



Building with conscience.

StoVentec® Render

Design Guide and Detail Booklet

Series 90R.xx | October 2020

Facades



Interiors



Ventilated Rainscreen
cladding systems

StoVentec® Render Rainscreen® Systems provide elegance and superior energy efficiency for the building envelope. The fully engineered, layered system is made up of an air and moisture barrier, a sub-construction of stainless steel brackets and aluminum profiles, mineral wool thermal insulation board, carrier board and Sto architectural finish. The carrier boards are field installed, flexible and easy to cut, making it simple to achieve unique architectural shapes, including seam free curved surfaces. Sto's wide variety of architectural finish systems provide the broadest range of aesthetics available in a rainscreen system, allowing designers to create unique walls that perform seamlessly.



Design Guide



Design Considerations	5
Minimum Ventilation Cavity	5
Maximum Ventilation Cavity	5
System Depth	6
System Information	7
Component Information	9
Testing and Listings	12
Guide Details	13

Table of Contents

System Overview and Components	3
StoGuard® Air and Moisture Barrier	3
StoVentro™ Sub-construction	3
Thermal Insulation	3
StoVentec® Carrier Board A+	3
Sto Architectural Finish System	3
Glossary of Terms	4

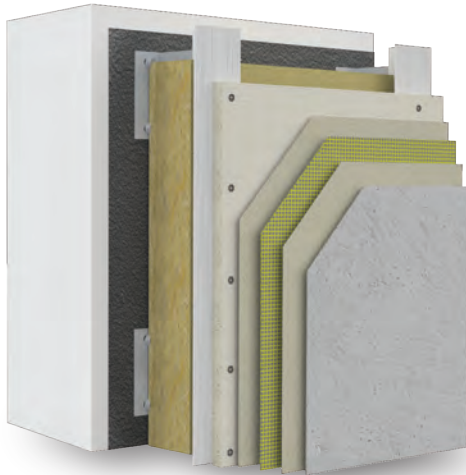


ATTENTION

The final design of any project is the sole responsibility of the Design Professional, with considerations for compliance of local building and design codes and requirements. Sto Corp. accepts no liability for design, engineering, or workmanship of any project. The information provided herein is in addition to other technical data provided by Sto Corp. (System Bulletin, Specification, Guide Details, etc). For more information, please visit www.stocorp.com

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StoVentec® Render

The Original Complete Rainscreen® System

StoVentec Render is a drained and back-ventilated rainscreen wall system. The system consists of five principal components: an air and moisture barrier, an adjustable sub-construction, thermal insulation, a lightweight composite carrier board made from recycled glass granulates and an architectural finish system. All Sto components are covered by a single-source warranty from Sto Corp.

StoVentec Render brings the full range of Sto coatings and textured finishes, from StoSignature and StoCreativ to Lotusan and Dryonic, to the Rainscreen market. It delivers the speed, simplicity and versatility of field construction with redundant moisture protection, high impact strength and design freedom. All materials are typically available with minimal lead times. Custom shapes, curves, colors, textures and effects can be readily created on site.

1



Air and Moisture Barrier

The first component of the StoVentec Glass system is Sto AirSeal®. It is a fluid applied Air and Moisture barrier (AMB) designed for use on most substrates, including glass mat gypsum sheathing, wood-based sheathing, concrete, and masonry. Sto AirSeal® protects walls against moisture damage from rain during construction and provides secondary moisture protection while the building is in service. It functions as the primary air barrier component in the wall assembly and comes with multiple transition components for maintaining AMB continuity at joints, seams, wall penetrations, and across dissimilar materials. Sto AirSeal® features 500% tensile elongation, meets requirements of ASTM C 1305 Low Temperature Crack Bridging and offers building code compliance confirmed by ICC-ESR 1233. Sto VaporSeal™ can be used where a vapor impermeable air and moisture barrier is specified.

2



StoVentro™ sub-construction

Sub-construction plays a vital role in wall design and construction. In addition to forming the structural link between façade and base wall, it provides design flexibility to StoVentec Render. Adjustable StoVentro wall brackets work with Sto Carrier Board A+ to create dynamic curvilinear surfaces, easily and economically. They also accommodate substrate waviness and imperfections. Together with StoVentro T and L-profiles, StoVentro brackets create correctly sized ventilation cavities that allow air circulation within limits defined by NFPA 285 fire propagation testing.

Much more than an engineered system that transfers wind loads and dead loads to structural framing, StoVentro sub-construction is part of the architect's creative toolkit.

3



Thermal Insulation

StoVentec Render uses Owens Corning Thermafiber® Rainbarrier®45 continuous insulation. This ASTM C612 (CAN/ULC S-702, Type I) compliant mineral wool provides exceptional thermal performance, fire resistance, acoustical control and moisture resistance.

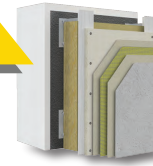
4



StoVentec® Carrier Board A+

Many of the unique properties of StoVentec Render are derived from the StoVentec Carrier Board A+, a lightweight composite board made from recycled glass granulates with extraordinary properties. By combining strength and impact resistance with flexibility and light weight, StoVentec Carrier Board A+ opens new possibilities. Sweeping, radiused shapes are easily created. High impact resistance combined with corrosion resistance takes durability to a new level. StoVentec Carrier Board A+ is the blank canvas on which the full range of Sto coatings and finishes find expression.

5

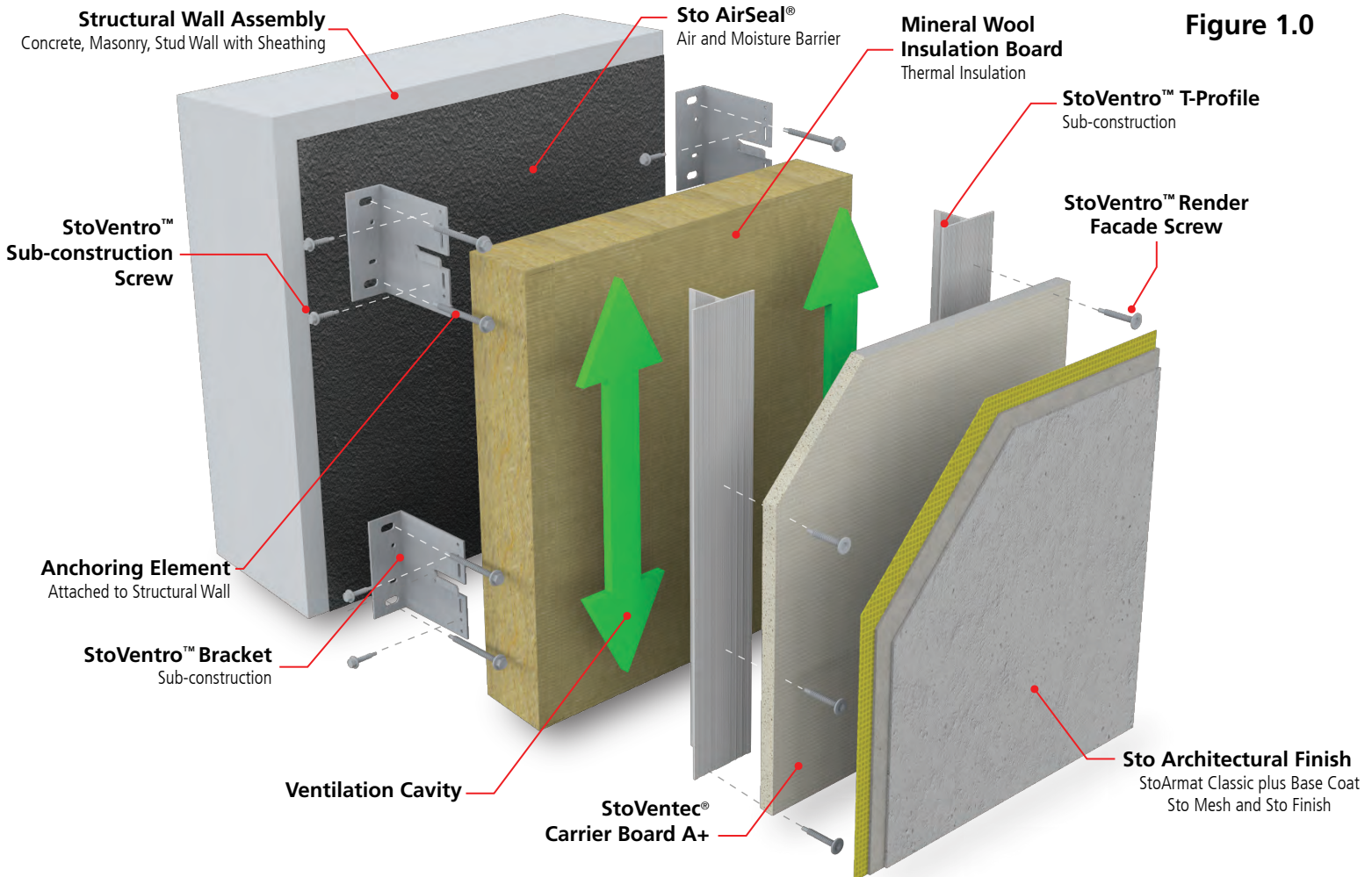


Architectural Finish System

The options are unlimited. From bright, highly chromatic colors to very dark shades, all are possible. Choose among the variety of StoSignature effects, or find a texture that is right for your project. The best looking walls are clean – Sto Lotusan coatings and finishes mimic the surface structure of the lotus leaf found in nature to repel dirt. Sto Dryonic coatings also employ biomimicry to create outstanding water-shedding performance. Backing these outstanding visual effects is a layer of treated glass fiber mesh embedded in StoArmat Classic plus base coat for enhanced impact resistance.



Figure 1.0



Glossary of Terms

StoGuard® Air & Moisture Barrier – a liquid applied air & moisture barrier available as a vapor-permeable or vapor-impermeable component.

Mineral Wool Insulation Board - Owens Corning Thermafiber® RainBarrier®45 insulation provides thermal insulation, fire resistive characteristics, and acoustical control. (Not provided by Sto Corp.)

StoVentec® Sub-construction – Stainless-steel wall brackets with aluminum vertical support profiles.

StoVentec® Bracket – Adjustable stainless-steel support for vertical 'L' and 'T' profiles.

StoVentec® T-Profile – Vertical aluminum profile, attached to the wall brackets, which supports StoVentec® Carrier Board A+.

StoVentec® Sub-construction Screw – Stainless steel fastener that provides wall bracket to vertical profile attachment.

StoVentec® Render Facade Screw – Stainless steel fastener that provides attachment of StoVentec® Carrier Board A+ to vertical StoVentec® T-Profiles.

Ventilation Cavity – The circulating air layer between the Mineral Wool Insulation Board and StoVentec® Carrier Board A+.

StoVentec® Carrier Board A+ – Lightweight composite board made of recycled glass granulate.

Sto Architectural Finish – Render offers a wide range of possibilities in surface texture, color and appearances over StoArmat Classic plus base coat and Sto Mesh.

