Building with conscience.

StoVentec® Render

Application guidelines

March 2025

Facade

Ventilated rainscreen cladding systems

StoVentec® Render offers maximum design variety for seamless rendered facades.
Whether it is used for external walls of solid construction such as CMU or tilt-up, or on steel or lumber framing, the system performs exceptionally well with high thermal insulation, low system weight, and an individually designed rendered surface.

Contents

System information

StoVentro basics and planning

Application of the system

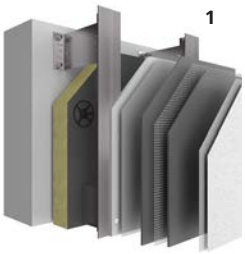
Details

Cover photo reference:
Deutsches Bergbau-Museum - Bochum, Germany
Sto installation: StoVentec® R with Stolit finish
Photo: Guido Erbring, Cologne

Technical Support
Phone: 800-221-2397
stocorp.com/rainscreen

StoVentec® R (SVR)
Rainscreen cladding facade

Overview of Render System Credentials

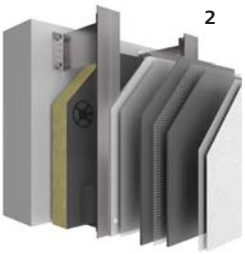


1

Limited combustibility, in accordance with NFPA 285

Intertek Design Listing STO/CWP 30-01

Cast in place concrete, concrete masonry unit or steel framing substrate with steel/ aluminium sub-construction
See page 6 for system build up.

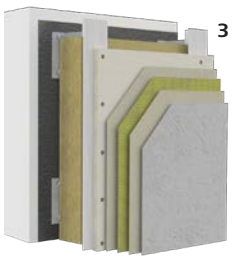


2

Limited combustibility, in accordance with CAN/ULC S-134

Intertek Design Listing STO/CWP 25-02

Cast in place concrete, concrete masonry unit or steel framing substrate with steel/ aluminium sub-construction
See page 6 for system build up.



3

General U.S. Code Complance plus Florida, California, Los Angeles Codes

Intertek Code Compliance Research Report 0454

Certification for physical properties, weather resistance, wind resistance, surface burning characteristics, ignition resistance, and fire propagation. Suitable for Construction Types I-V

4

Hurricane Rated

Miami-Dade NOA

Design Pressure rating: +/- 80 psf

Hurricane cycle testing TAS 202-203 Impact resistance deemed via concrete backup wall or 5/8“ plywood sheathing over 16“ o.c. 18 ga steel framing

System description

Applications	▪ New and existing buildings ▪ Commercial, Residential, Institutional, Educational, or Mixed Use, etc. ▪ Particularly suitable for fine surface textures ▪ Thick system build-ups (up to 14-5/8" (372 mm)) are possible
Substrates	▪ Masonry, such as brick, CMU, and masonry veneer ▪ Concrete, concrete slab construction ▪ Lumber frame construction ▪ Steel light-frame construction
Fixing	▪ Easily adjustable sub-construction made of a combination of Zn-Al-Mg coated steel and/or aluminum brackets and rails
Thermal protection	▪ Mineral wool with nonwoven fabric facing ▪ High insulant thicknesses possible (up to 13.5" (343mm)) ▪ System implementation also possible without insulation
Reaction to fire	▪ Limited combustibility ▪ NFPA 285 and CAN/ULC S-134 Design Listings ▪ Suitable for Construction Types I-IV ▪ Fire breaks/barriers may be required in accordance with local code
Other properties	▪ Very light, flexible carrier board made of expanded glass granulate with a low thermal expansion coefficient ▪ Resistant to earthquakes ▪ A double coat of paint offers special protection against algae and fungi ▪ Lotus-Effect® Technology optional ▪ Optional Dryonic® Technology for protection against microorganisms and for fastest drying
Design options	▪ Organic and silicone resin renders as well as render with Lotus-Effect® Technology as well as mineral and silicate renders in stippled or rilled render textures or as free-style textured render ▪ Masonry veneers: thin brick compliant with ASTM C1088, manufactured stone compliant with ICC-ES AC51
Color range	▪ Tintable in accordance with the StoColor System ▪ No limitation to the light reflectance value with organic render coatings
Approvals	▪ Intertek Code Compliance Research Report 0454 ▪ Florida Product Approval 41659 ▪ Miami Dade NOA

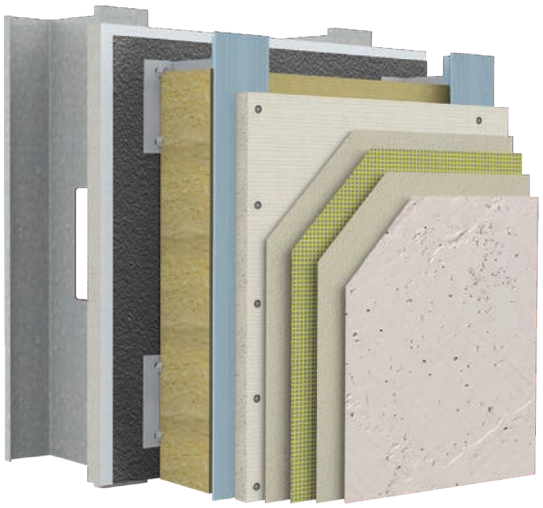
General application and planning information

- The applicable system certifications or evaluations are the basis for the planning and execution of facade and/or ceiling cladding with **StoVentec® Render**.
- For any project, always comply with local building code and/or registered design professional for structural adequacy requirements for exterior walls. With StoVentec Render, ensure a wall deflection limit of L/360 and a lateral deflection limit for wind of h/500.
- The StoVentro sub-construction and Carrier Boards can be dimensioned and fastened in accordance with prescriptive configurations provided in the Intertek CCRR and Miami-Dade NOA to meet an allowable system design pressure of up to 80 psf. The details of these prescriptions are included throughout this guide and noted accordingly. Otherwise, project-specific wind criteria may be met with customized engineering (project-based structural analysis) of the sub-construction (bracket spacing, anchoring, etc). With project-specific engineering of the Render system, follow the details provided in the engineered shop drawings.
- For retrofits over existing substrates such as masonry, field analysis and engineering is necessary to ensure the substrate can provide adequate dead load support and fastener withdrawal capacity for anchors securing StoVentec.
- Possible markings (i.e. thermal ghosting) on the vertical sub-construction result from building physics, can occur with all ventilated claddings, and are not product-specific. These markings do not constitute a fault. Hairline cracks over board joints in the system coating cannot be ruled out, but do not affect the stability, function, or serviceability of the system.
- Increased exposure to splash water and long-term moisture penetration of the system can lead to efflorescences in the carrier boards and should be prevented with structural and/or maintenance measures.
- Horizontal and/or vertical expansion joints must be observed every 82 feet (25m) max.
- Structural expansion/control/movement joints must be incorporated into the system.
- In the case of planned applications that are not included or described in the application guideline (e.g. curved facades), the technical feasibility for the specific project must be determined with the system provider in advance. Please contact the rainscreen Technical Solutions department at Sto Corp.
- Before getting started, refer to the StoVentec® Rainscreen Systems Toolkit for a detailed listing of the necessary tools needed to install StoVentro and SVR.

System build-ups

Limited combustibility, in accordance with NFPA 285

According to Intertek design listing report STO/CWP 30-01 - May 24, 2022



1 — Wall Assembly
5/8" thick, Type X interior gypsum board (not shown) and 18 gauge steel studs spaced 16" o.c. with 20 gauge top and bottom tracks and min. 1/2" exterior glass mat sheathing, (optional cavity insulation)
-or- cast-in-place or CMU block wall

2 —Air and Water Resistive Barrier
Sto Flexyl (wet film thickness 1.6 mm), Stoguard VaporSeal R (wet film thickness 0.38 mm (15 mils)), Sto Gold Coat (wet film thickness 0.25 mm (10 mils), or **Sto Air Seal (wet film thickness 1.3 to 1.8 mm (50-70 mils))**

3 — Sub-construction
Sub-construction that is thermal bridge-optimised made of Zn-Al-Mg galvanized or stainless steel or aluminum wall brackets and aluminium T-Profiles to fix the render carrier boards. Horizontal spacing of T-Profiles: 16" (406 mm) o.c.

4 — Exterior Insulation
Mineral wool complying with ASTM C612 and ASTM E136 with minimum density 4.0 lb/ft^3. Thickness shall be no less than 2 in. (50 mm). The air gap between insulation and back of Carrier Board may be between 10 and 60 mm.

4 — Carrier board: StoVentec Carrier Board
Carrier board made of expanded glass granulate, mesh-reinforced on both sides; dimensions: 1/2" (12 mm) thick, 4 ft (1219 mm) x 8 ft (2438 mm); weight 1.23 lb/ft^2 (6 kg/m^2); Flame Spread Index per ASTM E84: 20 (Class A)

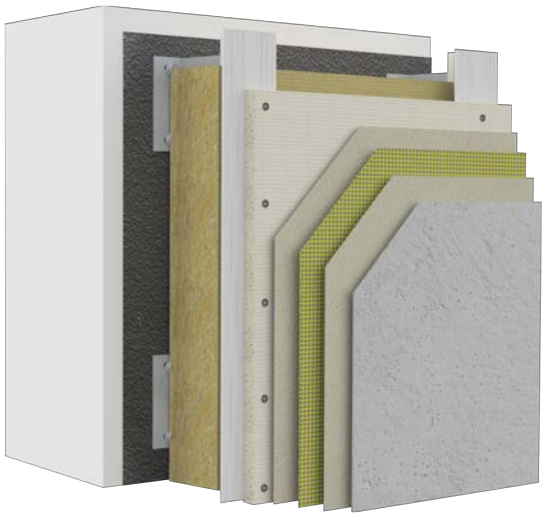
4 — Basecoat: StoArmat Classic plus

5 — Reinforcing mesh: Sto Mesh 6 oz

6 — Finishing render: Stolit or other Sto textured finish

Limited combustibility, in accordance with CAN/ULC S-134

According to Intertek design listing report STO/CWP 25-02 - May 24, 2022



1 — Wall Assembly
Construct a wall assembly that shall comply with the local Building Code or other applicable regulatory requirements as established by the local Authority Having Jurisdiction.

2 — Air and Water Resistive Barrier
Sto Flexyl (wet film thickness 1.6 mm), Stoguard VaporSeal R (wet film thickness 0.38 mm (15 mils)), Sto Gold Coat (wet film thickness 0.25 mm (10 mils)

3 — Sub-construction
Sub-construction that is thermal bridge-optimised made of Zn-Al-Mg galvanized or stainless steel or aluminum wall brackets and aluminium T-Profiles to fix the render carrier boards. Horizontal spacing of T-Profiles: 16" (406mm) o.c.

4 — Exterior Insulation
Mineral wool complying with ASTM C612 and CAN/ULC-S114 with density range from 3.5 lb/ft^3 to 6.0 lb/ft^3 (72 kg/m^3 to 96 72 kg/m^3). Thickness shall be no less than 2 in. (50mm). The air gap between insulation and back of Carrier Board may be between 10 and 60 mm.

4 — Carrier board: StoVentec Carrier Board A+
Carrier board made of expanded glass granulate, mesh-reinforced on both sides; dimensions: 1/2" (12 mm) thick, 4 ft (1219 mm) x 8 ft (2438 mm); weight 1.23 lb/ft^2 (6 kg/m^2)

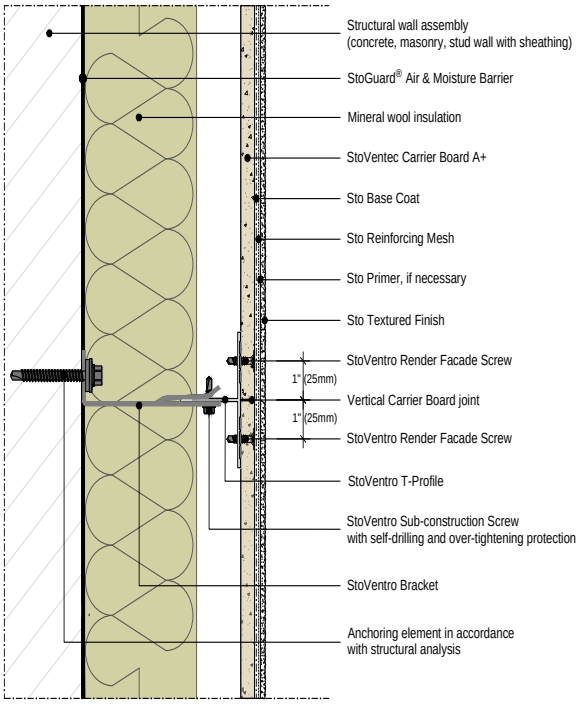
4 — Basecoat: StoArmat Classic plus

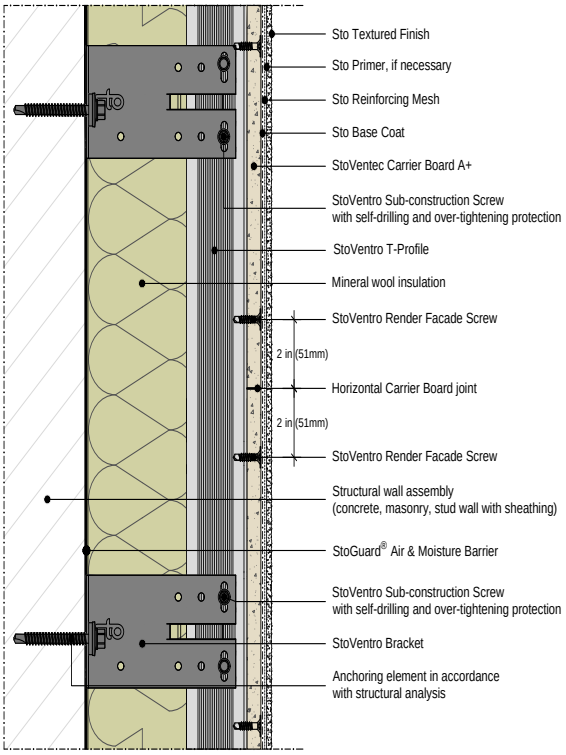
5 — Reinforcing mesh: Sto Mesh 6 oz

6 — Finishing render: Stolit or other Sto textured finish

System sections

Installation requirements





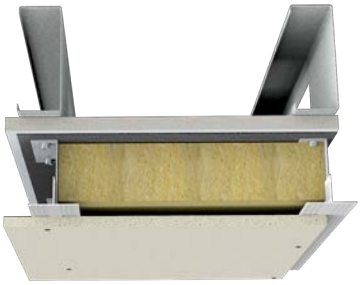
- If the structural wall substrate is load-bearing and able to bear the load of the StoVentec Render facade (total system weight (sub-construction, carrier board, insulation, and textured finish) is variable but maxes out near 8 lb/ft^2), an insulated rainscreen cladding system can be properly installed based on a project-specific wind load calculation as well as pre-engineered prescriptions or project-specific structural verification. The system is ideal for problematic substrates. It can even compensate for large unevenness in the anchorage substrate.
- Doors, windows, roller shutter boxes, parapets, horizontal covers and window sills must be installed before the facade cladding. Ensure that parapets, horizontal covers, and window sills have a large enough projection when planning the system build-up.
- Determine the building shell tolerances (field/as built measurements) and specify the required wall bracket projections/depths more precisely than in initial planning.
- As part of the working drawings and before installation of the StoVentec Render 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 certifications and pre-engineered prescriptive approach, or project-based structural analyses and taking into account project-specific conditions.

