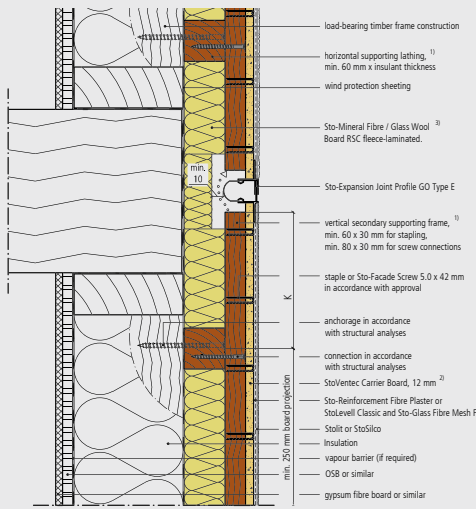
# System joints

## Structural expansion joints/ field demarcation joints

### Horizontal cross-section, vertical structural expansion joint with open expansion joint profile



### Vertical cross-section, horizontal field demarcation joint, with closed expansion joint profile



F = joint width in accordance with the structural engineer's specifications, taking due account of anticipated deformations  
 K = collar arm, max. 200mm or permissible deflection  $\delta$  / 300

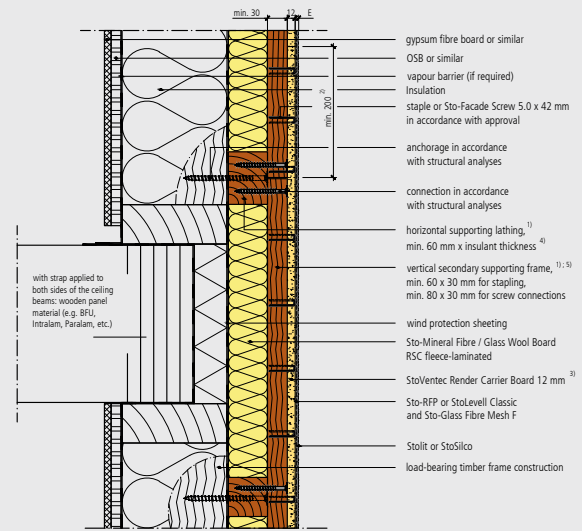
<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 - 1 to -3 and -5  
<sup>2)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board  
<sup>3)</sup> Reduce the insulant thickness in the area of the expansion joint profile in order to ensure safe rear ventilation.

### Notes

- The maximum permitted seamless edge length is 25 m for timber frame construction as an anchoring material for render coatings. Applications of glass mosaic, natural stone and ceramic are generally possible only with screwed-on carrier boards with a seamless edge length of maximum 6 m. The joint width must be adapted to given deformations.
- Structural expansion joints must be incorporated in the system. The joint width must likewise be adapted to the expected deformations.
- At field demarcation and structural expansion joints, the entire system, including the sub-construction, must be completely separated.
- For vertical structural expansion joints and field demarcation joints, a vertical carrier plate must be mounted on both sides in the sub-construction.

## Storey ceiling transition

### Vertical projection, storey ceiling transition - variant I



E = thickness of system coating depending on render system

<sup>1)</sup> grading class S10 or higher in accordance with DIN 4074-1, wood protection in accordance with DIN 68800 - 1 to -3 and -5  
<sup>2)</sup> In the area of the storey ceiling transition, the StoVentec Carrier Board must be brought at least 200 mm onto the vertical secondary supporting frame of the higher-level storey.  
<sup>3)</sup> in case of execution at the factory, also StoPrefa Render Carrier Board  
<sup>4)</sup> In the joint area of the vertical secondary supporting frame, the horizontal supporting lathing must be built at least 80 mm x insulant thickness due to the screw spacing.  
<sup>5)</sup> In the area of the storey ceiling transition, the vertical secondary supporting frame must be carried continuously onto the horizontal supporting lathing of the higher-level storey.

All further general conditions that must be observed when executing a storey ceiling transition without horizontal field demarcation joint can be obtained from the Sto AG Industrial and Prefabricated Construction Technology department.