Sto Edge Protection Profile – Sto PVC edge profile with integral glass fiber reinforcing mesh for 12mm StoVentec® Carrier Board A+ carrier board. (Not shown)

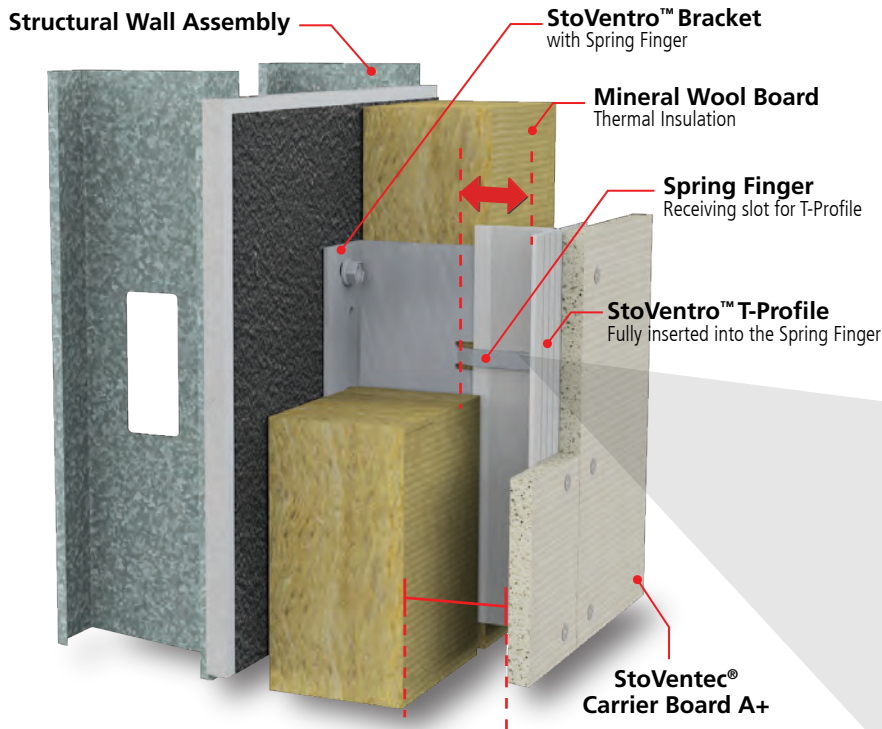
Sto Mesh Corner Bead – Corner bead with integral glass fiber reinforcing mesh. (Not shown)

Sto Ventilation Profile – Perforated profile for drainage and ventilation. (Not shown)

StoVentec® L-Profile – Aluminum support member used at inside and outside corners for structural attachment. (Not shown)

Accessory Profiles – Sto Drip Edge Profile, Sto Rain Guard Profile and Sto Roof Vent Profile (Not shown)

Anchoring Element – Engineered and code compliant fastener for attachment of StoVentec® Bracket to structural wall. (Not provided by Sto Corp.)



Minimum Ventilation Cavity

The vertical support profile (StoVentec T-Profile) is fully inserted into the StoVentec Bracket Spring Finger. This configuration represents the minimum ventilation cavity space of 20mm ($\approx 13/16''$). This ventilation cavity is measured from the exposed side of the Mineral Wool Insulation board to the back surface of the StoVentec Carrier Board A+.

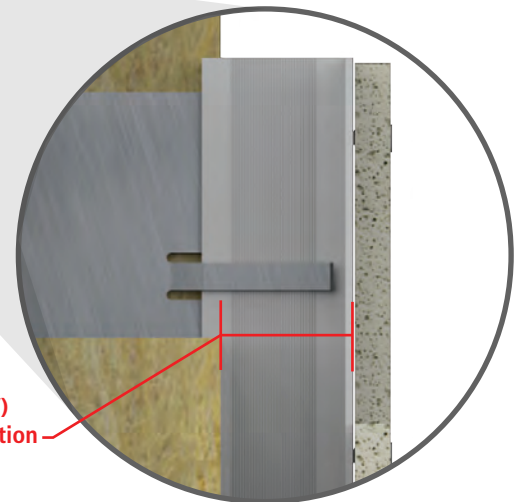
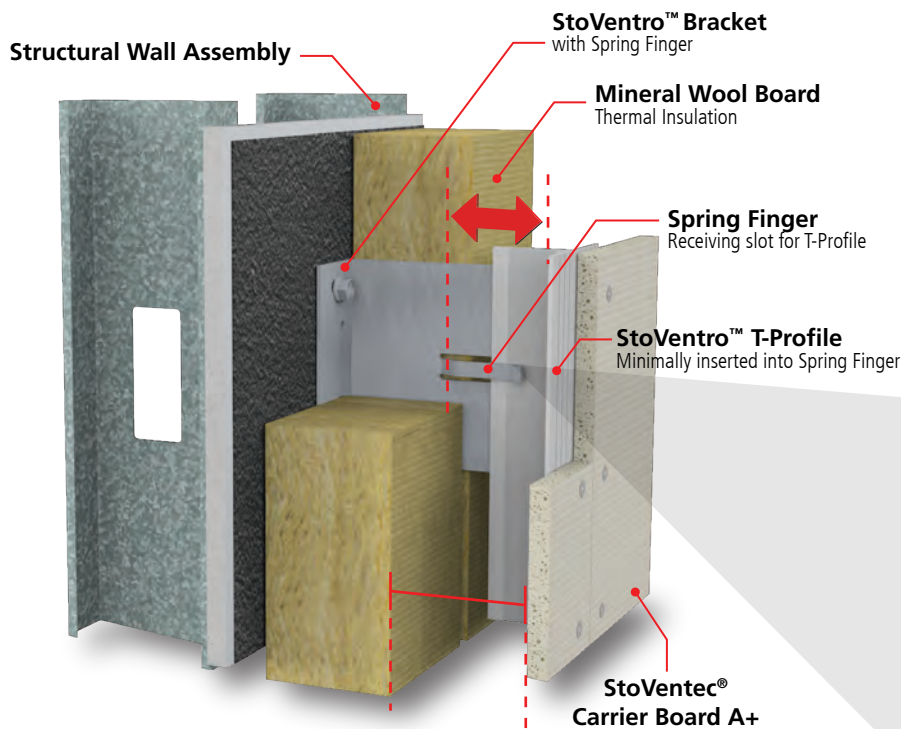


Figure 1.1
20mm ($\approx 13/16''$)
Minimum Ventilation Cavity Space



Maximum Ventilation Cavity

The vertical support profile (StoVentec T-Profile) is minimally inserted within the StoVentec Bracket Spring Finger. This configuration represents the maximum ventilation cavity space of 50mm ($\approx 2''$). This ventilation cavity is measured from the exposed side of the Mineral Wool Insulation board to the back surface of the StoVentec Carrier Board A+.

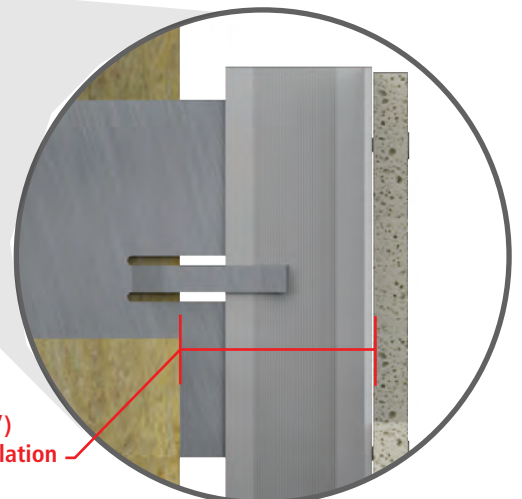


Figure 1.2
50mm ($\approx 2''$)
Maximum Ventilation Cavity Space


Table 1.0 - Bracket Size and System Depth as determined by Insulation Requirements

	Insulation ⁴ Size Required				Sto Wall Bracket Size Required (mm)	- Minimum - Distance from AMB ³ to Front Face of Architectural Finish (mm)	- Minimum - Distance from AMB ³ to Front Face of Architectural Finish (in)	- Maximum - Distance from AMB ³ to Front Face of Architectural Finish (mm)	- Maximum - Distance from AMB ³ to Front Face of Architectural Finish (in)
	Width (in)	Width (mm)	R-Value ¹	RSI-Value ²					
Standard	2"	50.8	8.6	1.48	80	99.3	3 - ¹⁵ / ₁₆ "	129.3	5 - ¹ / ₈ "
	2.5"	63.5	10.7	1.85	100	119.3	4 - ¹¹ / ₁₆ "	149.3	5 - ⁷ / ₈ "
	3"	76.2	12.9	2.22	100	119.3	4 - ¹¹ / ₁₆ "	149.3	5 - ⁷ / ₈ "
	3.5"	88.9	15	2.59	120	139.3	5 - ¹ / ₂ "	169.3	6 - ¹¹ / ₁₆ "
	4"	101.6	17.2	2.96	120	139.3	5 - ¹ / ₂ "	169.3	6 - ¹¹ / ₁₆ "
	4.5"	114.3	19.3	3.33	140	159.3	6 - ¹ / ₄ "	189.3	7 - ¹ / ₂ "
	5"	127	21.5	3.70	160	179.3	7"	209.3	8 - ¹ / ₄ "
	5.5"	139.7	23.6	4.07	160	179.3	7"	209.3	8 - ¹ / ₄ "
	6"	152.4	25.8	4.44	180	199.3	7 - ⁷ / ₈ "	229.3	9"
	6.5"	165.1	27.9	4.81	200	219.3	8 - ⁵ / ₈ "	249.3	9 - ⁷ / ₈ "
	7"	177.8	30.1	5.18	200	219.3	8 - ⁵ / ₈ "	249.3	9 - ⁷ / ₈ "
Custom	7.5"	190.5	32.2	5.55	220	239.3	9 - ⁷ / ₁₆ "	269.3	10 - ⁵ / ₈ "
	8"	203.2	34.4	5.92	220	239.3	9 - ⁷ / ₁₆ "	269.3	10 - ⁵ / ₈ "
Special Design Considerations Required	8.5"	215.9	36.5	6.29	240	259.3	10 - ³ / ₁₆ "	289.3	11 - ³ / ₈ "
	9"	228.6	38.7	6.66	260	279.3	11"	309.3	12 - ³ / ₁₆ "
	9.5"	241.3	40.8	7.03	260	279.3	11"	309.3	12 - ³ / ₁₆ "
	10"	254	43	7.40	280	299.3	11 - ¹³ / ₁₆ "	329.3	13"
	10.5"	266.7	45.1	7.77	300	319.3	12 - ⁵ / ₈ "	349.3	13 - ³ / ₄ "
	11"	279.4	47.3	8.14	300	319.3	12 - ⁵ / ₈ "	349.3	13 - ³ / ₄ "
	11.5"	292.1	49.4	8.51	320	339.3	13 - ³ / ₈ "	369.3	14 - ⁹ / ₁₆ "
	12"	304.8	51.6	8.88	320	339.3	13 - ³ / ₈ "	369.3	14 - ⁹ / ₁₆ "
	12.5"	317.5	53.7	9.25	340	359.3	14 - ¹ / ₈ "	389.3	15 - ³ / ₈ "
	13"	330.2	55.9	9.62	360	379.3	15"	409.3	16 - ¹ / ₈ "
	13.5"	342.9	58	9.99	360	379.3	15"	409.3	16 - ¹ / ₈ "