Note

Additional system and detail drawings, installation videos, technical hotlines, and more are available at https://www.stocorp.com/sto_systems/stoventec-render/.

Note: these details are a general and non-binding proposal, which are only schematic in nature. The specific technical specifications and information on the products contained in the Technical Data Sheets and system descriptions/approvals must be observed.

Backup wall types & sheathing



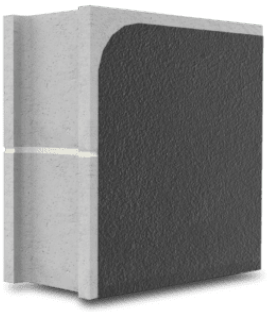
- StoVentec Render is suitable for wood or metal framed walls, CMU block, or precast/tiltup concrete
- New construction or retrofits
- For any project, always comply with local building code and/or registered design professional for structural adequacy requirements for exterior walls. With StoVentec Render, ensure a wall deflection limit of L/360 and a lateral deflection limit for wind of h/500
- Framed walls must utilize stud spacing at a maximum of 16 inches (406 mm) o.c.
- Metal framing minimum 18 gauge, 33 ksi
- For studded walls, exterior sheathing is required as a substrate for StoGuard air and water-resistive barriers
  - exterior glass mat gypsum
  - plywood
  - OSB
  - cement board
- Interior sheathing and/or lateral stud bracing/bridging may be required to control base wall deflection
- Refer to the **Pre-Engineered Render Technical Hotline** regarding Sto's prescriptive/template base wall design used for Render assembly wind load testing

Note
Additional system and product bulletins as well as Technical Hotlines are available at www.stocorp.com/rainscreen-systems/.

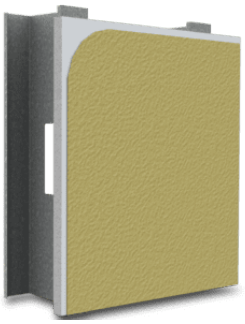
Air and water-resistive barriers

- StoVentec Render is a drained/back-ventilated rainscreen system
- For studded walls with sheathing, an air and water-resistive barrier layer is required
- For concrete and masonry walls, follow local code
- The StoGuard family of air and water-resistive barriers (WRB) provides multiple options, however Sto AirSeal, possessing high elongation and UV durability properties, is well-suited for StoVentec rainscreen system applications due to its optimization for high build installations. The following StoGuard products and respective application thicknesses are included in Render's design listings (refer to page 6 System Build-ups) for NFPA 285 and CAN/ULC S-134:
  - **Sto Air Seal® (wet film thickness 1.3 to 1.8 mm (50-70 mils)), or**
  - Sto Gold Coat® (wet film thickness 0.25 mm (10 mils))
  - Sto Flexyl (wet film thickness 1.6 mm), or
  - Sto VaporSeal® (Class 1 vapor retarder) (wet film thickness 0.38 mm (15 mils))
- Refer to the respective StoGuard WRB product bulletins and specifications for more details and application instructions/requirements

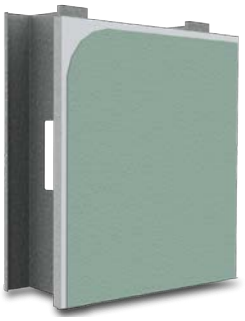
Note
Additional information on StoGuard air and water-resistive barriers is available at www.stocorp.com/air-water-resistive-barriers/.



Sto AirSeal®



Sto Gold Coat®



Sto VaporSeal®

StoVentro basics and planning

Brackets and T-Profiles

StoVentro sub-construction is an adjustable, thermally-broken bracket and rail system compatible with many types of cladding. Brackets are made with aluminum or Zn-Al-Mg-coated steel and are sized by 20 mm increments from 40 to 360 mm in depth. Steel brackets are available with or without spring fingers (also known as retainers) that assist with T-Profile installation by temporarily supporting them until fastening occurs.

Large - fixed point (FP) - brackets transfer dead loads and wind loads to the primary structure while Small - sliding/gliding point (GP) - brackets only aid with wind loads. The fasteners connecting T-Profiles to Small (GP) brackets are positioned within oblong pre-punched holes in the brackets. This allows for the thermal expansion/contraction of the aluminum T-Profiles and/or L-Profiles. L-Profiles are used in Render to reinforce carrier board corner joints.

Thermal blocking elements are optional accessories to further minimize the thermal bridging effect. Detailed thermal analyses of the StoVentro system are available in the Document Center at stocorp.com.

Aluminum Large (FP)

Aluminum Small (GP)

Steel Large (FP)

Steel Small (GP)

Thermal Blocking Elements

T-Profile (3 m (118 inches))

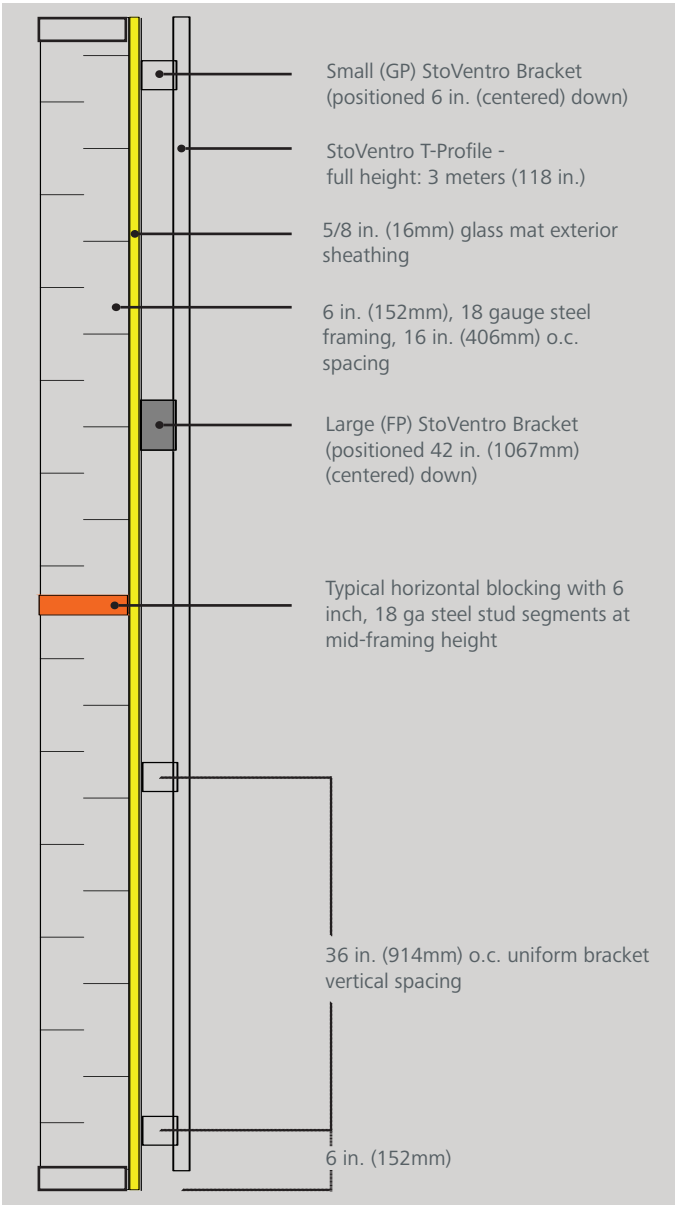
L-Profile (3 m)

Bracket and T-Profile configurations

Full height T-Profiles are 3 meters (118 inches) long. Each profile typically is secured by one Large (FP) bracket and at least two Small (GP) brackets. For StoVentec Render, the horizontal spacing of brackets and T-Profiles must be 16 inches (406 mm) o.c maximum.

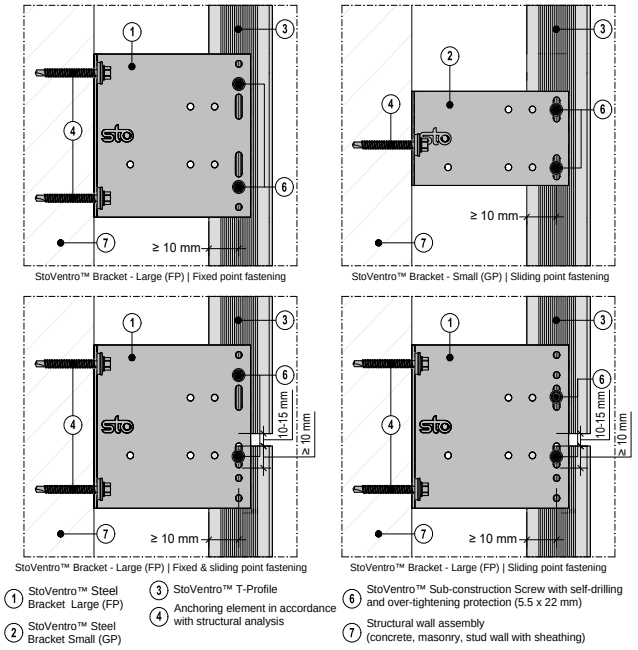
Vertical spacing of brackets varies by project based on wind design pressures. A project-based structural analyses can determine alternative vertical bracket spacings permitted specifically for a particular building.

Sto's prescriptive StoVentro configuration (illustration below) utilizes four brackets on full-height T-profiles. Brackets are spaced at a maximum of 36 inches (914mm) apart. This configuration is rated +/- 160 psf (7.66 kN/m^2) - ultimate wind load:



Note: this detail is a general and non-binding proposal, which is only schematic in nature. The specific technical specifications and information on the products contained in the Technical Data Sheets and system descriptions/approvals must be observed.

Brackets and T-Profiles - possible fixed point and sliding point arrangements



System requirements:

- Position the fixed point in the middle of the T-Profile or at a maximum of 59 inches (1.5 m) from the profile end
- Cantilevered T-Profile ends may not exceed 12 in. (305 mm), depending on the wind design pressure:
  12 in. (305 mm): -90 psf ultimate pressure or less
  6 in. (152mm): -160 psf ultimate pressure or less
- Large (FP) brackets may also serve as sliding point brackets or a combination of both fixed and sliding at T-Profile joints
- Large (FP) brackets can be positioned at T-Profile joints - leave 15 mm (~5/8“) gap between T-Profiles

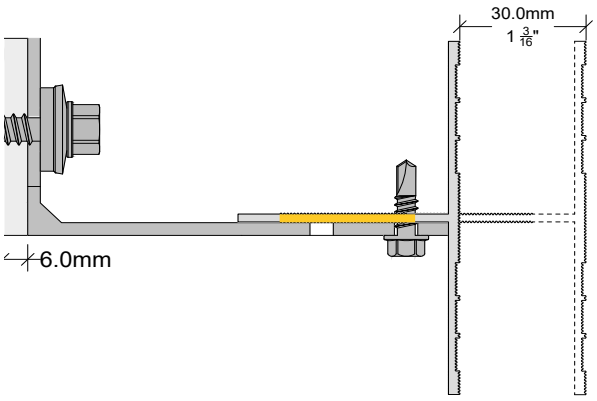
The diagrams show a selection of possible arrangements, depending on the building geometry, structural requirements, anchorage substrates and system projections. Apart from the prescriptive StoVentro design, the StoVentro configuration to be used is determined by project-specific structural analyses.

Tips

For each facade surface, align the first and last T-Profiles to be perpendicular and install on the wall brackets. Next, install a horizontal reference line to align the remaining profiles. Alternatively, use a laser.

Set the profiles, starting from the outside corners and moving toward the center of the facade. When using wall brackets with retainers, it is possible to insert all T-profiles before applying the reference line.

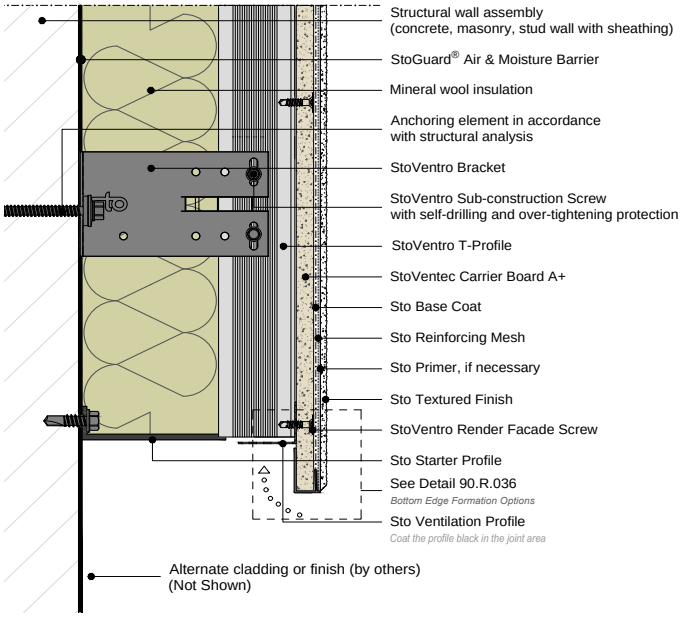
System adjustability



The default fastening position through a T-Profile is in the center of the fastening flange. T-Profiles feature a 30mm wide
fastening zone, textured lightly with shallow grooves. To ensure level and plumb for the Render surface, the T-Profiles can be fastened +/- 5/8 in. (15 mm) from the center of the lightly gooved fastening area. Note: Thermal blocking element featured above is 6 mm (1/4 in.) thick.