### Notes

- In the area of the ceiling transition, the StoVentec Carrier Board must be brought at least 200 mm onto the vertical secondary supporting frame of the higher-level storey.
- In the area of the ceiling transition, the vertical secondary supporting frame must be carried continuously onto the horizontal base lath of the higher-level storey.
- In the joint area of the vertical secondary supporting frame, the horizontal base lath must be built at least 80 mm x insulation thickness due to the screw spacing.
- Please observe the specifications of the details on VWR 852 (depicted here) or 853 (vertical cross-section of ceiling transition, variant I + II).

# Reinforcement

## Details



**1 Lintel and reveal area**  
Depending on the detail construction, the mesh of the Sto-Seal Bead Profi or the Sto-Glass Fibre Mesh cut to joint depth, is embedded into the base coat at the reveals (windows, doors, etc.).

**Reveal/lintel/internal corner reinforcement**

The internal reveal corners are reinforced with Sto-Glass Fibre Mesh, with the reinforcement mesh overlapping by at least 10 cm.

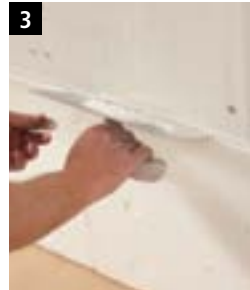


**2 Reveal and external corners of the building**

The corners are formed with the Sto-Mesh Angle Bead Standard. Set the mesh angle bead and embed it full-surface into the base coat.

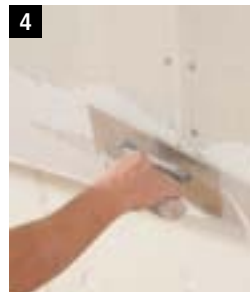
**Diagonal reinforcement connected to openings (windows, doors, niches)**

In corners of cut-outs, openings and niches, a diagonal reinforcement should be carried out from the full-surface system reinforcement with the Sto-Reinforcing Patch. In case of an organic coating, the diagonal reinforcement is redundant if the carrier boards are notched at least 20 cm in the connecting area.



**3 Edge protection profile reinforcement**

Apply the base coat to the carrier board underneath the mesh of the edge protection profile.



Embed the mesh of the edge protection profile into the base coat and have it overlap in the area of the profile joints.



Embed the surface mesh into the base coat and have it protrude over the lower edge of the edge protection profile.



The projecting surface mesh is cut off with the cutter blade at the lower edge of the edge protection profile.

### Information

The application instructions for full-surface reinforcement are described on page 29.

## Top coats

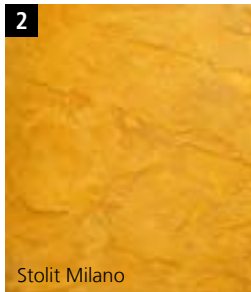
### Possible surfaces

All cement-free, ready-to-use finishing renders from Sto in accordance with European and/or national approval are suitable for use on StoVentec R as an integrated system.

The minimum application temperature of +5°C must be observed in accordance with the Sto Technical Data Sheets.

For organic system coatings, no limitation to the lightness value is required.

Alternative surfaces, such as glass mosaic, natural stone panels or ceramic coverings, can be used according to the national approval. They lend facades an individual appearance.



#### Note

If glass mosaic, natural stone panels or ceramic coverings are used as a finish, the StoVentec Carrier Board must be screwed on.

## Service

### Additional information

#### System drawings and construction details

The system drawings and construction details contained in the brochure for the StoVentec R Facade System with render layers show only an extract of our product range. Possible solutions in addition to facade claddings with render layers and ceiling coverings can also be found at [www.sto.de](http://www.sto.de).

#### Tender specifications

Text building blocks for setting up a tender document to implement a StoVentec R Facade as a facade cladding or ceiling covering can be found at [www.sto.de](http://www.sto.de). These should be selected depending on the project and adapted accordingly.

#### Services

- Project-related cost estimates for system implementation of StoVentec R
- Project-related calculation of wind load<sup>\*)</sup>
- Project-related structural analyses of the sub-construction<sup>\*)</sup>

<sup>\*)</sup> payment required (prices on request)

#### Additional information

The installation information described in this application guideline must be complied with to ensure the quality and the functional security of the StoVentec R Facade. Compliance with these specifications ensures a speedy installation.

All statements and values have been carefully checked and correspond to the current state of technology. We reserve the right to make changes that help improve the system.

If specific statements or procedures are not presented in sufficient detail or you wish to have additional information on reference projects in your vicinity, the experts at Sto will gladly assist you.

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