¹ R = 4.3 per 1 inch

⁴ Owens Corning Thermafiber®RainBarrier®45

² RSI = 0.74 per 25mm

³ AMB= Air and Moisture Barrier Layer


Table 1.1 - System Information

Feature	Description	Value
Application	Approved for vertical walls, ceilings, and soffits	Above grade only, exterior and interior. Commercial, Residential and Institutional construction.
Application	Curved façade applications	Facades with radius as small as 300mm (11-1 ³ / ₁₆ ") can be achieved
Warranty	Limited Warranty	10 Year
System Component	Component 1 - Air and Moisture Barrier (AMB)	Sto Corp. Sto AirSeal®. Fluid applied, vapor permeable AMB
System Component	Component 2 - Sub-construction	Sto Corp. StoVentro™
System Component	Component 3 - Insulation	Owens Corning Thermafiber® RainBarrier®45
System Component	Component 4 - Carrier Board	StoVentec® Carrier Board A+
System Component	Component 5 - Architectural Finish System	Sto Corp. Textured Finish over Sto Reinforced Base Coat
System Weight	Weight range of Sto Textured Finish, StoVentec Carrier Board A+, StoVentro Sub-construction and Thermal Insulation	≈37.29 to ≈39.73 kg/m ² (≈7.64 to ≈8.14 lb./ft ²) Variable based on cavity depth
System Weight	Weight range of Sto Textured Finish (Sto Base Coat, Sto Mesh, and Sto Finish)	≈7.32 to ≈9.76 kg/m ² (≈1.5 to ≈2.0 lb./ft ²)
System Weight	Weight of StoVentec Carrier Board A+ without Sto Corp Architectural Finish (Sto Base Coat, Sto Mesh and Sto Finish)	6 kg/m ² (1.23 lb./ft ²)
System Weight	Weight of StoVentro Sub-construction	≈2.00 kg/m ² (0.41 lb./ft ²) Variable based on cavity depth
System Weight	Weight of Thermal Insulation (O.C. Thermafiber RainBarrier 45)	0.75 - 2.63 lb/ft ² (3.66 - 12.84 kg/m ²) at 2"-7" (51 - 178mm) thickness
Substrates	Allowable wall substrates	Steel or wood frame with glass mat gypsum sheathing in compliance with ASTM C1177, code compliant OSB or plywood sheathing, concrete or core-filled concrete masonry, existing structurally sound, uncoated brick or other masonry wall construction. For others, contact Sto Corp.
Substrates	Horizontal spacing (stud spacing) of vertically oriented StoVentro T-profiles mounted in StoVentro brackets	406mm (16") on center
Substrates	Vertical spacing of StoVentro brackets	Varies based on Wind Loads. See StoVentec load tables
Ventilation	Ventilation is required at top and bottom of architectural finished panel	Minimum 10mm (3/ ₈ ") gap
Ventilation Cavity	Thickness of unobstructed air cavity between face of wall mounted insulation and rear surface of StoVentec Carrier Board A+	20mm - 50mm (13/ ₁₆ " - 2")
Deflection Limit	Recommended allowable deflection limit	L/360
Structural	Structural Wall Assembly level tolerance	6mm in 3.0m (13/ ₁₆ " in 10')
System Layout	Gap between StoVentec Carrier Board A+ outside edge and all other physical building elements (if ventilation profile IS NOT used)	10mm - 20mm (3/ ₈ " - 13/ ₁₆ ")
System Layout	Gap between StoVentec Carrier Board A+ outside edge and all other physical building elements (if ventilation profile IS used)	25mm (1")
System Layout	Clearance of architectural finished panel above ground level	150mm (5-7/ ₈ ") (minimum)
System Layout	StoVentec Render setback distance of textured finish from ground objects (structures/elements)	At ground level, recommended 914.4mm (3') minimum setback allowance for protection against inadvertent impact, snow accumulation, debris build-up, etc.



Table 1.1 - System Information (cont'd)

Feature	Description	Value
System Layout	StoVentec Carrier Board A+ installation	Carrier boards butt ends shall be centered horizontally on the mounting surface of the 90 mm wide vertically oriented T-profiles. See StoVentec Carrier Board A+ Product Bulletin
System Layout	Sto Edge Protection Profiles	Use of Sto Edge Protection profiles are REQUIRED at all outside exposed edges of StoVentec Carrier Board A+ (i.e. All exposed perimeter edges)
System Layout	StoVentec Carrier Board A+ corners	Use of Sto Mesh Corner Bead required on all outside corners, jambs, and returns of Sto Textured Finish.
System Layout	StoVentec Carrier Board A+ connections to other structures/elements	Use of backer rod and sealants (by others) required (with appropriate allowance for weep/drainage) at interfaces to other structures and elements.
System Layout	StoVentec Carrier Board A+ orientation	Install carrier boards horizontally in a running bond pattern.
System Layout	Quantity of fixed point (FP) connections to T/L profile	1 maximum
System Layout	Quantity of sliding point (GP) connections to T/L profile	At least one sliding point is required. Actual quantity is defined by project-specific engineering calculations.
Joint Requirements ¹	Max. seamless distance between expansion joints in the field of the walls with length to width ratio not in excess of 2.5 to 1.	25m (82 ft)
Joint Requirements ¹	Joints are required in the system as follows	<ul style="list-style-type: none"> • At existing movement joints in back-up wall construction • At through wall joints in back-up wall construction • At dissimilar back-up wall construction (e.g., frame wall to masonry wall) • At floor line deflection joints in steel frame construction • At floor lines in multi-level wood-frame construction • At intervals of not more than 82 feet (25m) in the field of walls with length to width ratio not in excess of 2.5 to 1.
Joint Requirements ¹	At junctions or abutments to dissimilar building components	Windows, doors, alternative façade materials, pipe, scupper and similar through wall penetrations.
Fire Break	Required (Horizontal)	Refer to StoVentec® Details for material and configuration.
Flashing	Recommended	Refer to StoVentec® Details for material and configuration.

¹ Size joints in accordance with anticipated movement



Table 1.2 - Component Information

Feature	Description	Value
AMB	StoGuard® Air and Moisture Barrier (AMB), Sto AirSeal® or Sto VaporSeal®	Vapor permeable or impermeable per project specific requirement, as manufactured by Sto Corp.
AMB	Thickness	30 DFT (50 wet mils) 40 DFT (66 wet mils) where specified
AMB	Color: Sto AirSeal® Sto VaporSeal®	Charcoal or black Grey/Blue
Sub-Construction	Bracket material	304 stainless steel
Sub-Construction	Bracket: Small StoVentro Bracket (GP) W x H x T1 Used for wind loading	50mm x 75mm x 2.0mm x variable depth (2" x 2- ¹⁵ / ₁₆ " x ¹ / ₁₆ ")
Sub-Construction	Bracket: Large StoVentro Bracket (FP) W x H x T1 Used for dead/fixed point loading and wind loading	50mm x 130mm x 2.5mm x variable depth (2" x 5- ¹ / ₈ " x ¹ / ₈ ")
Sub-Construction	Depth Range	80mm - 360mm (3- ¹ / ₈ " - 14- ¹ / ₈ ")
Sub-Construction	Bracket: Adjustability Depth Range	0mm - 30mm (0" - 1- ³ / ₁₆ ")
Sub-Construction	Protrusion of top of bracket above face of insulation	≈ 20mm (¹³ / ₁₆ ")
Sub-Construction	Bracket weight	Variable by size
Sub-Construction	Material (StoVentro L & T Profile)	6005A-T5 or 6063-T66
Sub-Construction	Size: StoVentro T-profile (3m length)	90mm x 53mm x 2.7mm (3- ⁹ / ₁₆ " x 2- ¹ / ₁₆ " x ¹ / ₈ ")
Sub-Construction	Size: StoVentro L-profile (3m length)	50mm x 40mm x 2.7mm (2" x 1- ⁹ / ₁₆ " x ¹ / ₈ ")
Sub-Construction	Weight/ft: StoVentro T-profile (approximate)	2.64 kg/m (0.54 lb./ft)
Sub-Construction	Weight/ft: StoVentro L-profile (approximate)	1.61 kg/m (0.33 lb./ft)
Sub-Construction	Fastener: Bracket to StoVentro T/L profile attachment	Hex Head (Torx), Self drilling screw, 5.5mm Dia. x 22mm L, with over torque feature, 304 SS. (³ / ₁₆ " x ⁷ / ₈ ")
Sub-Construction	Fastener to Aluminum: StoVentec Carrier Board A+ to StoVentro T/L profile attachment	Flat Head, Self drilling façade screw, 5.5mm Dia. x 24mm L (³ / ₁₆ " x ¹⁵ / ₁₆ ") for attachment to aluminum substrate
Sub-Construction	Fastener to Carbon Steel substrates: StoVentec Carrier Board A+ to carbon steel stud	Flat Head, Self drilling façade screw, 6.0mm Dia. x 28 mm L (¹ / ₄ " x 1- ¹ / ₈ ") 304 SS, for attachment to carbon steel substrates
Sub-Construction	Fastener to Wood Substrates: StoVentec Carrier Board A+ to StoVentro T/L profile attachment	Flat Head, Self drilling screw, 5.0 mm Dia. x 42 mm L (³ / ₁₆ " x 1- ⁵ / ₈ ") 304 SS, for attachment to wood substrates
Sub-Construction	Bracket to substrate attachment fastener (anchoring fastener). Calculations performed by qualified licensed engineer	Project specific based on wind load, and substrate materials, defined by structural calculations, material: 304 stainless steel
Sub-Construction	Vertical gap between adjacent T/L profiles mounted in an end-to-end configuration	10 - 15mm (³ / ₈ " - ⁵ / ₈ ")
Sub-Construction	Minimum fastening distance from top or bottom edge of T/L profile	≥ 10mm (³ / ₈ ")



Table 1.2 - Component Information (cont'd)