Getting Started
Sub-construction/insulation

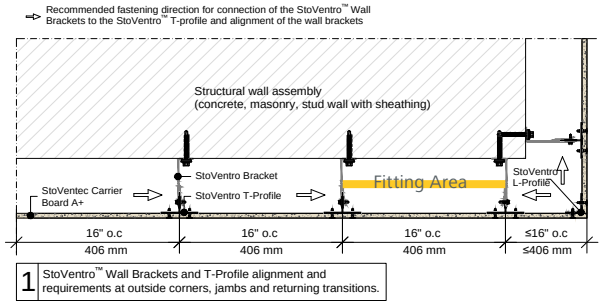
Measuring the facade – 1) Determining the base point



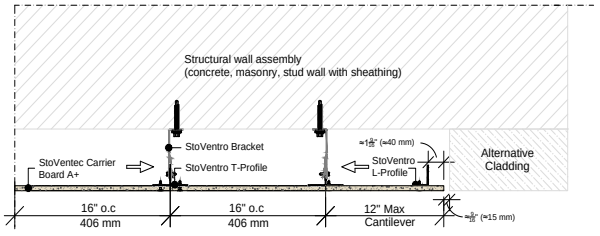
1) There are multiple bottom-edge detail options. Refer to the **Installation at Grade** section in this guide as well as Detail 90.R.036.

2) The base point of the facade above ground level or roof surfaces is to be determined in such a way that
- the system ventilation is guaranteed over the long term and
- the facade cladding is not constantly soaked by spray/ splash water from neighbouring horizontal surfaces
- minimum clearance above grade: 5-7/8" (150 mm) min.
- Carrier board may cantilever below the T-Profile with the lowest course of Render Facade Screws no more than 3 inches (76 mm) above the bottom edge of the carrier board

Measuring the facade – 2) Marking the T-Profile centerlines



1 StoVentro™ Wall Brackets and T-Profile alignment and requirements at outside corners, jambs and returning transitions.



2 StoVentro™ Wall Brackets, T-Profiles, and L-Profile alignment and requirements at returning transitions and transitions to alternative cladding

Cantilever	L-Profile Required	Rated wind resistance [psf]	Rated wind resistance [kN/m²]
6 in (154mm)	No	68.9	3.3
8 in (200mm)	Yes	81.4	3.9
12 in (300mm)	Yes	50.1	2.4

1) Refer to the **Outside Corners** portion of this guide.

2) Fitting area: where the distance between the brackets/ rails nearest the building corner and the next/second line is likely to be less than 16" (406mm).

3) Observe the building shell (surface plane) tolerances in order to let the carrier boards protrude enough to meet evenly at the outside corners. Cantilevers up to 16 inches (406 mm) are possible depending on project wind load requirements and use of L-Profiles to reinforce the carrier board joint.

4) The arrows in the illustrations above indicate the recommended alignment/orientation of the StoVentro Brackets and direction of fastening for connecting the T-Profiles. StoVentro screws always pass through the bracket holes before penetrating the T-Profile.

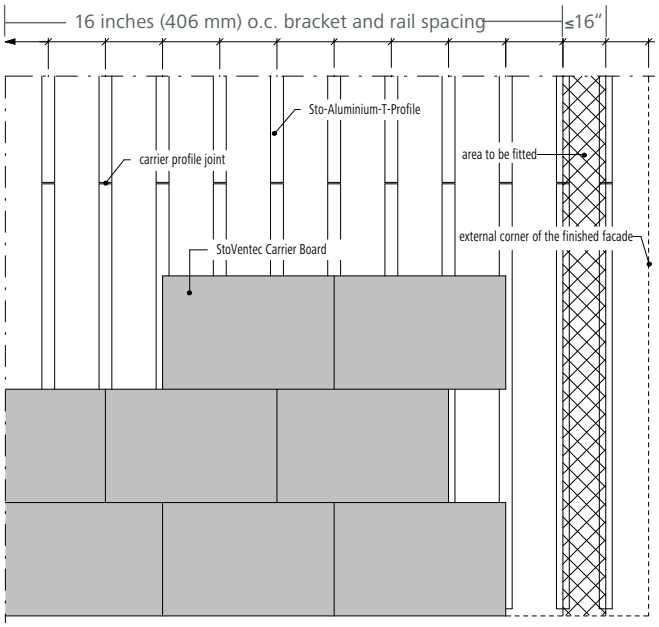
Tip

Refer to the StoVentec® Rainscreen Systems Toolkit for a comprehensive list of tools and items needed for StoVentro and Render installation.

Measuring the facade - 2) Marking the T-Profile centerlines:

Mark the wall substrate for the vertical T-Profile centerlines at a regular interval of 16 inches on center (406 mm).

- Mark the T-Profile centerlines beginning at an outside corner.
- Position the T-Profile centerlines at the outside corners as required to anchor the brackets into stud framing, or, for concrete, CMU, and masonry applications position per edge distance requirements - typical 4 in. (102 mm) fastener edge distance - or per a project-specific structural analysis/fastening schedule
- After the outside corner bracket/rail line, mark the second and third T-profile centerlines on the bare wall. The distance from the outside corner bracket/rail centerline to the second profile centerline is to be less than or equal to 16 in. (406 mm), as this is the fitting area. The third line must be 16 in. from the second.
- The applicable building shell (surface plane) tolerances must be noted and taken into account in the Carrier Board projection at the outside corners of the facade. The maximum Carrier Board cantilever is 16" (406 mm). However, the cantilever distance is tied to project wind loads and L-Profiles must be used to reinforce the corner joints with cantilevers greater than 6 inches (152 mm). Refer to the cantilever table (page 12) as well as Detail 90.R.049.
- When installing Carrier Boards (size: 4 x 8 feet (1219 x 2438 mm)), the vertical board joints on each row must be offset 16 inches (406 mm). For further information on board installation, see page 18.
- Establish the existing building shell tolerances for the entire facade surface at the marked profile centerlines using a reference line or laser to define the required wall bracket projections/depths more precisely.
- Observe the arrangement of planned Vertical and Horizontal Expansion Joints and structural expansion joints in order to plan for additional T-Profile centerlines.
- Additional T-Profile centerlines are needed for window and other system connections as well as inside corners. Each carrier board or partial board must be fastened to at least two carrier profiles.



Notes

We generally recommended marking the T-Profile axes and not the anchor/bracket axes on the anchorage substrate. See page 15.

The wind loads applicable to the facade area must be determined according to local building code.

Sub-construction brackets

Measuring the facade – 3) Arranging the wall brackets

Determine the number, vertical spacing, and arrangement of the wall brackets as Large (FP) and Small (GP) in accordance with pre-engineering prescriptions or a project-based structural analyses. Vertical spacings should be in 1/2 in. (12 mm) increments. Typical spacings are 24, 30, 36, 42, or 48 inches

Snap horizontal chalk lines to represent the midline axis of the brackets at the required vertical spacing. Utilize only alike bracket types/sizes along the same horizontal line (i.e. each row must be all Small brackets (GP) or all Large (FP) ones).

Observe an offset of approx. 20 mm (~3/4“) from the T-Profile centerline/axis (already marked on the wall) to the centerline of the anchoring flange of the brackets. For concrete wall applications, it is recommended that the positions of subsequent drill holes for the wall fasteners/anchors are marked on the anchorage substrate with the help of the relevant wall bracket and spraypaint.

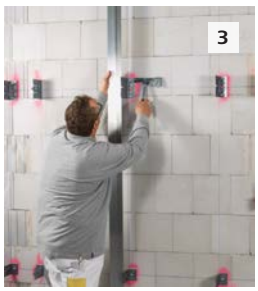
Tip
With horizontal spacing of T-Profiles every 16 inches (406 mm) o.c., mount the wall brackets so that the T-Profiles can be fastened to the wall brackets starting from the outside corner and moving toward the middle of the facade. The anchor flange of the wall bracket can be installed on the left or right of the T-Profile centerlines as needed.

Note
To reduce the thermal bridging effect, utilize the appropriate thermal blocking element between the brackets and wall surface.

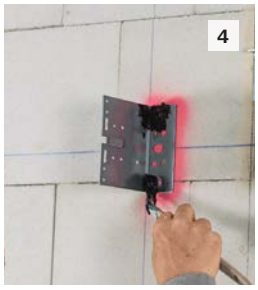
Installing the wall brackets

To install the wall brackets, if needed, pre-drill the wall at the marked locations, depending on the wall structure and anchor types to be used and in accordance with the pre-engineering prescriptions or project specific anchor engineering. Observe the specified minimum drill hole depth. The drill holes must be cleaned appropriately.

Secure the wall brackets with appropriate anchors. The large (20 mm) oblong holes are for concrete anchors. The small circular and oblong holes are for stud wall anchors. Fasten so that lateral (left/right) shifting of the wall bracket is still possible because of the oblong holes (i.e. do not fully drive or tighten the anchors).



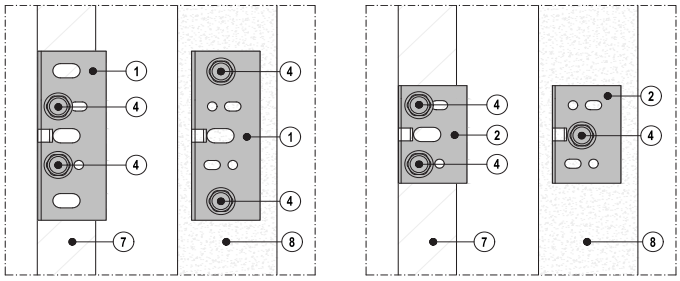
Align wall brackets in each column laterally. Tighten the anchor screws so that the full surface of the anchor collar rests on the wall bracket and the screw head on the anchor collar.



If not using stainless steel anchors, paint or level out galvanized screw heads at the connection to the anchor collar with a flexible, permanently elastic bitumen-oil combination coating.

Note
Use and install anchoring fasteners appropriate to the wall substrate and in accordance with Prescriptive requirements or a project-based anchoring design.

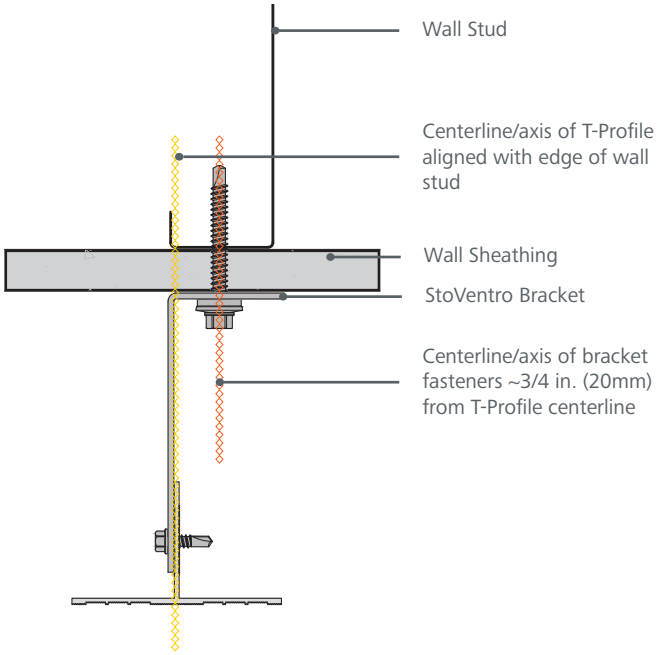
Anchoring arrangements



① Large (FP) steel bracket
② Small (GP) steel bracket
④ Wall anchor per structural analysis
⑦ Structural substrate (stud wall with sheathing)
⑧ Structural substrate (concrete and masonry)

The large 3/4 in. (20 mm) horizontal oblong holes are for concrete anchors. An FP bracket has three such pre-punched holes. GP brackets have only one concrete anchor hole each. The small circular and oblong holes are for stud wall anchors. The oblong holes allow for bracket alignment prior to full anchor tightening.

When applying brackets over stud framing, fasten the first screw in a small oblong hole and the second screw in a circular hole above or below in alignment with the first fastener (after alignment and initial tightening with the first anchor).



Wall bracket extensions

Wall bracket extensions are available to correct out-of-plane surfaces beyond the adjustability range provided by brackets alone.

For steel brackets and complimentary extensions, push the extension piece onto the wall bracket and align it to the desired depth.

For aluminum brackets, utilize clamps to temporarily hold the extension to the bracket at the desired depth.

Next, fix the extension on the wall bracket with two rivets (diameter: 5.0 mm, drill hole: 5.1 mm, clamping range: 2.5–4.5 mm).

Alternatively, screws may be utilized as designed by project-specific engineering.

Sub-construction T-Profiles and Insulation

Exterior insulation

Note
Sto Corp does not manufacture insulation but recommends Rockwool Cavityrock® and Cavityrock Black which are well-suited for rainscreen applications. Please refer to the Rockwool Insulation Attachment Guide for more complete information regarding compliance and installation.

Mineral Wool Properties:
- ASTM C612 (CAN/ULC S-702, Type I) compliant, non-combustible mineral fiber board classified into types IA, IB, IVA
- Minimum thickness: 2 inches (50 mm)*
- Density: 4.5 lb/ft3 (72.1 kg/m3)
- Thermal conductivity: 0.23 (BTU • in)/(hr. • ft² • °F), @ 75 °F (0.033 W/cm • K)
- Thermal resistance: R-Value = 4.3 per inch, RSI = 0.74 per 25 mm

Secure the mineral wool per manufacturer installation guidelines with appropriate fasteners or other means.

Notes
*If compliance with NFPA 285 or CAN/ULC S-134 is not required, the mineral wool may be less than 2 in. (50mm) thick.

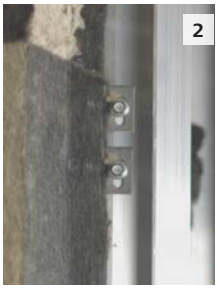
Size StoVentro Brackets to pair with insulation that enables a minimum air space of 3/4 in. (20mm) and maximum 2 in. (50mm) between the surface of the insulation and the back of the T-Profiles and Carrier Boards. Refer to the Render Design Guide for more detailed information.

Installing vertical T-Profiles on wall brackets without retainers (spring fingers) using grip pliers

If necessary, cut the T-Profiles to size using a chop saw, as needed for height constraints and/or in accordance with the installation plan.

When using StoVentro wall brackets without spring fingers, clamp the T-Profiles to the wall brackets with grip pliers until screw fastening is completed.
Prior to fastening the T-Profiles, account for irregularities in the supporting wall construction and ensure the overall surfaces for the carrier boards are level and plumb by aligning the T-Profiles with a reference line or laser.

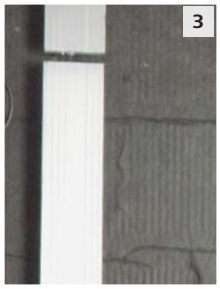
Apply the insulation in sequence while installing the vertical T-Profiles. Working from left to right, with only the first column of T-Profiles clamped in place, insert the insulation panels, oriented vertically without gaps, friction fitting between the T-Profiles and second column of brackets.



Clamp the second column of T-Profiles into place and insert the insulation in the same manner as the first, and so on. Ensure the T-Profiles are level and plumb at the desired system depth and fasten with two StoVentro Screws - Self-Drilling (5.5 x 19 mm) at each bracket, appropriately utilizing the sliding and fixed points.

1. For fixed points, fasten the two screws in the outer round holes.

2. For sliding points, fasten the two screws centrally in the vertical oblong holes of the wall brackets. Refer to page 11.



3. Create joints between freely protruding T-Profile ends and/or on fixed/sliding or sliding/sliding points with a joint width of approx. 5/8 in. (15 mm) to allow for thermal expansion.

Avoid back ventilation of the insulation. The insulation must not be compressed. Using the original insulation material, stuff gaps in the insulation made during installation.

Alternative Procedure
Clamp/place, level, and fasten all the T-Profiles in the installation area in the same manner as above without placing insulation. To add insulation after the T's are secured, score the face of the insulation panels near their midpoint and then flex them into position between the brackets and T's. Avoid leaving space between the insulation panels and wall surface.

Tip
C-clamp locking pliers (11 in.) are the best option for temporarily securing T-Profiles to brakets.

Installing vertical T-Profiles on wall brackets with retainers (spring fingers)

The spring finger - T-Profile connection is temporary and fastening at each bracket is required.

Working from left to right, insert the T-Profiles into the retainers (spring fingers) of the first column of wall brackets. Insert the insulation panels, oriented vertically without gaps, friction fitting between the T-Profiles and second column of brackets.

Insert the second column of T-Profiles into place and place the insulation in the same manner as the first, and so on.

Prior to fastening the T-Profiles, ensure the overall surfaces for the carrier boards are level and plumb. Align the profiles on a reference line or using a laser. Fasten the T-Profiles, as fixed and sliding points, with two StoVentro Screws - Self-Drilling (5.5 x 19 mm) for each bracket and using over-tightening protection.

1. For fixed points, fasten the two screws in the outer round holes.

2. For sliding points, fasten the two screws centrally in the vertical oblong holes of the wall brackets. Refer to page 11.

3. Create joints between freely protruding T-Profile ends and/or on fixed/sliding or sliding/sliding points with a joint width of approx. 5/8 in. (15 mm) to allow for thermal expansion.

Avoid back ventilation of the insulation. The insulation must not be compressed. Using the original insulation material, stuff gaps in the insulation made during installation.

Steel Large (FP)
w/ spring finger

Steel Small (GP)
w/ spring finger

NOTE: StoVentro steel brackets with spring fingers are not inventoried by Sto. They ordered on demand for individual projects and a lead time is required.

Carrier boards

Fastening schedules and requirements

Product tips

StoVentec Carrier Board

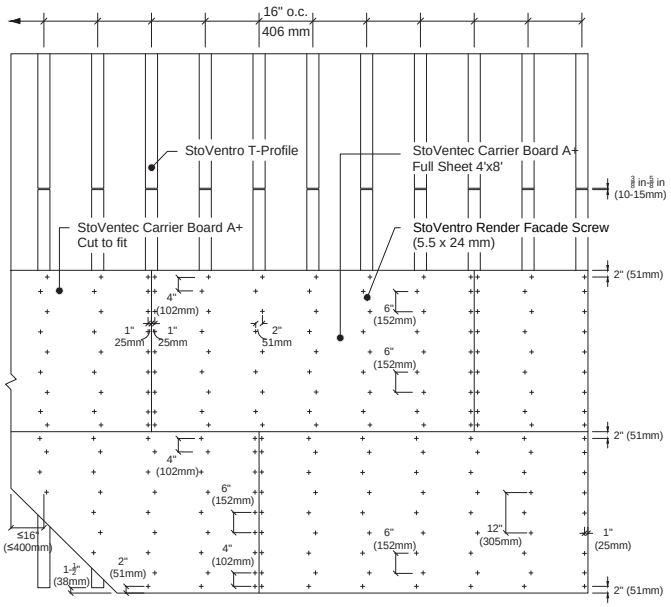
- Standard U.S. board format: 4 ft x 8 ft x ~1/2 in. (1219 x 2438 x 12 mm)
- Weight: 1.23 lb/ft² (6 kg/m²)
- Class A Surface Burning Characteristics
- Board accomodates walls with a radius greater than 26 feet (8 m) without scoring. Walls with a radius smaller than 26 feet but longer than 20 inches (300 mm) require board scoring (contact Sto technical solutions team)

Sto Render Facade Screws, stainless steel: (07056-007) for aluminium sub-construction (5.5 x 24 mm), (07056-006) for steel substrates (6.0mm x 28mm)

Prescriptive carrier board fastening schedules on 16 inch (406 mm) T-Profile spacing:

- Projects with allowable wind design pressures up to 80 lb/ft² (psf): 6 inch max. screw spacing (63 screws per full size board)
- Up to 60 psf: 8 inch max. screw spacing (49 screws per full size board)
- Up to 42.5 psf: 12 inch max. screw spacing (35 screws per full size board)

Fastening diagram: 6 in. max. – StoVentec Carrier Board 4 ft x 8 ft x 1/2", allowable wind loads up to 80 lb/ft²**



Notes

Always install the carrier boards in a bond pattern, without any stack bonds (offset vertical board joint by at least 16 in. (406 mm) - one regular axis spacing of the T-Profiles).

With screw spacing from horizontal edges of 2 in. (51 mm), additional screw connections are required at the lower or upper panel ends.

A vertical distance of at least 8 in. (20 cm) must be maintained between the horizontal carrier board joints and the joints of the vertical T-Profiles. Make sure that the carrier boards are fixed with at least 3 screws to each T-Profile above and below the board joint; additional screws may be necessary. If needed, install a 2 ft (61 cm) horizontal board strip to enable the 20 cm seperation between T-Profile joints and carrier board horizontal joints.

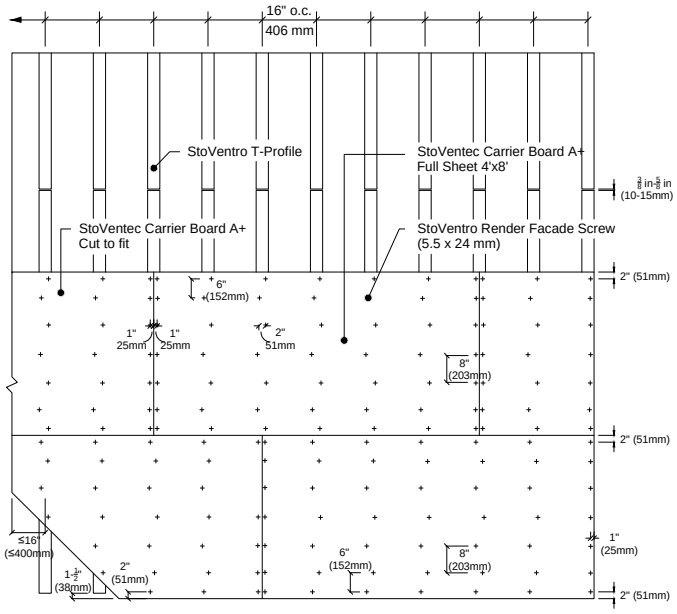
* see Sto detail 90.R.001

** All wind loads stated refer to the allowable design pressure of the building components and cladding per ASCE 7.

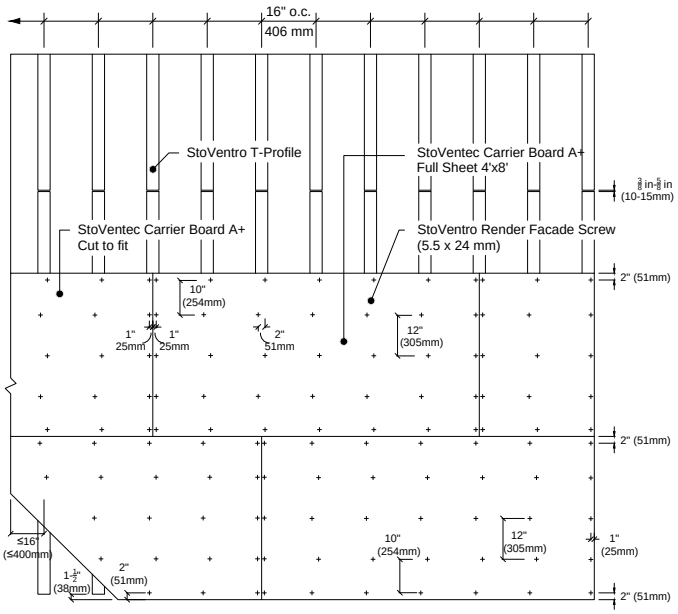
Carrier boards

Fastening schedules and requirements

Fastening diagram: 8 in. max. – StoVentec Carrier Board 4 ft x 8 ft x 1/2“, allowable wind loads up to 60 lb/ft²**



Fastening diagram: 12 in. max. – StoVentec Carrier Board 4 ft x 8 ft x 1/2“, allowable wind loads up to 42.5 lb/ft²**



Note

Always install the carrier boards in a bond pattern, without any stack bonds (offset vertical board joint by at least 16 in. (406 mm) - one regular axis spacing of the T-Profiles).

With screw spacing from horizontal edges of 2 in. (51 mm), additional screw connections are required at the lower or upper panel ends.

A vertical distance of at least 8 in. (20 cm) must be maintained between the horizontal carrier board joints and the joints of the vertical T-Profiles. Make sure that the carrier boards are fixed with at least 3 screws to each T-Profile above and below the board joint; additional screws may be necessary. If needed, install a 2 ft (61 cm) horizontal board strip to enable the 20 cm seperation between T-Profile joints and carrier board horizontal joints.

* see Sto detail 90.R.004

**All wind loads stated refer to the allowable design pressure of the building components and cladding per ASCE 7.

Notes

Always install the carrier boards in a bond pattern, without any stack bonds (offset vertical board joint by at least 16 in. (406 mm) - one regular axis spacing of the T-Profiles).

With screw spacing from horizontal edges of 2 in. (51 mm), additional screw connections are required at the lower or upper panel ends.

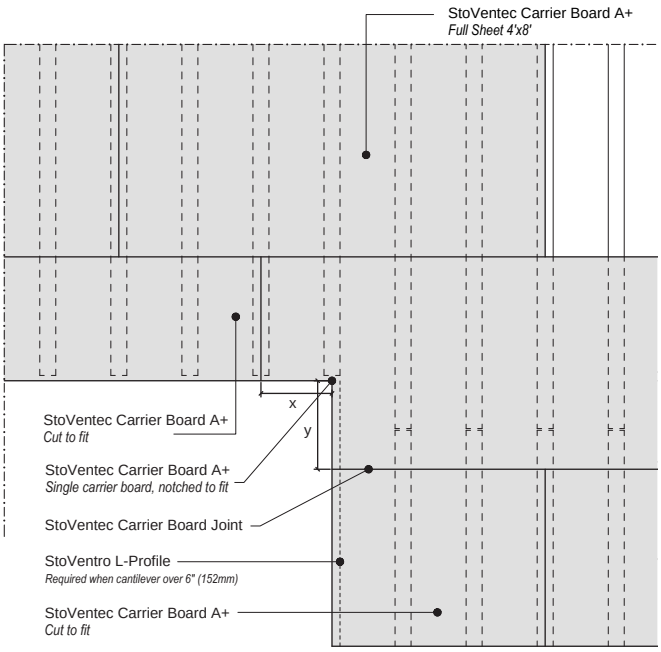
A vertical distance of at least 8 in. (20 cm) must be maintained between the horizontal carrier board joints and the joints of the vertical T-Profiles. Make sure that the carrier boards are fixed with at least 3 screws to each T-Profile above and below the board joint; additional screws may be necessary. If needed, install a 2 ft (61 cm) horizontal board strip to enable the 20 cm seperation between T-Profile joints and carrier board horizontal joints.