Feature	Description	Value
Sub-Construction	Attachment locations of StoVentro single T/L profiles to StoVentro Wall Brackets - Small (GP)	To compensate for linear thermal expansion of T/L profiles, attach profiles to StoVentro Brackets through 5.5 x 20mm oblong slots in bracket. These are referred to as sliding point attachment.
Sub-Construction	Attachment locations of StoVentro single T/L profiles to StoVentro Wall Brackets - Large (FP)	Attach T/L profile through circular holes in StoVentro bracket. This is commonly referred to as fixed point attachment.
Insulation	Type: Mineral Wool Board	ASTM C612 (CAN/ULC S-702, Type I) compliant, non-combustible mineral fiber board classified into types and categories: Type IA, IB, IVA.
Insulation	Weight: 50mm - 178mm (2" - 7") Thickness	0.75 - 2.63 lb/ft ² (3.66 - 12.84 kg/m ²)
Insulation	Thickness Minimum	50mm (2")
Insulation	Density	72.1 kg/m ³ (4.5 lb/ft ³)
Insulation	Thermal Conductivity	0.033 W/cm · K (0.23 (BTU-in)/(hr·ft ² ·°F), @ 75°F)
Insulation	Thermal Resistance	R-Value = 4.3 per inch, RSI = 0.74 per 25mm of thickness
Insulation	Attachment to substrate wall	Commercially accepted perforated Insulation Hangers ("stick-pins" by others) which are attached with a non-sag adhesive to the exterior wall air barrier surface to secure insulation
Carrier Board	Size: Height x Width	1219.2mm x 2438.4mm (4' x 8')
Carrier Board	Thickness	12mm (1/2")
Carrier Board	Recycled content	StoVentec Carrier Board A+ is comprised of 90+% post-consumer recycled glass granulate
Carrier Board	Bending Tensile Strength, average	≈ 8 N/mm ² (1160 lb.in ²) per DIN EN 100
Carrier Board	Bending Tensile Strength, minimum	≈ 5.5 N/mm ² (798 lb.in ²)
Carrier Board	Curved application	Desired radius ≥ 8 m (26'-3") for 4' x 8' carrier board, contact Sto Corp. for recommended spacing of sub-construction
Carrier Board	Curved application	For desired radius of 300mm (11-13/16") ≤ r ≤ 8 m (26'-3"), scoring of carrier board is required. Scoring dimensions: 4.5mm (11/64") width by 11mm (7/16") depth. Contact Sto Corp. for further details about scoring patterns based upon desired radius.
Carrier Board	StoVentec Carrier Board A+ cantilever: vertical overhang of carrier board edge past vertically oriented StoVentro T/L profile.	38mm nominal (1-1/2")
Carrier Board	StoVentec Carrier Board A+ cantilever: horizontal overhang of unsupported carrier board edge past StoVentro T-profile (reinforcing StoVentro L-profile behind carrier board NOT required)	< 152mm (< 6") Reference detail 90.R.046
Carrier Board	StoVentec Carrier Board A+ cantilever: Use of reinforcing StoVentro L-profile behind carrier board REQUIRED for horizontal overhang of carrier board edge past StoVentro T-profile	152mm (6") < length ≤ 406mm (≈ 16") Reference detail 90.R.046



Table 1.2 - Component Information (cont'd)

Feature	Description	Value
Carrier Board	StoVentec Carrier Board A+ cantilever: Use of reinforcing StoVentro L-profile required in outside corner condition of two adjacent carrier boards	L-profile required
Carrier Board	Connection of T/L profiles in end-to-end connection	Large brackets are required to secure T/L profiles in end-to-end condition. Note: Brackets in this condition can be either function as fixed point (FP)/gliding point (GP), or gliding point (GP)/gliding point (GP). Configuration of brackets in fixed point (FP)/fixed point (FP) condition is not recommended.
Carrier Board	StoVentec Carrier Board A+ attachment at horizontal edges	51 mm (2") from edge
Carrier Board	StoVentec Carrier Board A+ attachment at vertical edges	25mm (1") from edge For reference, see Detail 90.R.001
Carrier Board	StoVentec Carrier Board A+ attachment at horizontal edge from edge of StoVentro T-profile	$\geq 10\text{mm}$ ($\frac{3}{8}"$) from edge For reference, see Detail 90.R.001
Carrier Board	StoVentec Carrier Board A+ attachment in field of carrier board to vertically oriented StoVentro T-profile	Installed in a staggered pattern, typically 152mm (6") o.c. Wind load for the project may dictate closer spacing. For reference, see Detail 90.R.001
Carrier Board	StoVentec Carrier Board A+ attachment at adjacent carrier boards to vertically oriented StoVentro T-profile	Installed in a straight pattern, typically 152mm (6") o.c. Wind load for the project may dictate closer spacing. For reference, see Detail 90.R.001
Architectural Finish	Base Coat	StoArmat Classic plus
Architectural Finish	Thickness (Sto Base Coat, Sto Mesh, and Sto Finish)	$\approx \frac{1}{8}"$ to $\approx \frac{1}{4}"$, thickness varies based upon desired finish. Refer to applicable Sto Corp. Product Bulletin for details.
Architectural Finish	Primer	Use of primer is optional, except for specialty finishes as stated in the applicable product bulletin.
Architectural Finish	Aesthetics	No color restrictions apply. When using dark colors (LRV < 50) decrease span between joints to a maximum of 12.2m ($\approx 40'$) to accommodate thermal expansion and contraction.



Table 1.3 - Testing & Listing Information

Feature	Description	Value
Listing	Fire Spread	NFPA 285, STO/CWP-30-01, CSI Section Numbers: 07 42 00 Wall Panels, 07 42 43 Composite Wall Panels.
Listing	Fire Spread	CAN / ULC S134, STO/CWP 25-02, CSI Section Numbers: 07 42 00 Wall Panels, 07 42 43 Composite Wall Panels
Listing	National Technical Approval, Germany	DIBt Z-10-.3-717, - Ventilated Rainscreen Cladding Façade System with Render Coating (DIN 18516)
Listing	Technical Approvals for Construction, UK	BBA certificate 10/4792, Back-ventilated and Drained Cavity Rainscreen over External Walls of New or Existing Building
Test	Fire Resistance of Wall Assemblies	ASTM E119, Engineering Judgment by Jensen Hughes Fire Protection Consultants, will maintain fire resistance rating of backup wall
Test	Water Penetration Resistance	AAMA 509, water penetration rating, Class W1
Test	Ventilation	AAMA 509, ventilation rating V9
Test	Wind Load Resistance (Ultimate wind load capacity)	ASTM E330, +6.03 kN/m ² -4.31 kN/m ² (126 lb/ft ² , -90 lb/ft ²)



Table of Contents

Structure/Sub-Framing/Wind Loads

Carrier Board A+ Attachment 16" o.c. (-90psf) Ultimate Wind Load Capacity	90.R.001
StoVentro Bracket Spacing 36" o.c. (106psf) Ultimate Wind Load Capacity	90.R.002
Carrier Board A+ Installation of Horizontal Board Joint	90.R.030
Carrier Board A+ Installation of Vertical Board Joint at T-Profile	90.R.031

Installation Components

StoVentro Brackets - Large (FP) and Small (GP)	90.R.045
StoVentro Sub-construction Installation at Outside Corners, Jambs, Transitions and Alternative Cladding	90.R.046

Installation at Grade

Installation at Grade - Exposed Substrate with Sto Ventilation Profile	90.R.055
Installation at Grade with Sto Ventilation Profile	90.R.065

Fire Protection at Window

Fire Protection at Window Head with Lamella & Intumescent Tape	90.R.080
Fire Protection at Window Head with Fire Break Material	90.R.081

Installation at Windows

Window Jamb	90.R.085
Window Sill	90.R.090
Soffit and Ceilling - Not Insulated	90.R.161
Soffit and Ceilling - Insulated	90.R.165

Installation at Parapet

Parapet with 10mm Ventilation	90.R.180
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Installation at Movement Joints

Wall Structural Joint - with Sto Edge Protection Profile G	90.R.390
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Installation at Corners

Inside Corner	90.R.400
Outside Corners	90.R.410
Outside Corners to Alternative Facade	90.R.419

Installation at Panel Joints

Horizontal Expansion Joint with Sto Edge Protection Profile GT and GF	90.R.450
Horizontal Expansion Joint with Sto Edge Protection Profile G	90.R.451
Vertical Expansion Joint with Sto Edge Protection Profile GT and GF	90.R.460
Vertical Expansion Joint with Sto Edge Protection Profile G	90.R.461

Installation at Dissimilar Materials

Vertical Transition to Alternative Facade/Wall Substrate	90.R.470
Returning StoVentec Render to Alternative Facade/Wall Substrate	90.R.474



Installation at Dissimilar Materials

Horizontal Transition to Alternative Facade/Wall Substrate Above	90.R.475
Horizontal Transition to Alternative Facade/Wall Substrate Under	90.R.476
Horizontal Transition to Alternative Facade/Wall Substrate Above with Render Facade Flush	90.R.478
Vertical Transition to Alternative Facade/Wall Substrate - Render Proud	90.R.486
Inside Corner to Alternative Facade/Wall Substrate	90.R.490

Fire Protection at Floor Line

Fire Protection at Floor Lines with Lamella and Intumescent Tape Fire Break	90.R.550
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StoVentec® Render

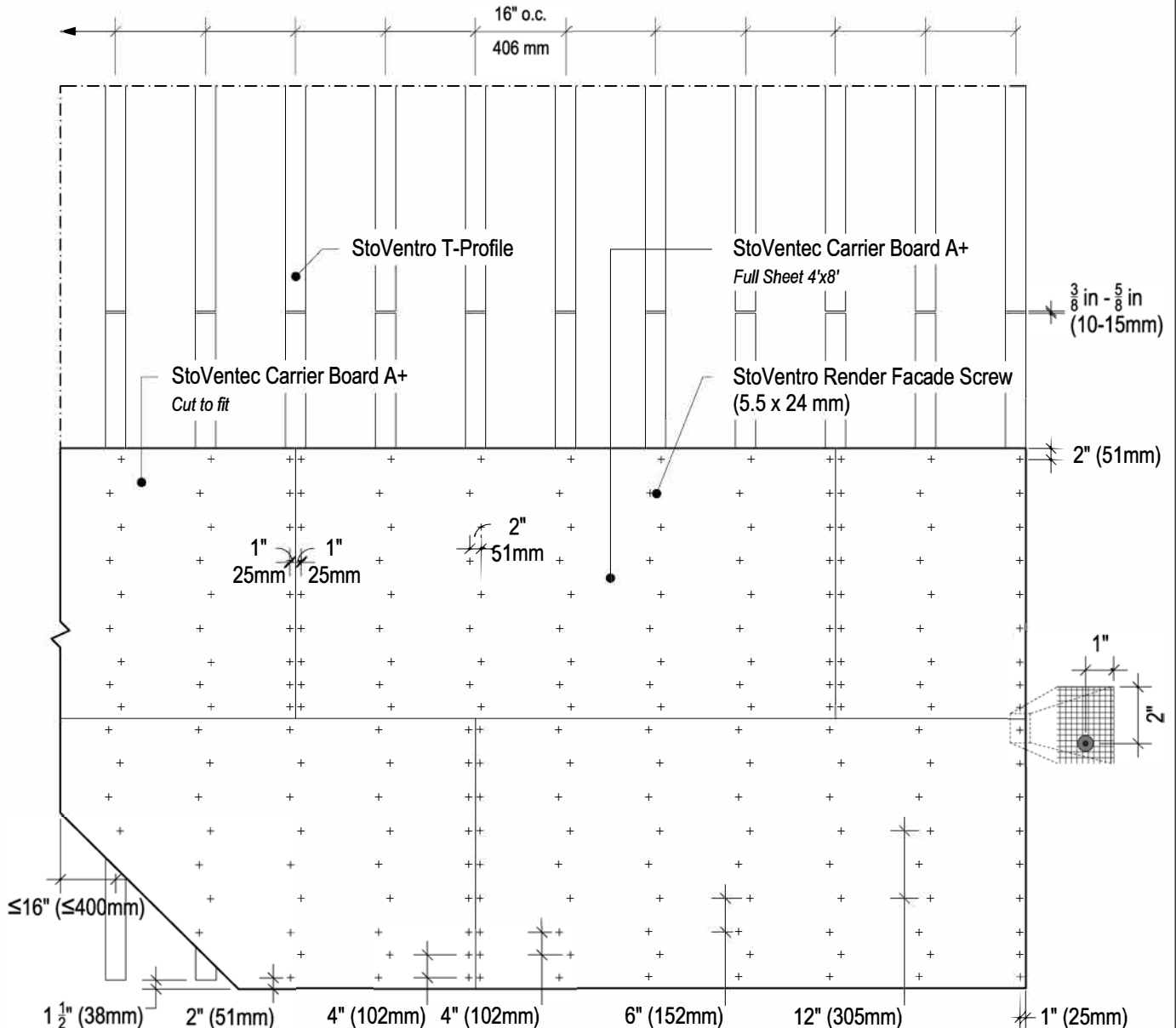
StoVentec Carrier Board A+ Attachment to StoVentro T-Profile, spaced at 16" o.c.(406mm)
Field and Edge fastening of StoVentec Carrier Board A+ to StoVentro T-Profiles.

Elevation View

Date: June 2020

Detail No.: 90.R.001

Ultimate Wind Load Capacity, based on ASTM E330 wind load testing:
+126 psf (6.03 kN/m²) | -90 psf (4.31 kN/m²)



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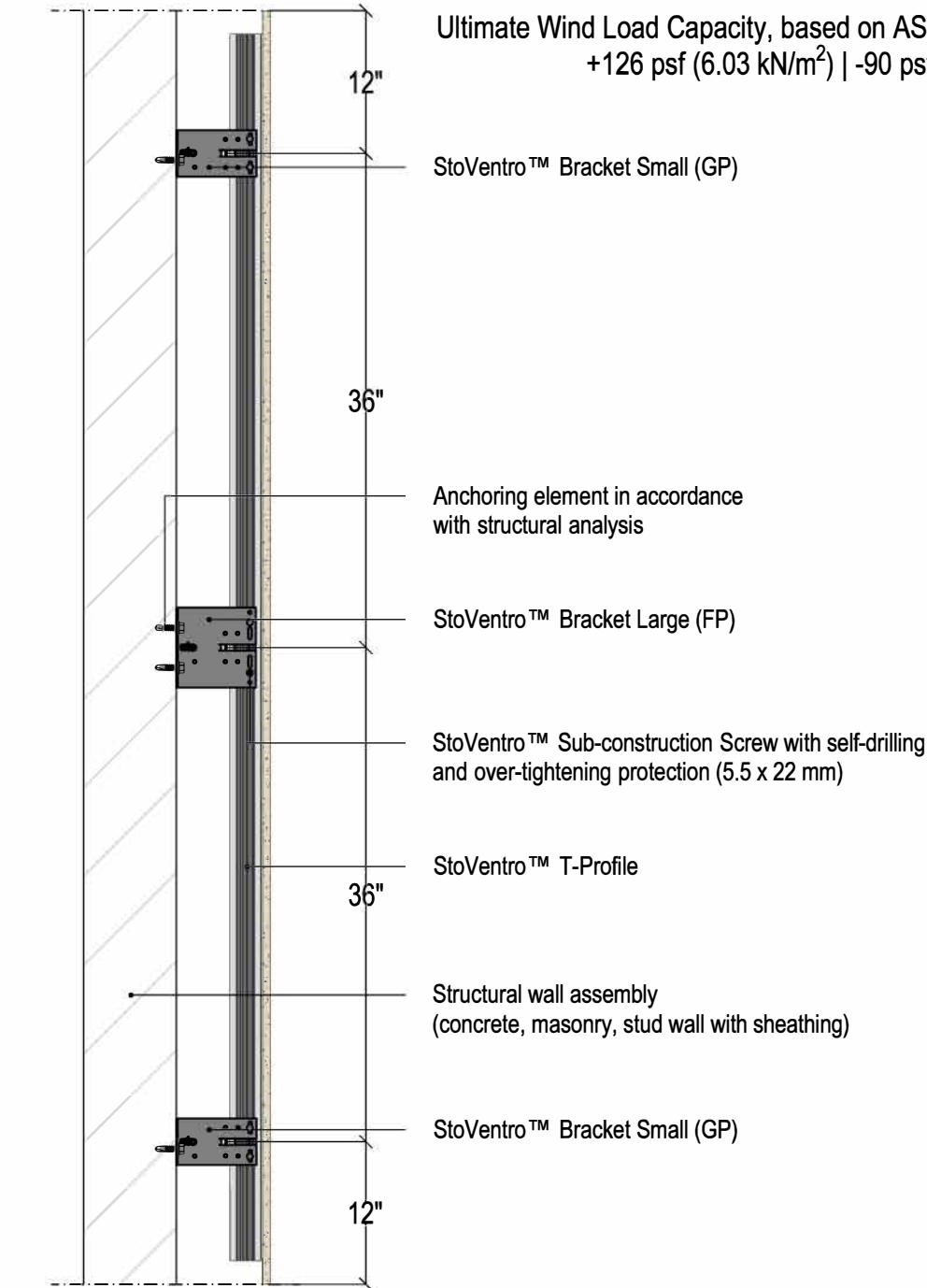
StoVentec® Render

StoVentro Bracket Installation, spaced at 36" o.c. (914mm)

Section View

Date: June 2020

Detail No.: 90.R.002

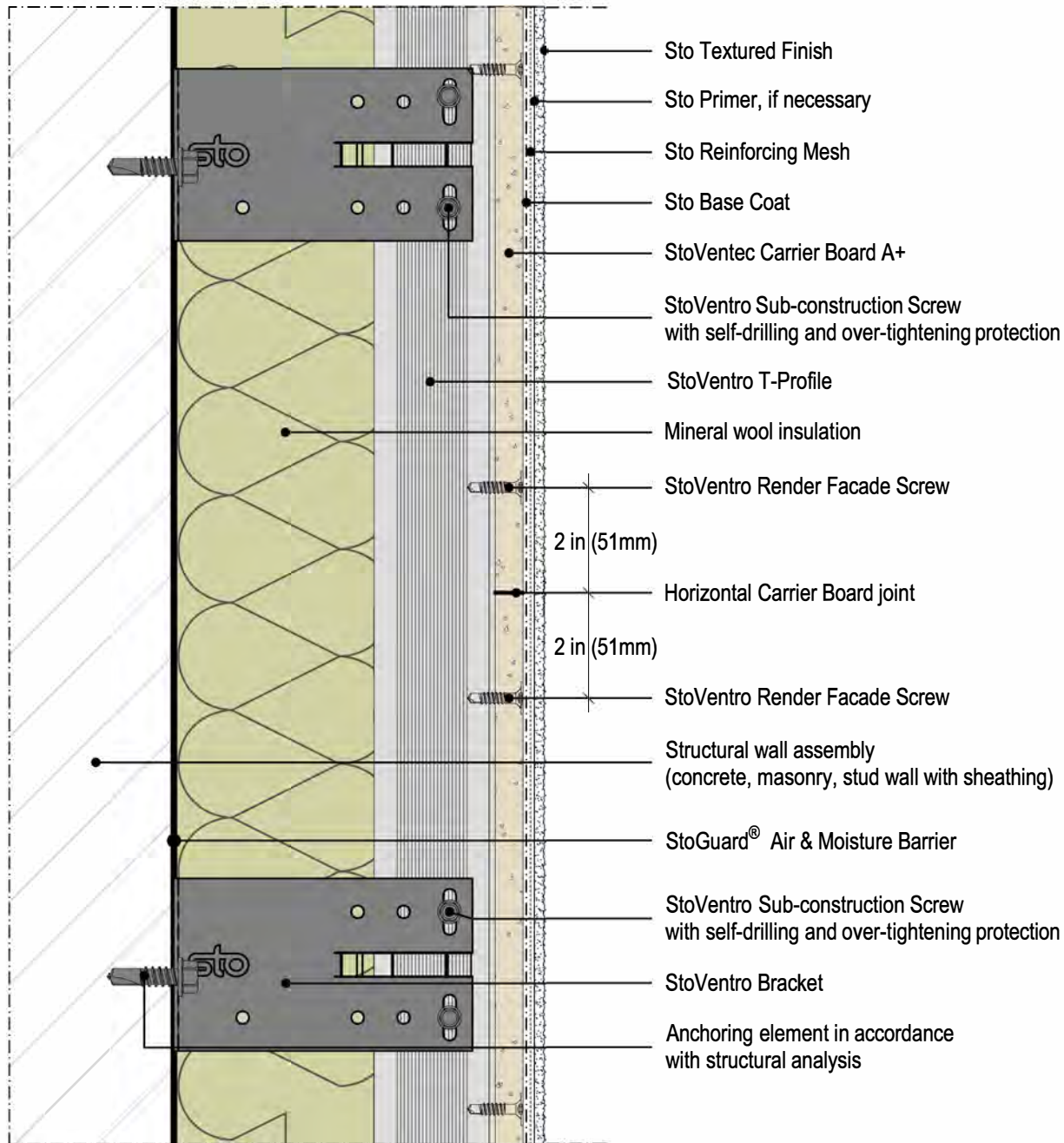


Ultimate Wind Load Capacity, based on ASTM E330 wind load testing:
+126 psf (6.03 kN/m²) | -90 psf (4.31 kN/m²)