* see Sto detail 90.R.005

**All wind loads stated refer to the allowable design pressure of the building components and cladding per ASCE 7.

Carrier boards

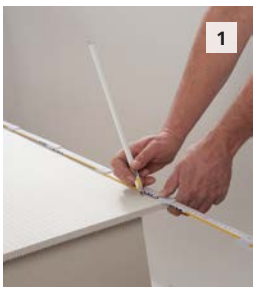
Openings



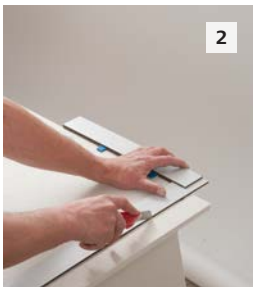
At windows, doors, or other openings, do not align Carrier Board joints to the opening corners. Notch the board to overlap with at least 8 in. (203 mm) material in both the x and y axis.

To prevent Carrier Board cantilevers of more than 6 in. (152 mm), utilize L-Profiles along the vertical edges of the opening

Installing the carrier boards



Measure and score the boards in need of fitting.



Cut through the mesh on the front side of the board with a utility knife and metal rule or stop angle and score the expanded glass granulate of the board body.

Break the board at the cut.

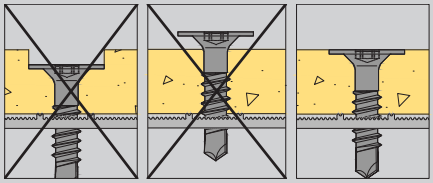
Then cut through the rear-side mesh.

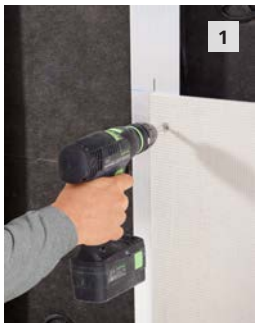
For exact board joints, smooth out the cut edge with abrasive grit sand paper or EIFS sanding board.

Installing the carrier boards

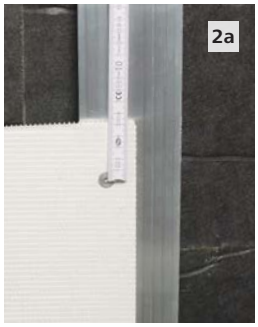
Note

Turn screws until flush. Do not over or under drive. Leave over-driven screws in place and fasten an additional, properly flush screw 1 in. above or below the overdriven one.





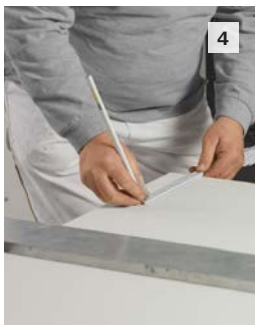
Mark the upper edge of the first board row exactly horizontally on the T-Profile with a spirit level and a chalk line. Align the first board row on the chalk line, secure against slipping (e.g. with grip pliers), and attach the StoVentec Carrier Board to the carrier profiles with Render Facade Screws. Always arrange vertical board joints in the middle of the vertical profiles.



Mark the face of the carrier boards along the centerline of each T-Profile to aide in correctly positioning the fasteners.
Fasten the Render Facade Screws (5.5 x 24 mm) through the carrier board into the T-Profile flush with the surface without pre-drilling, maintaining the specified vertical and horizontal screw spacings and screw edge intervals in accordance with the fastening diagrams.

Start the screw connection in one corner or in the middle of the board to prevent bending. Place the following boards tightly against each other (in moderate contact) without open joints and without forming a joint bridge.

Press the board tightly against the T-Profile when inserting screws. Fasten screws on alternate sides of the T-Profile web over the intermediate profiles.
Be sure to completely fasten every carrier board in a timely manner during board installation to guarantee stability.
Each entire or cut board must normally be fastened to at least two vertical T-Profiles.



Cut/reduced boards must be measured and scored and pre-cut in accordance with the fastening diagrams and edge/joint rules (pages 18-19). To ensure the screw edge intervals are not too small, the board width must be at least 2 in. (5 cm).

Tips

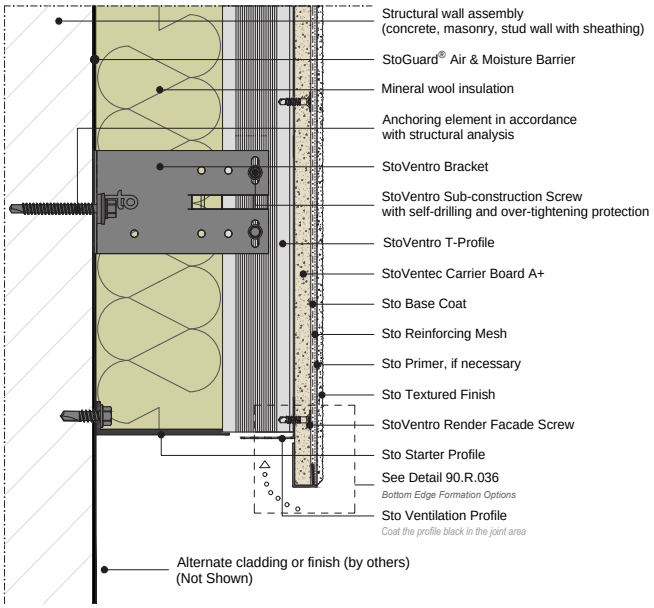
Alternatively to scoring boards by hand, use carbide-tipped blades with hand-held circular saws or circular saw benches to cut carrier boards. Ensure the mesh of the carrier board does not come away.

For joints > 1/4 in. (6 mm), the board(s) should be uninstalled and replaced with new ones cut more precisely. Gaps between 3 and 6 mm should be filled with StoSeal STPE Sealant.

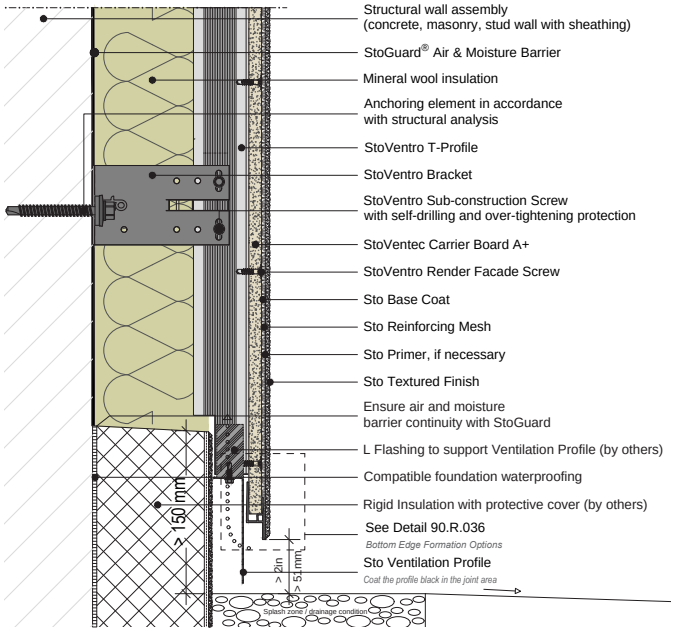
Details - Installation at grade

Grade details

Base detail for a set-back slab (or alt. cladding) with Sto-Starter Profile



Grade detail for a set-back slab with rigid insulation board in a splash zone

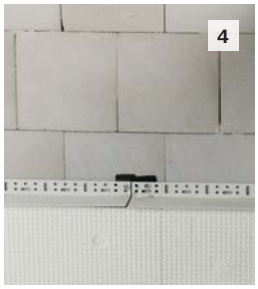


Starter profile installation

Determine the Render system base height before starting installation work (see also page 12) and mark it with a plumb line. Apply the foundation level and perimeter insulation according to the specifications and application guidelines.

Ensure continuity of the StoGuard air and water-resistive barrier at the Starter Profile level and transition between the wall and slab/ foundation.

Align the starter profile horizontally and flush at the previously determined height and fix it with appropriate anchors (i.e. steel stud, concrete fasteners, etc.) to studs, sill plate, or concrete/masonry every 24 in. (610 mm) (max.). Level out any unevenness of the substrate with shims.



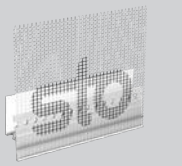
With profile joints, use the two exterior bore holes for fixing. Form a joint approx. 1/8 in. (3 mm) wide between the individual profiles.

At building corners, miter-cut the starter profile, join it so that it is straight-edged, or overlap it.

Note: these details are general and non-binding proposals, which are only schematic in nature. The specific technical specifications and information on the products contained in the Technical Data Sheets and system descriptions/approvals must be observed.

Installation at grade

Ventilation and edge protection profile installation

Product tips	
	**Sto-Ventilation Profile Alu** Profile for securing system ventilation and small animal protection in the base area and the lower end of the system (dimensions 30 x 40 mm and 40 x 100 mm)
	**Sto-Edge Protection Profile G** For vertical and lower horizontal outer edges of the carrier board in the window and base/grade areas; distance from ground level when used in grade area > 6 in. (15 cm)
	**Sto-Edge Protection Profile GT** For outer edges in the grade and window sill areas when using diffusion-tight coating build-ups; distance from ground level when used in base/grade area > 2 in. (5 cm)

Form a 1/4 to 1/2 in. (5 to 10 mm) joint between the Sto-Starter Profile or the horizontal surface of the foundation insulation and the T-Profiles.

When fastening the carrier board with the lower Render Facade Screws, fix the Ventilation Profile to the vertical T-Profiles simultaneously. Take into account a board projection of approx. 1-1/2 in. (4 cm).

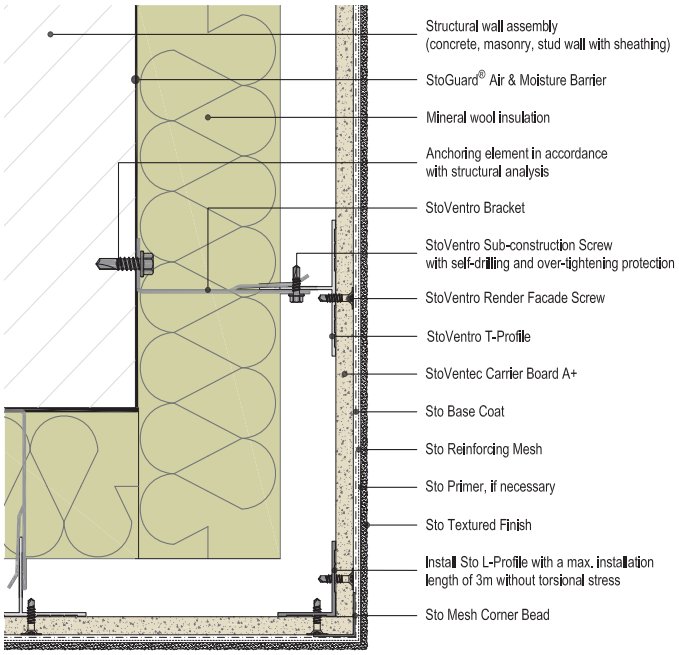
Install Sto-Edge Protection Profile G or GT on the lower edge of the carrier board.

Overlap the profile mesh in the profile joints (mesh overlapping should also be implemented when the profile is cut to size). Mount the Sto-Edge Protection Profile G or GT at an offset to the carrier board joints.

Create a joint of approx. 1 mm between the individual profile rods.

Details - Corner formations

Outside corners – Render to Render



Vertical L-Profiles (maximum length ~10 ft (3 m)) are installed on the rear side of the previously installed carrier boards of the first facade surface to brace the corner, taking into consideration a tolerance-based board projection. The L-Profiles are fixed with Render Facade Screws.

Align the L-Profiles so they are perpendicular over the entire building height.

Position the L-Profiles so they are aligned with the T-Profiles on the second facade surface.

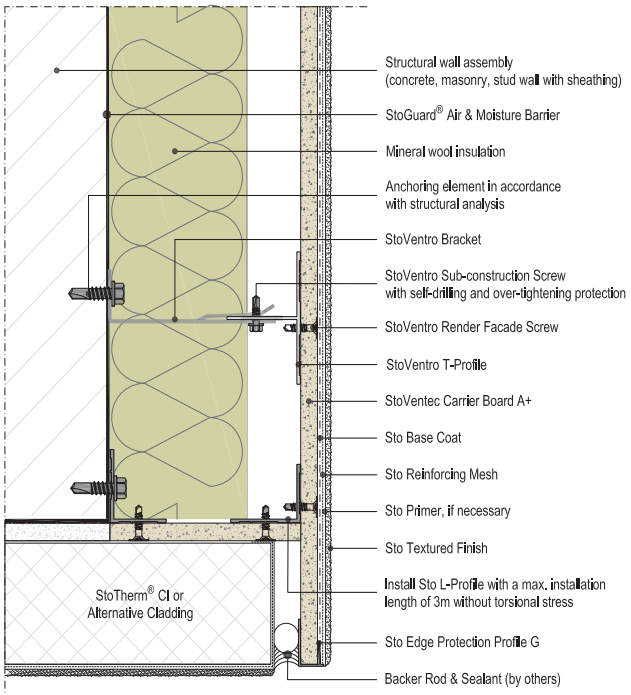
Then place the carrier boards on the second facade surface, align them, and fasten them onto the T-Profiles and L-Profiles.

After installing all carrier boards, score the projection on the rear side with a utility knife.
Apply pressure on the projection towards the front side to break the board at the score. Cut through the mesh on the front side of the carrier board with a utility knife.

Smooth the board edge with an abrasive grit or EIFS sanding board if necessary.

Corner formations

Outside corners – Render meets alt. facade/EIFS



Anchor L-Profiles to the structure positioned at the outside corner as pictured in the detail above before installing the continuous insulation.
Align the L-Profiles toward the building shell outer edge, taking the carrier board thickness ~1/2 in. (12 mm exact) into account.

Utilize the same fasteners and spacing as required for the StoVentro brackets.

Back the L-Profiles with Thermal Blocking Elements, if needed.

Fix the second vertical L-Profiles, aligned with the already installed L-Profiles, to the back of the carrier boards with Render Facade Screws and using over-tightening protection. The carrier board of the rainscreen cladding facade should project beyond the planned outer edge of the EIFS or other alternative cladding on the adjacent side, taking the building shell tolerances into account.

Cut the StoVentec Carrier Boards to the correct width as side system ends to enclose the rainscreen cavity at the corner. Adjust to fit in moderate contact with the wall and the projecting carrier board. Fasten the end cap piece carrier boards to the L-Profiles with Render Facade Screws per the project's required fastening schedule and observing edge distance requirements.

Depending on the external wall insulation system, the carrier board of the side system end is primed across the entire surface with Sto-Primer. Bond the insulation board (EPS or mineral wool) of the EIFS on the bare wall and the end boards according to the specifications. Leave a 1/2 in. gap between the protuding carrier board and the EPS.

Once the EIFS is bonded, the protruding carrier board must be cut off so that its end is flush with the EPS. Score the projection on the rear side with a utility knife. Apply pressure on the projection towards the front side to break the board at the score.

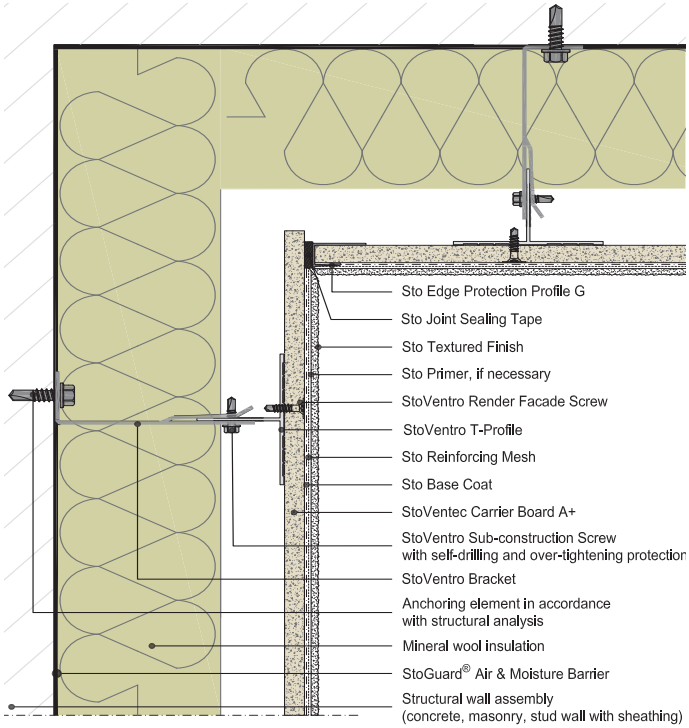
Cut through the mesh on the front side of the carrier board with a utility knife. Smoothen the carrier board end and add Edge Protection Profile G.

Later, add backer rod and StoSeal STPE Sealant to close off the gap between the EIFS and carrier board.

Note: this detail is a general and non-binding proposal, which is only schematic in nature. The specific technical specifications and information on the products contained in the Technical Data Sheets and system descriptions/approvals must be observed.

Corner formations

Inside corners

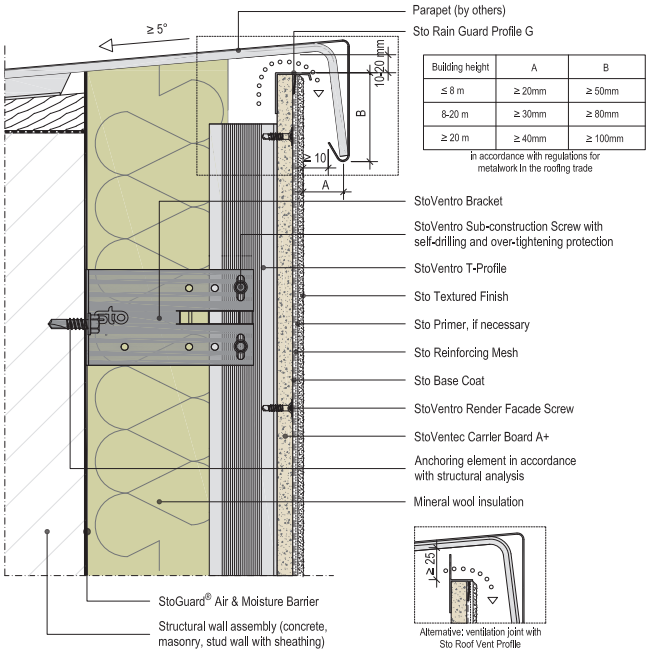


Bond the Sto-Joint Sealing Tape, onto the Sto-Edge Protection Profile G which is mounted on the adjacent carrier board that is still to be installed. Alternatively, it is possible to pre-bond the joint sealing tape onto the already installed carrier board at the inside corner. In this case, the Sto-Edge Protection Profile G should then be mounted on the board which is to be installed.

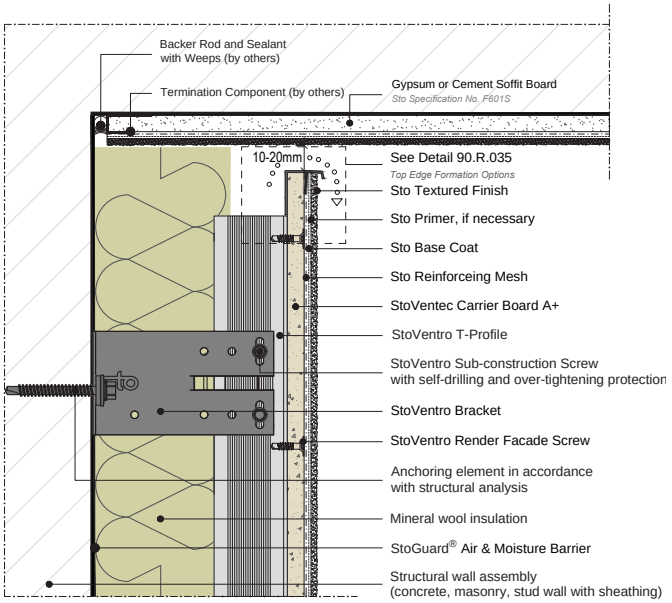
Push the adjacent StoVentec Carrier Board tightly against the first and fasten it to the sub-construction with Render Facade Screws. When coating the system, make a trowel cut.

Details: Roof connections

Parapet connection with 10 mm ventilation gap



Soffit connection with 10 mm ventilation gap



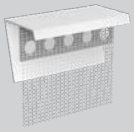
Provide a minimum 3/8 to 3/4 in. (10 - 20 mm) gap between the top of the carrier board and parapet cap, soffit, or ceiling (outdoors).

For parapets: there must also be an air space greater than or equal to 10 mm between the downward-pointing front flange of the parapet cap and the face of the Render to allow for ventilation of the rainscreen cavity.

As building height increases, the dimension of the downward-pointing front flange of the parapet cap (B in the detail above) also increases as does the air gap depth (A). Refer to the table provided.

Cap the carrier boards with Rain Guard Profile G or Roof Vent Profile G. The latter is particularly suited to soffit terminations as it provides the necessary air gap but also a barrier for fauna.

Product tips



Sto-Rain Guard Profile G
Stop profile with drip edge

Sto-Roof Vent Profile G
Connection profile for roof ventilation

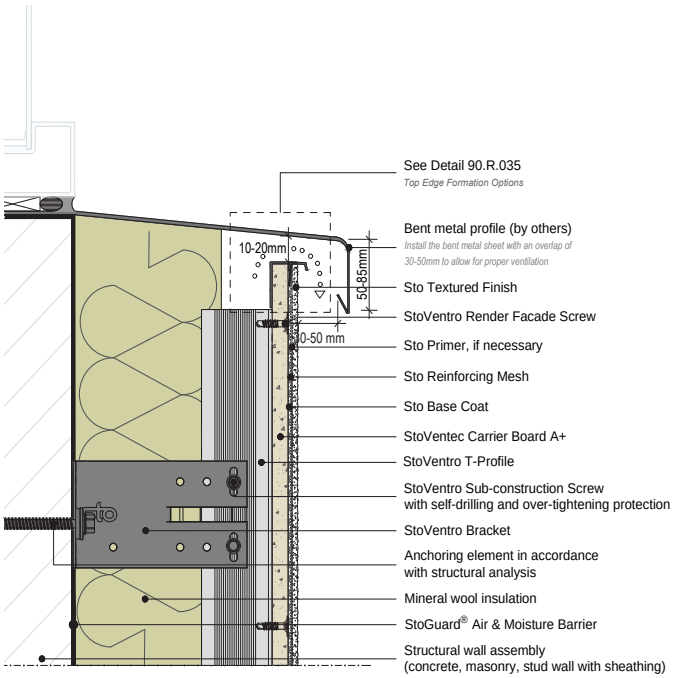
Notes

Following installation of the upper StoVentec Carrier Boards, clip the Sto-Rain Guard Profile G or Sto-Roof Vent Profile G onto the upper board edge.

Alternatively, the Sto-Rain Guard Profile G or Sto-Roof Vent Profile G can be fitted so that it projects on one side before installation of the upper carrier board. During installation of the subsequent board, this will be pushed into the protruding profile of the previously screwed-in board.

Details - Windows and doors

Window sill connection with ventilation gap



Install the Sto-Rain Guard Profile G or Sto-Roof Vent Profile G below the window sill on the upper edge of the carrier board.

Alternatively, the Sto-Rain Guard Profile G or Sto-Roof Vent Profile G can be fitted before installation of the carrier board.

The carrier board fasteners (Render Facade Screws) must not go through the mesh of Sto-Rain Guard Profile G or Sto-Roof Vent Profile G.

Provide a minimum 3/8 to 3/4 in. (10 - 20 mm) gap between the top of the carrier board and metal window sill (by others).

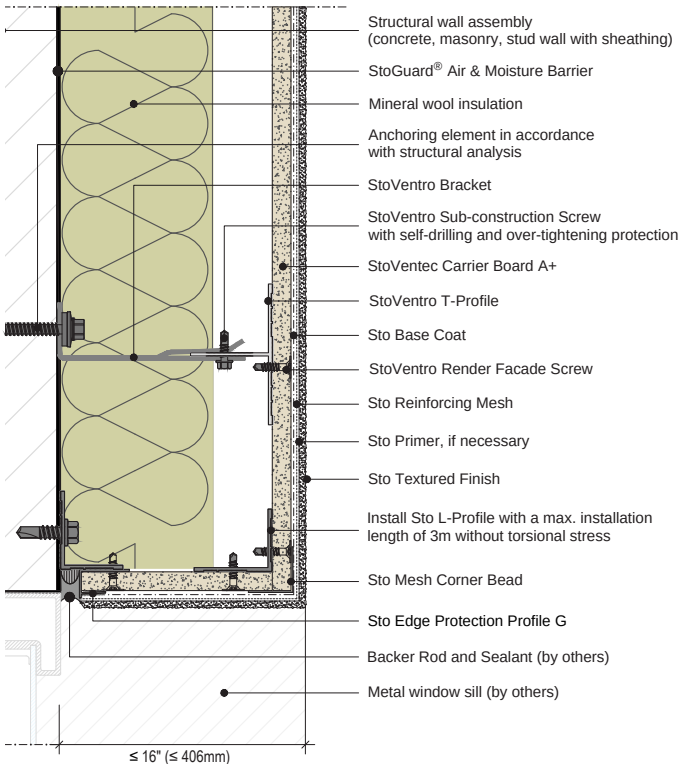
There must also be an air space of 1-1/4 to 2 in. (30 to 50 mm) between the downward-pointing front flange of the window sill profile and the face of the Render to allow for ventilation of the rainscreen cavity.

The dimension of the downward-pointing front flange of the window sill should be between 2 to 3-3/8 in. (50 to 85 mm).

Cap the carrier boards with Rain Guard Profile G or Roof Vent Profile G. The latter includes a vertical flange providing for the necessary air gap but also a barrier for fauna.

Windows and doors

Window jamb - Render return



Note

For correct waterproofing and installation of the windows and doors, observe the manufacturer specifications as well as the appropriate StoGuard WRB instructions, if applicable.

Anchor L-Profiles to the structure positioned at the opening jamb as pictured in the detail before installing the continuous insulation.

Align the L-Profiles toward the opening outer edge, taking the carrier board thickness ~1/2 in. (12 mm exact) into account.

Utilize the same wall anchors and spacing as required for the StoVentro brackets.

Back the L-Profiles with Thermal Blocking Elements, if needed.

As with outside corners, align vertical L-Profiles perpendicular and flush with the L-Profiles facing the building shell, and fix them to the facade carrier board panel on the rear side with Render Facade Screws.

Measure and cut carrier boards to fit the jamb/return. Account for 3/8 in. (10 mm) for a sealant joint between the carrier board edge and the window/door/wall surface.

Cap the boards with Edge Protection Profile G at the sealant joint edge (i.e. termination into the building shell).

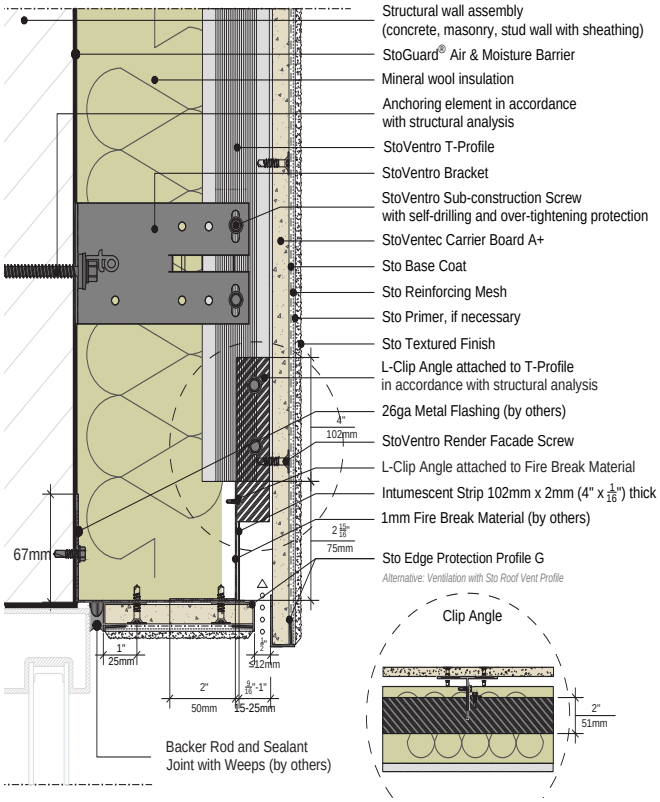
Install the cut panels with edge protection profiles using Render Facade Screws. Do not fasten through the edge protection profile mesh.