ATTENTION

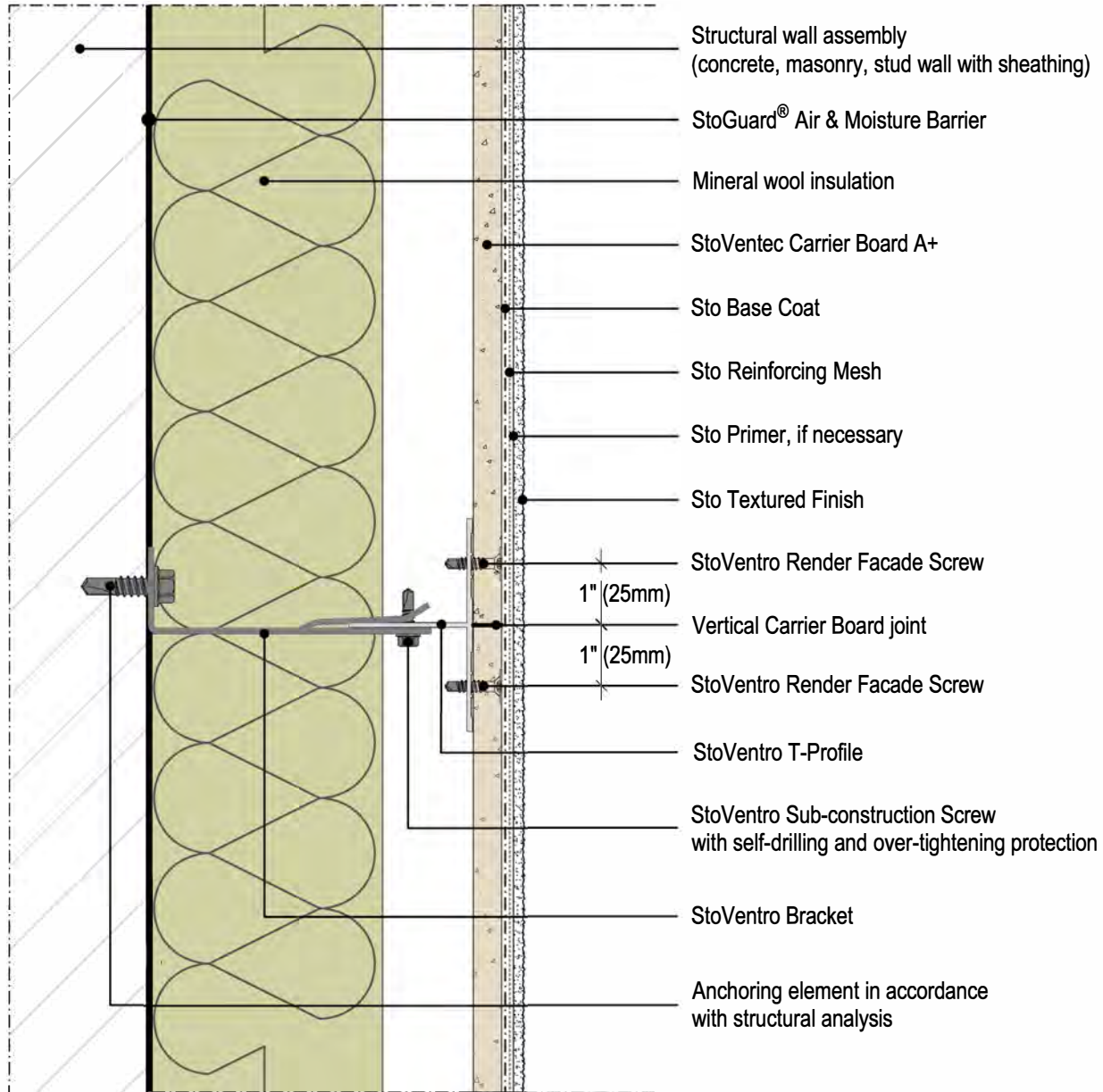
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StoVentec® Render**StoVentec Carrier Board A+ Installation at Horizontal Board Joint****Date: June 2020****Section View****Detail No.: 90.R.030****ATTENTION**

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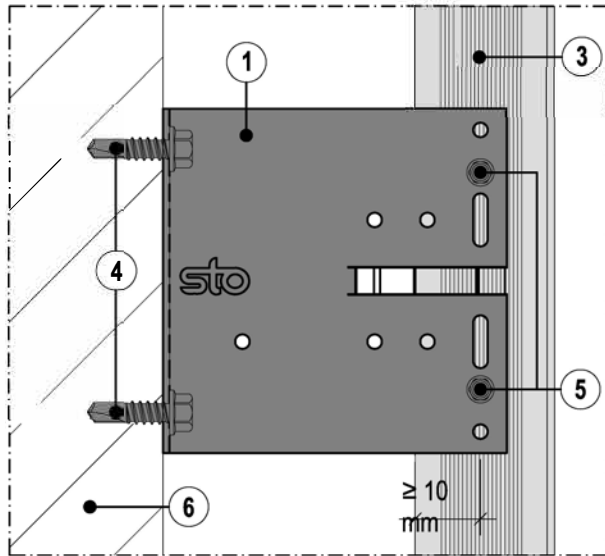
StoVentec® Render**StoVentec Carrier Board A+ Installation at Vertical Board Joint****Plan View****ATTENTION**

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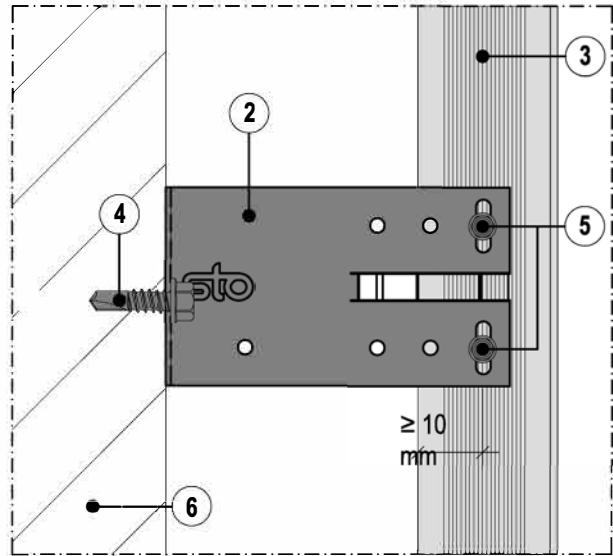
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Date: June 2020

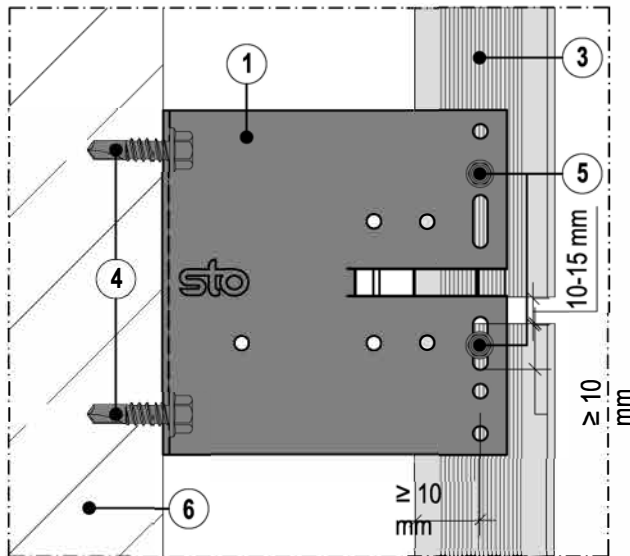
Detail No.: 90.R.045

StoVentec® RenderStoVentro® Brackets - Large (FP) and Small (GP),
with attachment locations for fixed points and sliding points**Section View**

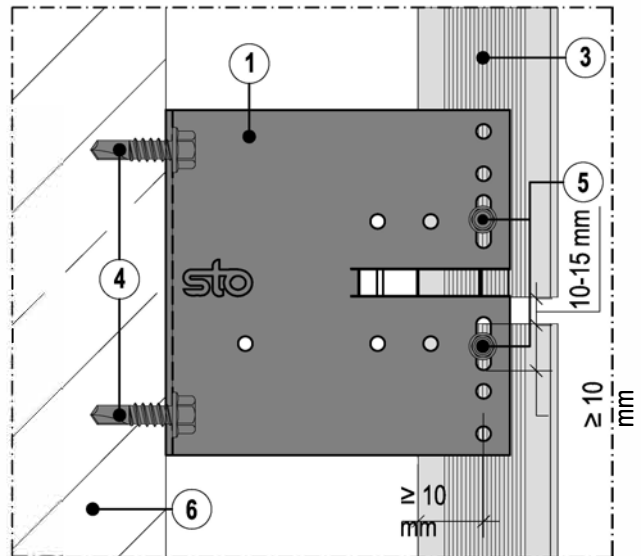
StoVentro™ Bracket - Large (FP) | Fixed point fastening



StoVentro™ Bracket - Small (GP) | Sliding point fastening



StoVentro™ Bracket - Large (FP) | Fixed & sliding point fastening



StoVentro™ Bracket - Large (FP) | Sliding point fastening

- | | | |
|---------------------------------|--|---|
| ① StoVentro™ Bracket Large (FP) | ③ StoVentro™ T-Profile | ⑤ StoVentro™ Sub-construction Screw with self-drilling and over-tightening protection (5.5 x 22 mm) |
| ② StoVentro™ Bracket Small (GP) | ④ Anchoring element in accordance with structural analysis | ⑥ Structural wall assembly (concrete, masonry, stud wall with sheathing) |

ATTENTION

Note: All values are subject to structural analysis.

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StoVentec® Render

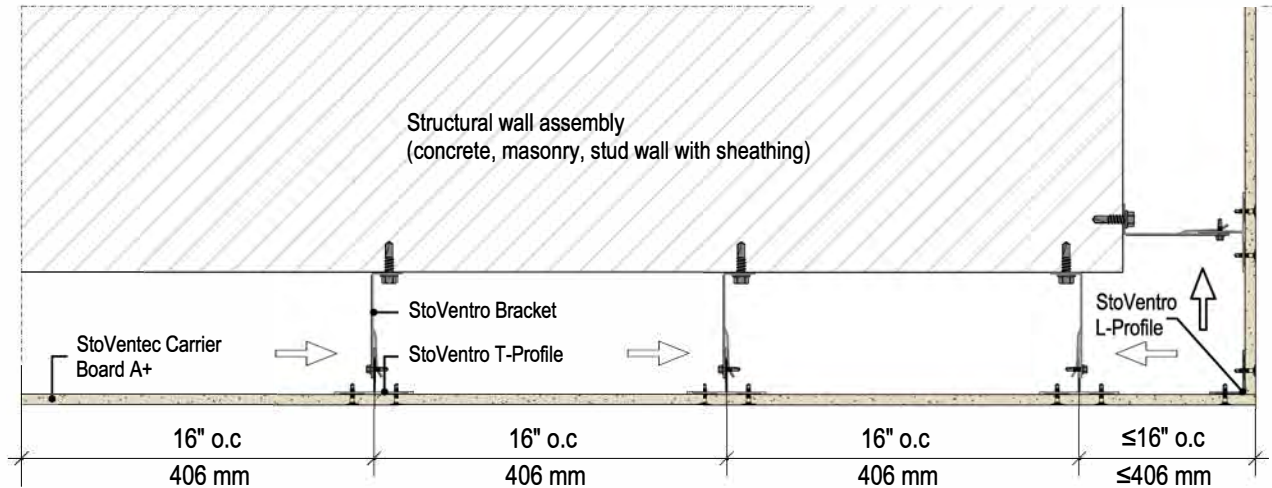
StoVento® Sub-construction Installation at outside corners, jambs, returning transitions, and transitions to alternative cladding