Fasten according to the edge distance rules and the appropriate diagram/configuration (see pages 18-19).

Windows and doors

Window/door head

Head formation – StoVentec R facade with fire protection**

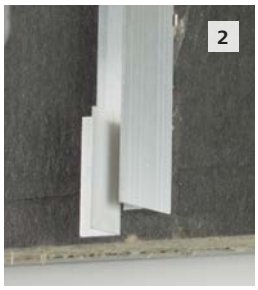


Note

The opening head's sub-construction must be partly attached before installation of the insulation. When measuring for the sub-construction, take into account the thickness of the return carrier board.

Anchor horizontal L-Profile on the building shell, taking into consideration the carrier board thickness (12 mm) including coating, before installing the facade insulation. Back the angles with with Thermal Block elements, if needed.

**To achieve NFPA 285 and CAN/ULC S134 fire ratings, refer to the Intertek Design Listings and Sto Details 90.R.080 and 90.R.081 for additional steps and requirements.



After installation of the insulation and before installing/fixing the T-Profiles on the wall brackets, install segments of L-Profile on the vertical T-Profile with Ventro Screws (5.5 x 19 mm) using over-tightening protection in accordance with construction detail 90.R.081. These L-Profile "clips" provide anchor points for a horizontal L-Profile to support the front end of the horizontal/return carrier board.

Align the front L-Profile (max. length 3 m) flush with the L-Profile that is already on the building shell. Utilize clamps to temporarily hold the profile while adjusting height and level.

Fasten the front L-Profile on the vertical L-Profile clips with Ventro Screws (5.5 x 19 mm) and using over-tightening protection. Produce fixed and sliding points.

The horizontal L-Profile ends may not cantilever more than 12 in. (30 cm).

The StoVentec Carrier Board must be cut to size for the window/door head return (see page 20) and adjusted. When cutting the head return board to size, the ventilation airspace of 3/8 to 3/4 in. (10-20 mm), which ensures system ventilation, must be observed. This gap is located between the vertical Carrier Board and the horizontal window head return piece.

Window/door head

Install Sto-Edge Protection Profile G on the Carrier Board long edges (front side and side facing the building shell).

Alternatively, Sto-Roof Vent Profile G can be used instead of Sto-Edge Protection Profile G at the front. This widens the gap to about 1 in. (25 mm).

Fasten the Carrier Board onto the horizontal L-Profiles with Render Facade Screws. The screw connection must not go through the mesh of the edge protection profiles.

If there is a T-Profile joint at the level of the opening head, notch the facade panel so that there is a vertical distance of at least 8 in. (20 cm) between the horizontal board joint and the T-Profile joint. Score the Carrier Boards precisely, notch, and then install on the T-Profiles with Render Facade Screws.

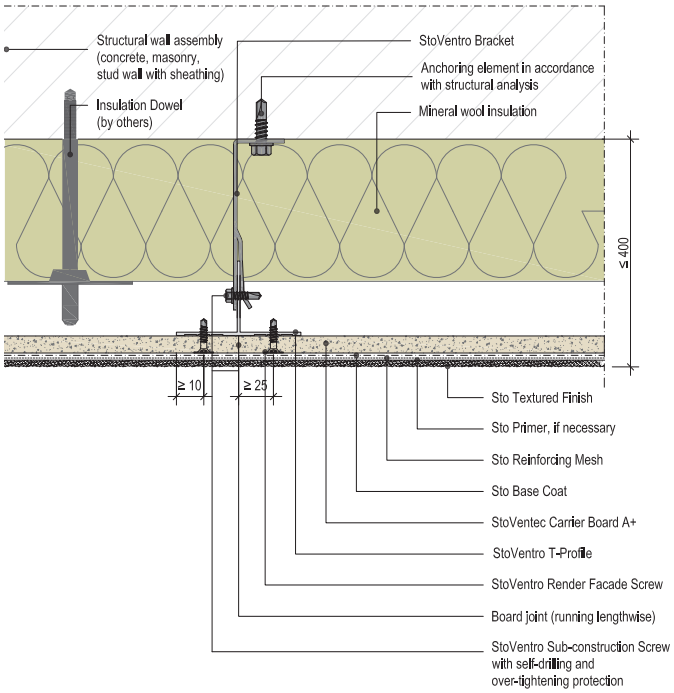
Install a Sto-Edge Protection Profile G on the lower end of the facade panel.

Note

If the facade/vertical carrier board installation overlaps with the opening head return board, the rear-side projection of the facade board must be measured after the return board is installed and this should be transferred to the front side, scored with a utility knife, and broken off. Smooth the board edge if necessary and then install Edge Protection Profile G.

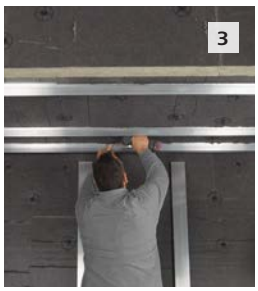
Soffits

SVR as soffit



Anchor the wall brackets as suspensions in the load-bearing substrate with appropriate fasteners per project-specific engineering.

Install the insulation with insulation dowels (by others) per insulation manufacturer instructions for soffit conditions.



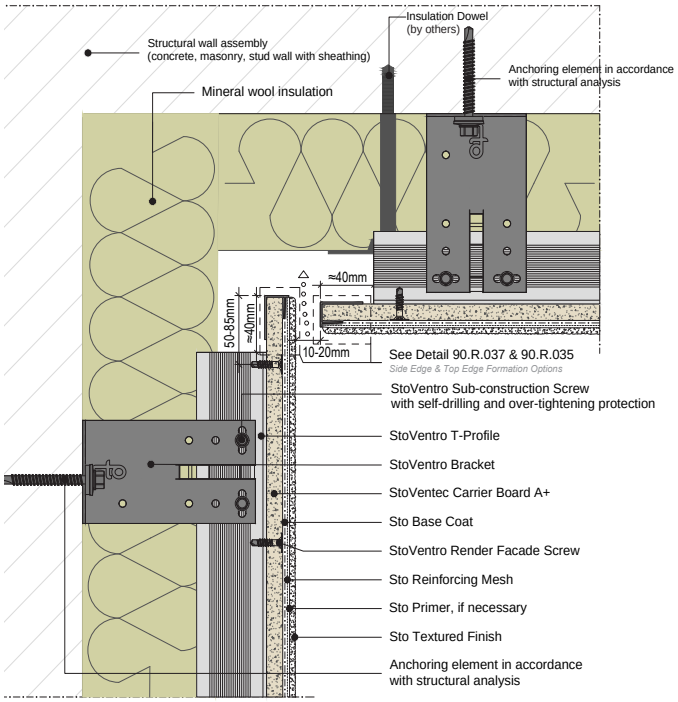
Install the T-Profiles as horizontal carrier profiles in the same fashion as described on page 17 for vertical profiles inclusive of fixed and gliding points.

Install the StoVentec Carrier Board in the same way as described on pages 20-21 and utilizing Render Facade Screws following edge distance rules and a fixing diagram for design wind loads appropriate for the specific project.

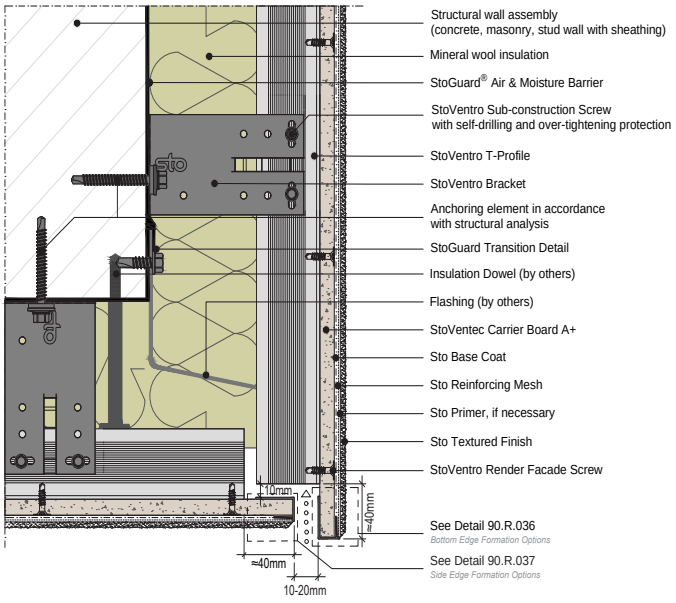
Note

If necessary, carry out diagonal bracing in accordance with project-specific engineering.

Transition - wall to soffit: vertical section in longitudinal direction

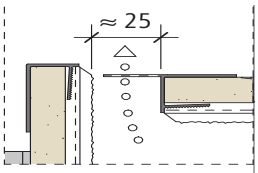


Transition - soffit to facade leading upwards: vertical section in longitudinal direction



Form connection joints, e.g. with Sto-Edge Protection Profile G. Install the profiles at the edges of the StoVentec Carrier Board on the facade and soffit.

Create the ventilation airspace of 3/8 to 3/4 in. (10-20 mm), which ensures system ventilation. This gap is located between the vertical/wall Carrier Board and the horizontal soffit board(s).

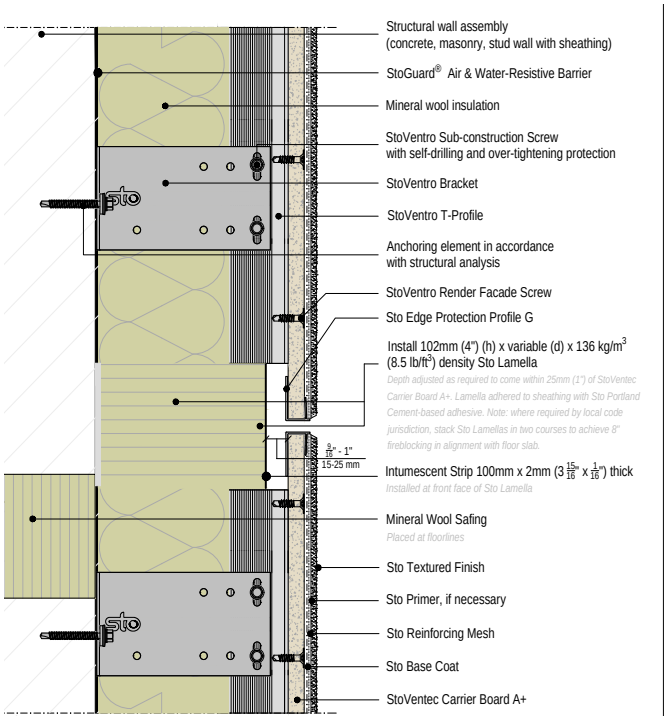


alternative: ventilation joint with Sto-Roof Vent Profile G, PVC white, 12 mm

Alternatively, Sto-Roof Vent Profile G can be used instead of Sto-Edge Protection Profile G on the soffit board edge. This widens the gap to about 1 in. (25 mm).

Horizontal fire break

Horizontal fire barrier: floor lines



Based on the depth of the cavity between the wall surface and the back of the Carrier Board, size Sto Lamella to leave 9/16 to 1 in. (15-25 mm) space between the lamella face and back surface of the Carrier Boards.

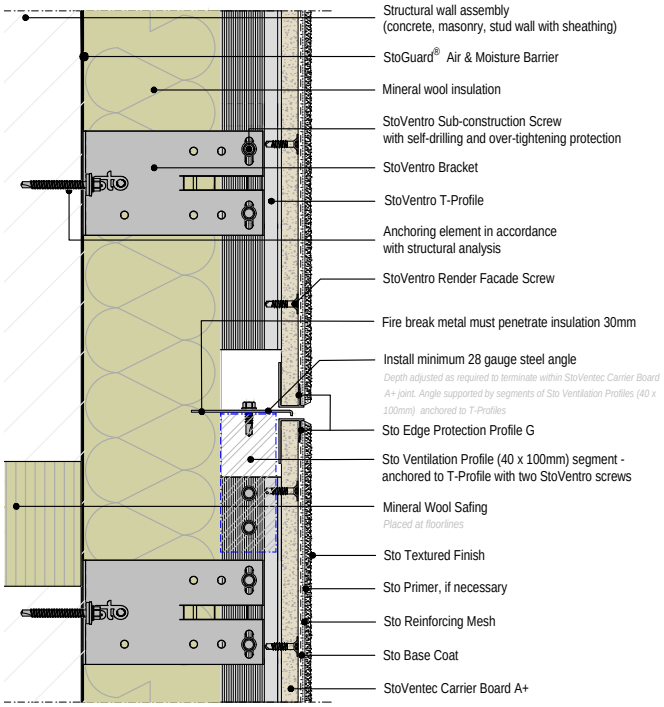
Install the lamella continuously along the floor line, adhering it to the wall with Sto Portland Cement-based adhesive.

Add 2 mm thick intumescent strip onto the front face of the lamella, covering the entire height/thickness.

Alternatively, install minimum 28 gauge metal fire breaks. The metal shall span the cavity and be supported by the base wall, or combine it with ancillary wall brackets mounted horizontally.

In the detail below, 90.R.555, Sto Ventilation Profile is cut into segments and used to float the metal fire break at the desired height. The Ventilation Profile segment is L-shaped and anchored to the top of T-Proflies with two StoVentro screws each. The 28 gauge metal fire break, running continously across the span of the joint, is fastened to the Ventilation Profile every 16 inches (406mm). It penetrates the insulation by 30mm and protrudes into the Carrier Board joint by at least 10mm.

To achieve NFPA 285 and CAN/ULC S134 fire ratings, refer to the Intertek Design Listings and Sto Detail 90.R.550 for additional options, detailed steps, and requirements.