Plan View

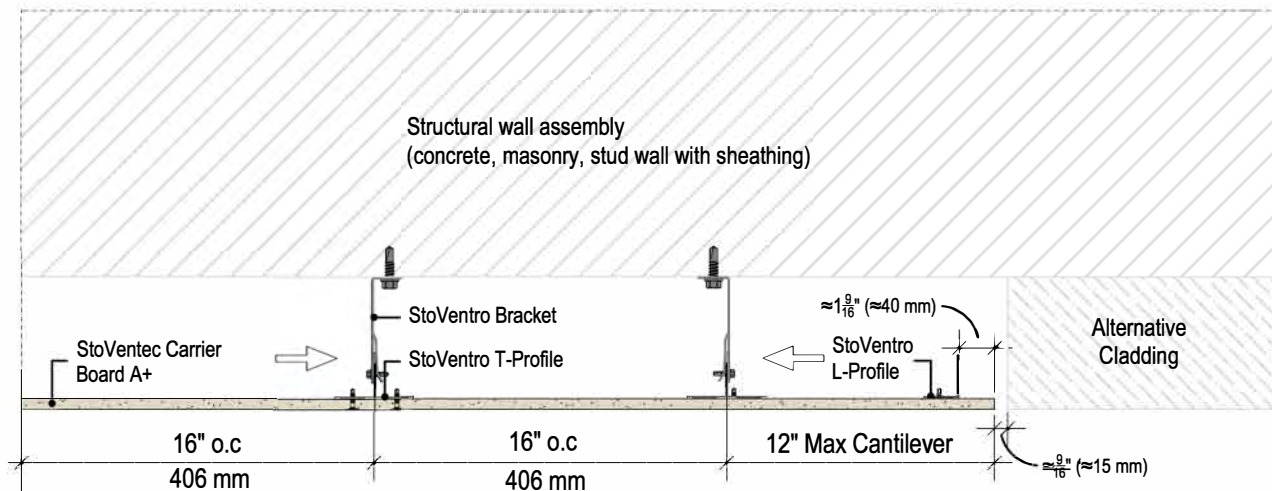
Date: June 2020

Detail No.: 90.R.046

→ Recommended fastening direction for connection of the StoVento™ Wall Brackets to the StoVento™ T-profile and alignment of the wall brackets



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



2 StoVento™ 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/m ²]
6 in (154mm)	No	68.9	3.3
8 in (200mm)	Yes	81.4	3.9
12 in (300mm)	Yes	50.1	2.4

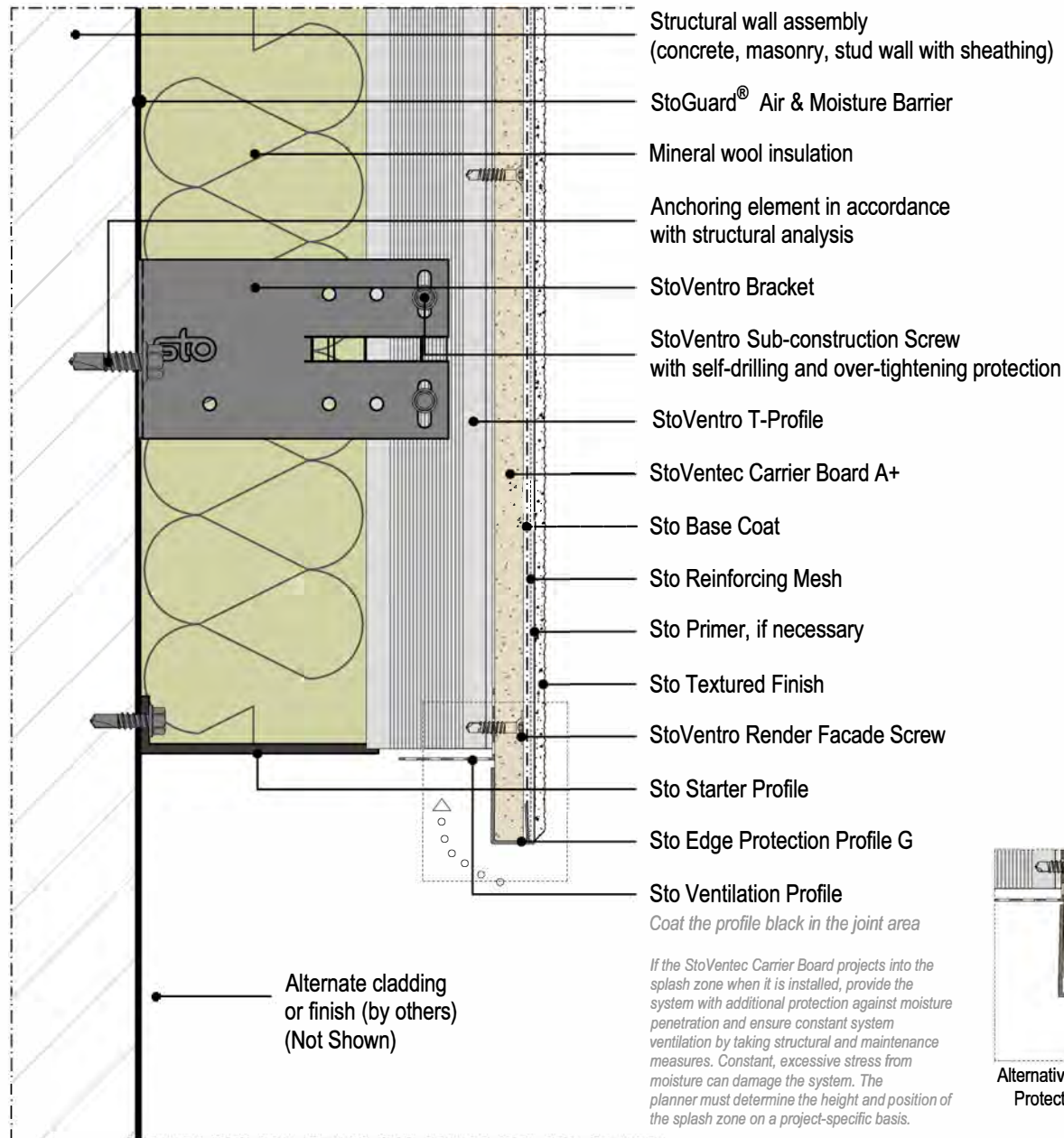
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Date: June 2020

Detail No.: 90.R.055

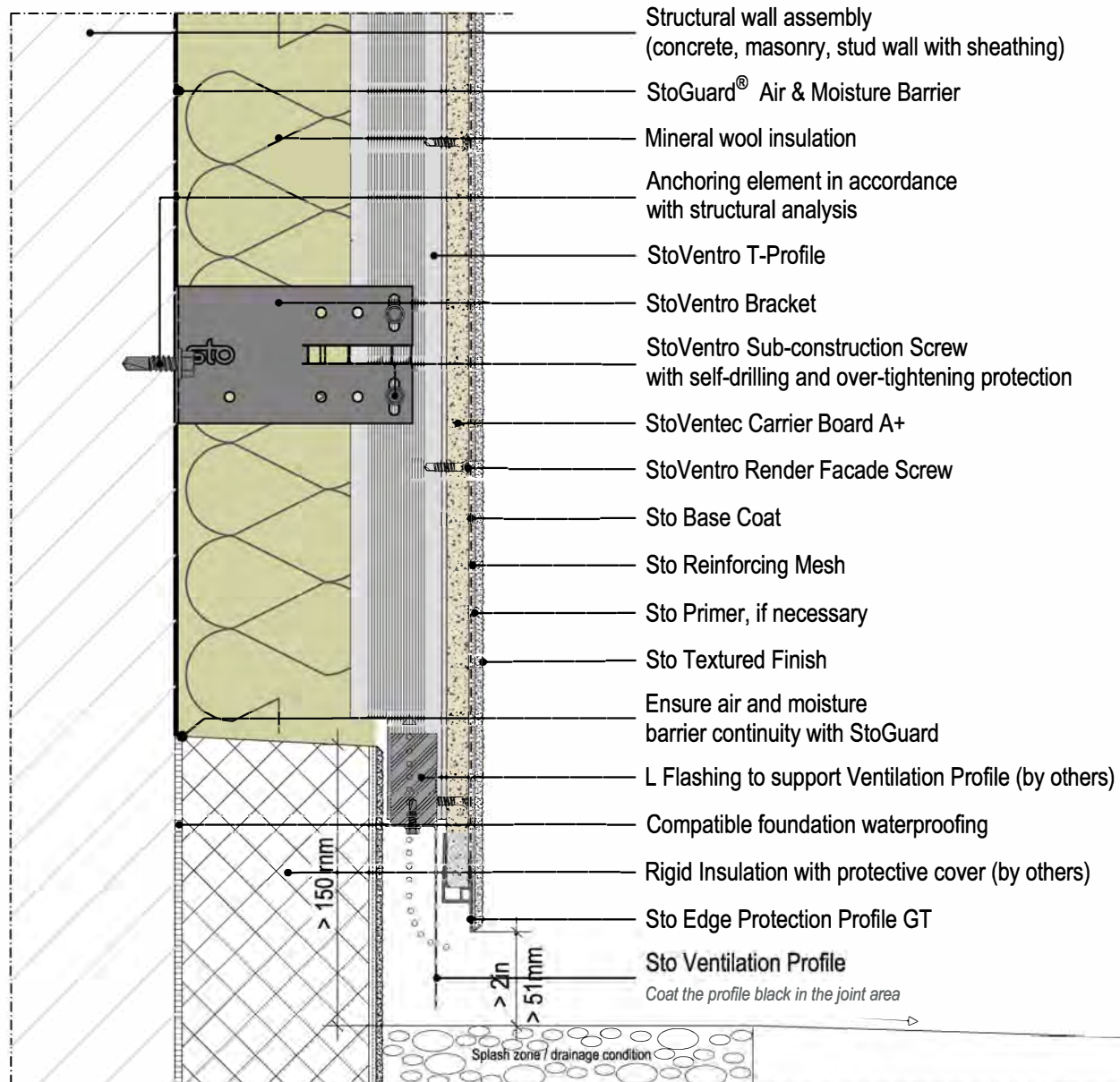
StoVentec® RenderInstallation at grade with Sto Ventilation Profile
(exposed substrate at grade)**Section View**Alternative: with Sto Edge
Protection Profile GT**ATTENTION**

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StoVentec® Render

Installation at grade with Sto Ventilation Profile

Date: June 2020**Section View****Detail No.: 90.R.065**

If the StoVentec Carrier Board projects into the splash zone when it is installed, provide the system with additional protection against moisture penetration and ensure constant system ventilation by taking structural and maintenance measures. Constant, excessive stress from moisture can damage the system. The planner must determine the height and position of the splash zone on a project-specific basis.