Notes

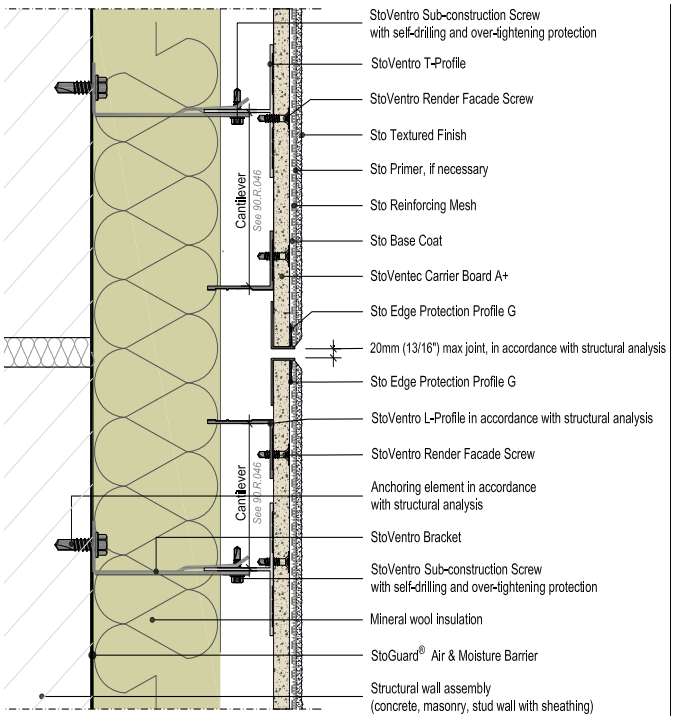
To install fire barriers in ventilated facade constructions, the following building code specifications in their respective current version and issue must be considered:

- NFPA 285 (U.S.)
- CAN/ULC S-134 (Canada)

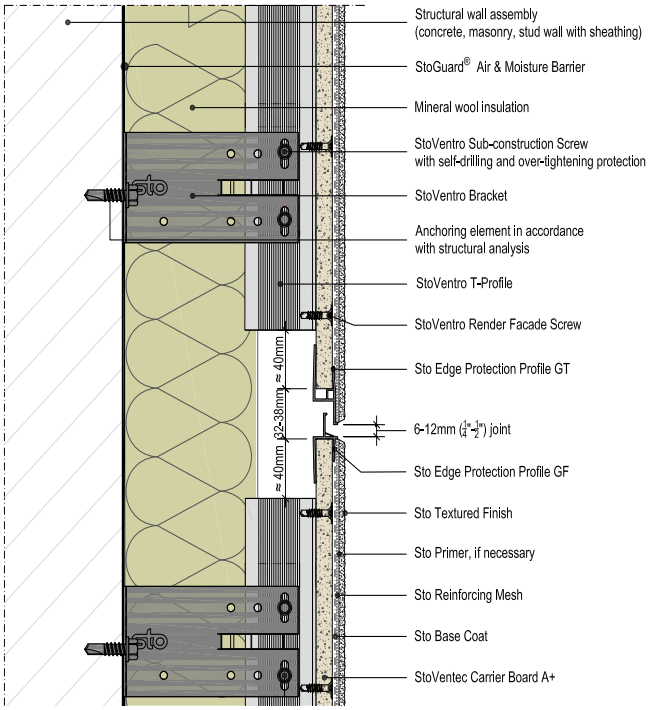
Coordinate the specific execution and location of the fire barriers with the fire protection expert responsible for the construction project.

System joints - expansion and movement

Vertical joints with Edge Protection Profile G



Horizontal joints with Edge Protection Profiles GF and GT



Expansion/movement joint locations

- The maximum permitted seamless vertical and horizontal edge length for Render is 82 feet (25 m). The length to width ratio must not exceed 2.5:1.
- Existing movement joints in back-up wall
- Through-wall joints in back-up wall
- Dissimilar back-up wall construction joints (e.g. frame wall to CMU)
- Floor line deflection joints in steel frame construction
- Floor lines in multi-level wood-frame construction

Expansion/movement requirements

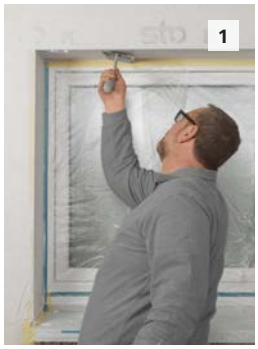
- Integrate structural expansion joints into the Render system. Adapt the joint width to suit the expected deformations.
- At Render system joint locations, the entire system, including the sub-construction, must be completely separated.
- With vertical expansion joints, depending on the arrangement of the carrier profiles, install a T-Profile on both sides of the joint.
- If carrier board ends cantilever more than 6 in. (152 mm), fasten L-Profiles to the back of the board ends to add rigidity. Do not cantilever board ends more than 16 in. (406 mm).

Reinforcement

Details (openings, joints, terminations)

Standard Base Coat for Render: StoArmat Classic plus
- it is not necessary to prime the carrier board before using Armat Classic plus.

Diagonal reinforcement connected to openings (windows, doors, niches)
Before full-surface system reinforcement, apply Sto Mesh Corner Beads or minimum 9x12 inch (225 x 300 mm) diagonal strips of detail mesh at corners of windows, doors, and all penetrations through the system. Embed the strips in wet base coat and trowel from the center to the edges of the mesh to avoid wrinkles.



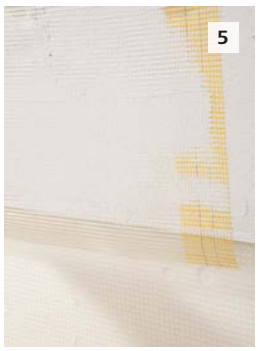
Opening/recess head and returns
Embed Sto Edge Protection profiles in wet base coat and trowel from the inside to the edges of the mesh to avoid wrinkles.

Reveal/return/inside corner reinforcement
Reinforce the inside corners between the jamb returns and head returns/soffits with Sto-Glass Fibre Mesh, with the reinforcing mesh overlapping by at least 4 in. (10 cm).

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

Reinforcement of profiles
Apply the base coat to the visible side of the carrier board underneath the mesh of the profiles already installed on the board edges, such as Sto-Edge Protection Profile G, GT, GT-R, GF, Sto-Roof Vent Profile G, Sto-Rain Guard Profile G, etc.

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



Embed the 6 oz surface mesh into the base coat and have it protrude over the lower or upper edge of the profile, depending on the profile and installation situation.

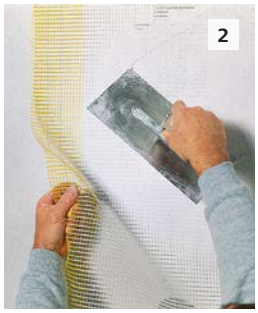
Cut off the protruding surface mesh with a utility knife on the lower or upper edge of the profile, depending on the installation situation.

Note
With mineral (cementitious) base coats (e.g. Sto Primer/ Adhesive), apply a full-surface undercoat of Sto-Prime over the entire surface of the carrier boards as well as under the mesh of the edge protection profiles before the diagonal reinforcement and the mesh angle beads are installed.

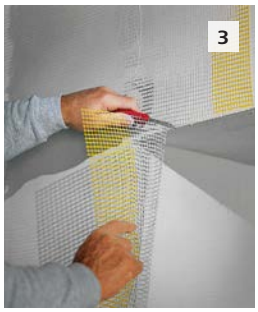
Reinforcement

Full-surface reinforcement

Base coat
The Armat Classic plus base coat can be applied manually with a stainless steel trowl to a uniform thickness of approximately 1/8 in. (3 mm).



Embedding the mesh
Work horizontally or vertically in strips of 40 in. (1016 mm), and immediately embed the 6 oz mesh into the wet base coat by troweling from the center to the edge of the mesh. Overlap mesh not less than 2-1/2 in. (64 mm) at mesh seams and at overlaps of detail mesh. Double wrap all inside and outside corners with minimum 6 in. (152 mm) overlap in each direction. Feather seams and edges.



Cut off the reinforcing mesh along the corner edges, e.g. at all corners, with a sharp cutter at an angle of 45°. Cut the reinforcing mesh cleanly and accurately. Before application of the base coat, check all edges for mesh projections and cut them off if necessary.

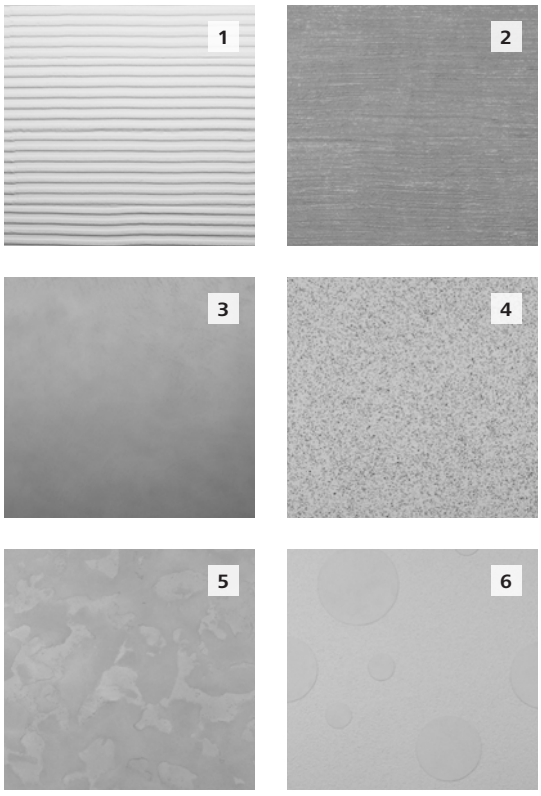
Then apply the base coat so that it fully covers the surface. Avoid creating wrinkles in the mesh. No mesh color should show through the base coat when it is dry. Re-skim with additional base coat if mesh color is visible.

Finish

Render surfaces

All cement-free, ready-to-use, or mineral finishing renders from Sto are suitable for use on StoVentec R. An intermediate coat is recommended with mineral finishing renders. Provide mineral finishing renders with a double levelling coat. Observe the minimum application temperature of 41 °F (+5 °C) in accordance with the appropriate product Technical Data Sheet. No limitation to the light reflectance value is required for organic system coatings. At light reflectance values under 15%, mineral finishing renders require project-specific approval from Sto.

Alternative decorative surfaces, such as glass mosaic, natural stone slab, or ceramic coverings, can be used in accordance with the Intertek CCRR and design listings and lend facades an individual appearance. Refer to Sto Technical Hotline No. 0821.



StoSignature demonstrates the possibilities for unique rendered facades. Here are a few options:
1) StoSignature texture: Linear 30
2) StoSignature texture: Linear 10 +Effect: Coating Partial
3) StoSignature texture: Fine 10
4) StoSignature texture: Rough 1 +Effect: Granulate 20
5) StoSignature texture: Fine 40 +Effect: 2.Texture Fine 40 Partial
6) StoSignature texture: Rough 1 +Effect: 2.Texture Fine 40 Defined

Masonry veneer facades (MVF)

Masonry veneers such as thin brick (compliant with ASTM C1088) or manufactured stone (compliant with ICC-ES AC51) may be installed over the StoVentec carrier boards. The carrier boards must be primed with Sto Prime and the base coat must be Sto Primer/Adhesive instead of Armat Classic plus. Utilize StoColl as the MVF adhesive.

1. Mark layout lines in accordance with planning: generally taking into account pattern (e.g., running bond, stacked bond, etc.), size of grout joints, location of expansion joints and other start and stopping points of the installation, and aesthetics.

2. Use the proper size notched trowel for application:
   - Thin brick units up to 5/8 inch (16mm) thick: ¼ x 3/8 x ¼ inch (6x10x6mm) square notched trowel.
   - Thin brick units up to 1-3/4 inch (45 mm) thick: ½ x ½ x ½ inch (13x13x13mm) U-shaped or square notched trowel.

3. Spread the StoColl adhesive with the flat side of the trowel to "wet-out" the prepared substrate. Then use the notched side of the trowel to spread additional adhesive with ribbons of adhesive oriented horizontally. Apply in a small area and immediately install thin brick before a "skin" forms on the adhesive. If adhesive skins, remove and discard the skinned adhesive, and re-apply fresh adhesive.

4. Just prior to placing units "back-butter" the units by applying fresh adhesive onto the back of the units in a thin layer with the flat side of the trowel, or with a margin trowel so it "wets out" the surface.

5. Immediately place units slightly offset from their final position in the freshly applied wall adhesive, then slide into place while applying firm pressure to fully bed the units in the adhesive so no voids exist in the adhesive. Use a straight edge to check for evenness of the surface when installing thin brick.

6. As units are placed, periodically remove a unit to verify full contact of adhesive with the substrate and the back of the unit, and full embedment (no voids) in the adhesive.

7. Before the adhesive dries scrape out any excess mortar in the grout joints or on the surface of the units. Allow to cure for at least 24 hours before grouting/pointing.

Grouting/Pointing Mortar Installation

Use an ANSI 118.7 compliant portland cement-based grout or pointing mortar in conformance with the manufacturer's instructions.

StoCast

StoCast Brick and StoCast Wood cast resin veneers may be installed over StoVentec carrier boards. Refer to the respective application guide for each product.

Install sub-construction and carrier boards per this document and reinforce the carrier boards in the same manner with edge profiles and 6 oz. mesh. If using Armat Classic plus as the base coat, it is not necessary to prime the carrier boards.

1. For StoCast Brick: mark layout lines in accordance with planning: generally taking into account pattern (e.g., running bond, stacked bond, etc.), size of grout joints, location of expansion joints and other start and stopping points of the installation, and aesthetics.
   - Utilize Sto Bonding & Pointing Mortar to apply the StoCast Brick pieces per the application guide.

2. For StoCast Wood: utilize StoCast Wood Adhesive and install the planks in accordance with the application guide.

Recommended tools

Refer to the StoVentec® Installation Guide System Tookit for a complete list of needed tools and other items. It and many other Render-related resources are available at stocorp.com/sto_systems/stoventec-render/.

Cleaning

Refer to the Sto Specification No. RC 100 - Guideline Specifications for Cleaning Wall Surfaces for detailed information about cleaning StoVentec Render.

Notes