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Date: June 2020

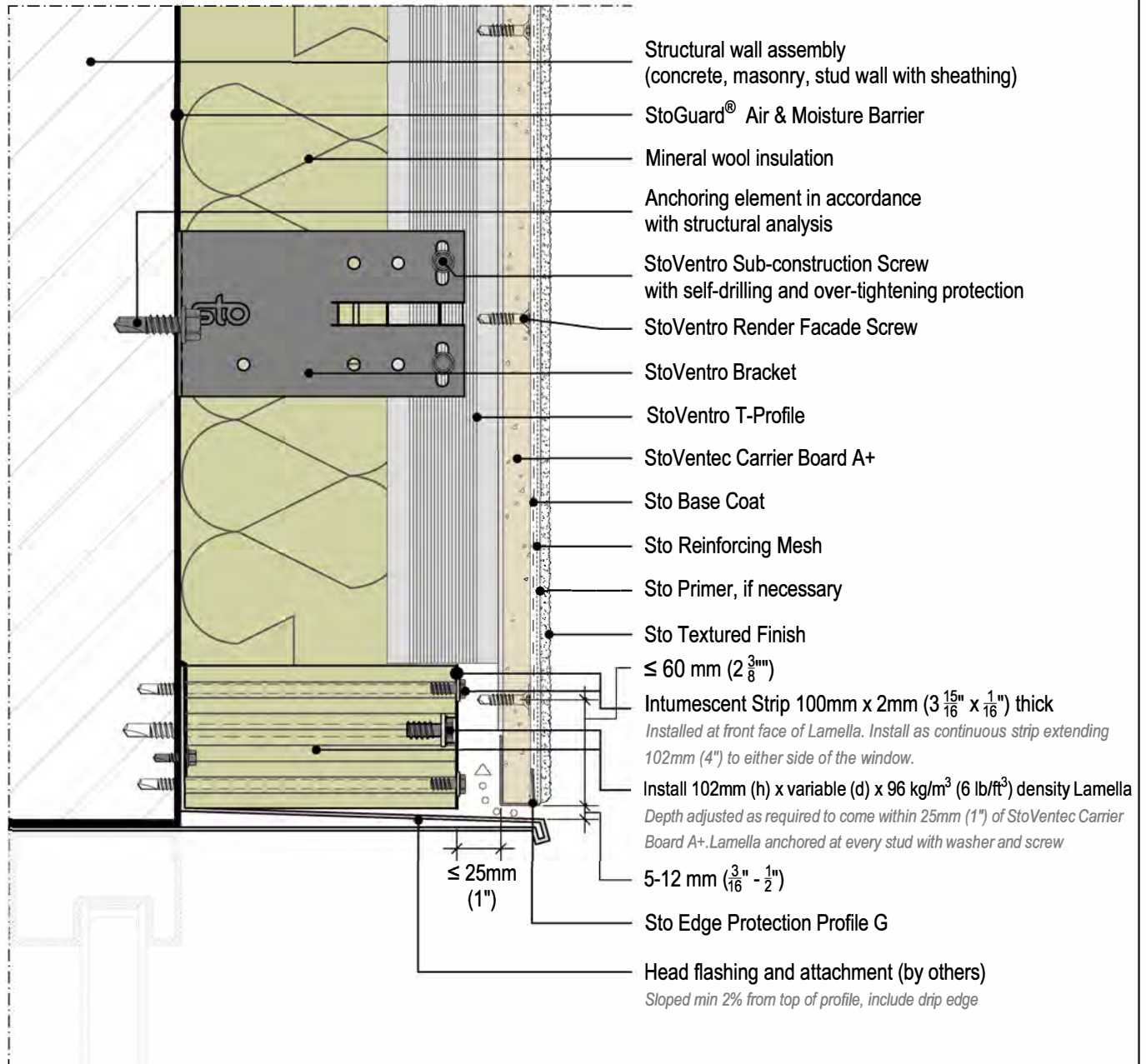
Detail No.: 90.R.080

StoVentec® Render

Fire protection at Window Head with Lamella and Intumescent Tape
 CAN ULC S134 Compliant, Intertek Design Listing No. STO/CWP 25-01
 NFPA 285 Compliant, Intertek Design Listing No. STO/CWP 30-02

Section View

Note: Windload limit (68.9 psf) with 16" o.c. StoVentro T-Profiles

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Date: June 2020

Detail No.: 90.R.081

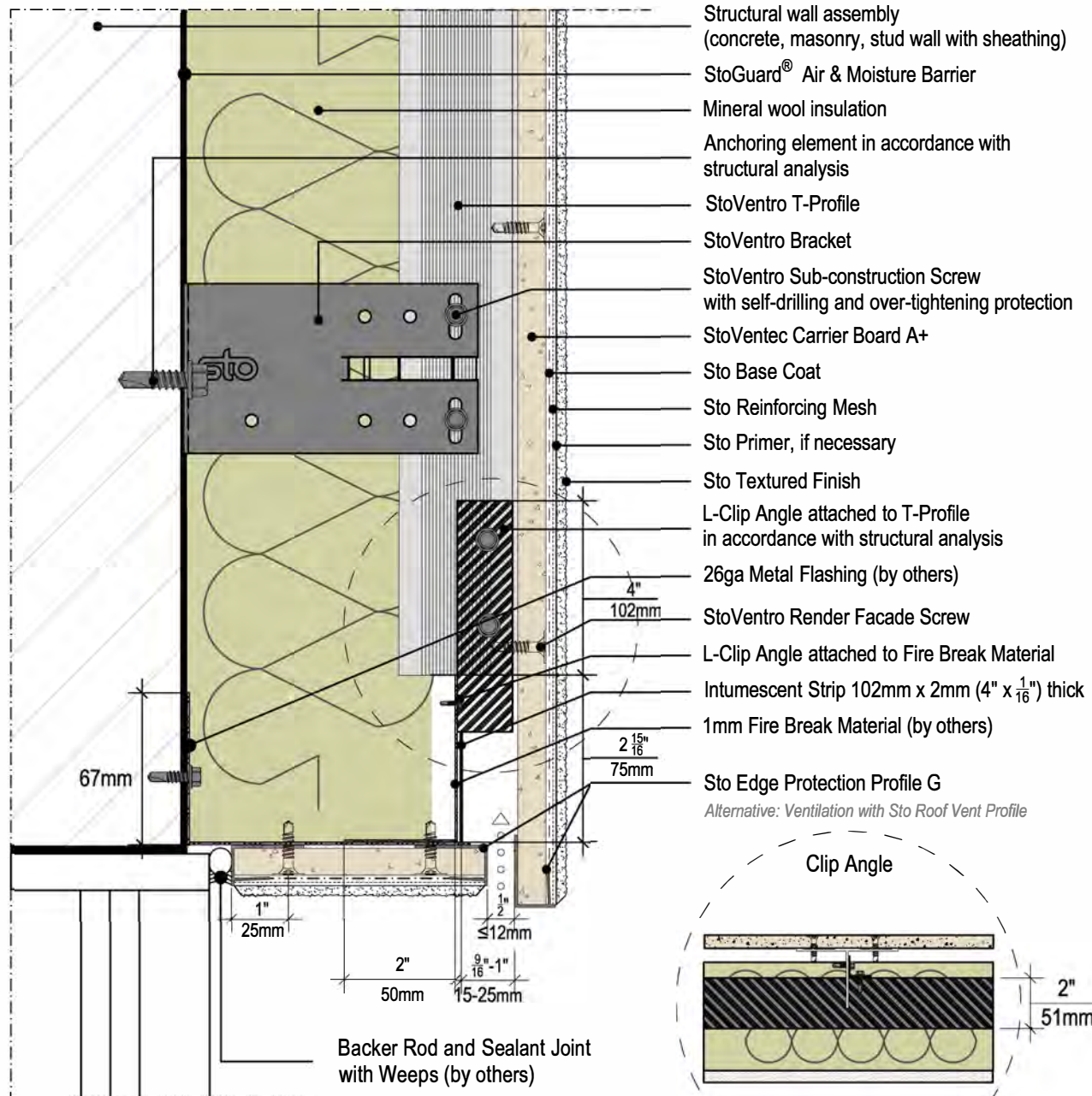
StoVentec® Render

Fire protection at Window Head with Fire Break Material

CAN ULC S134 Compliant, Intertek Design Listing No. STO/CWP 25-01

NFPA 285 Compliant, Intertek Design Listing No. STO/CWP 30-02

Section View

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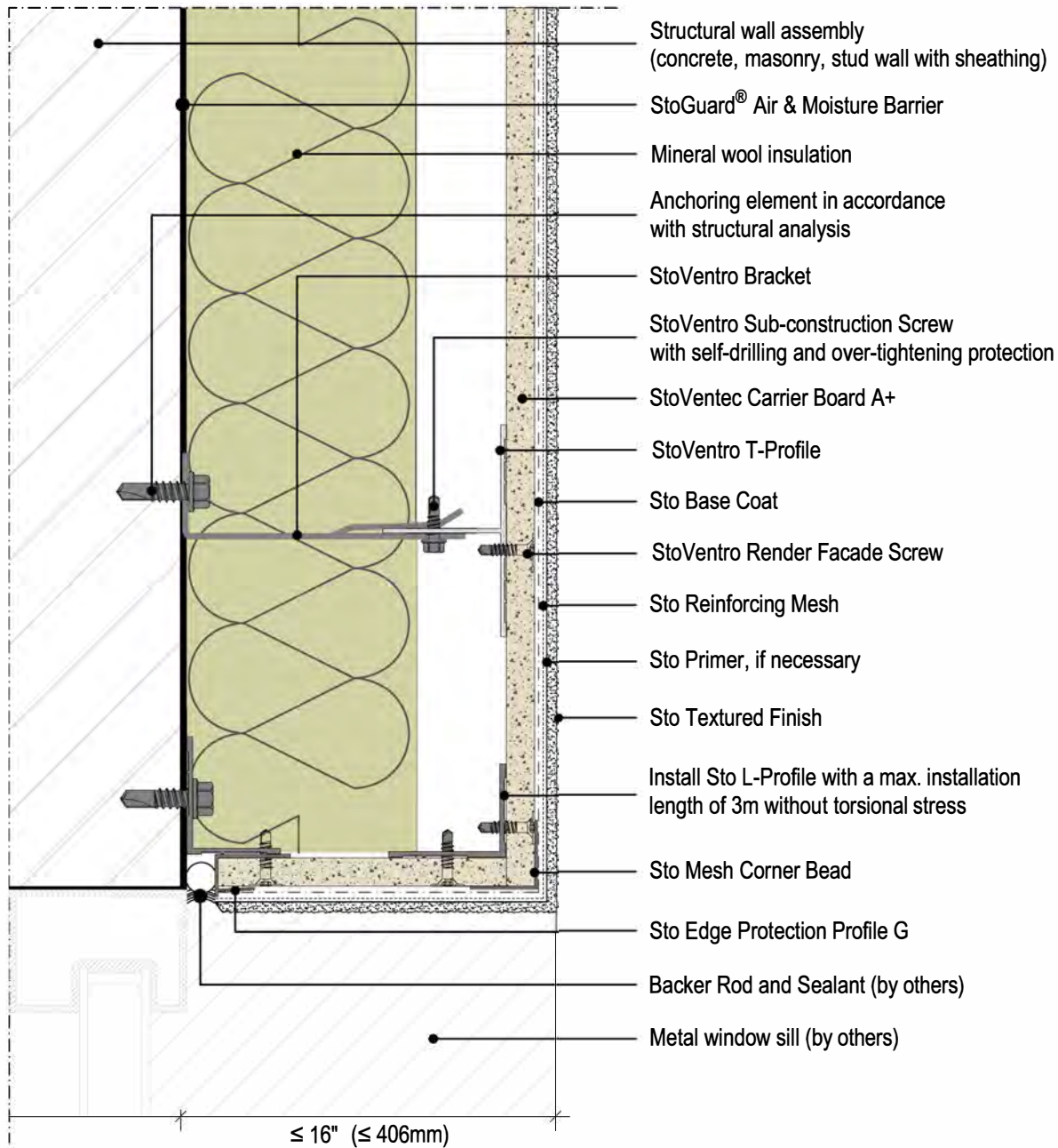
Date: June 2020

Detail No.: 90.R.085

StoVentec® Render

Window Jamb

Plan View



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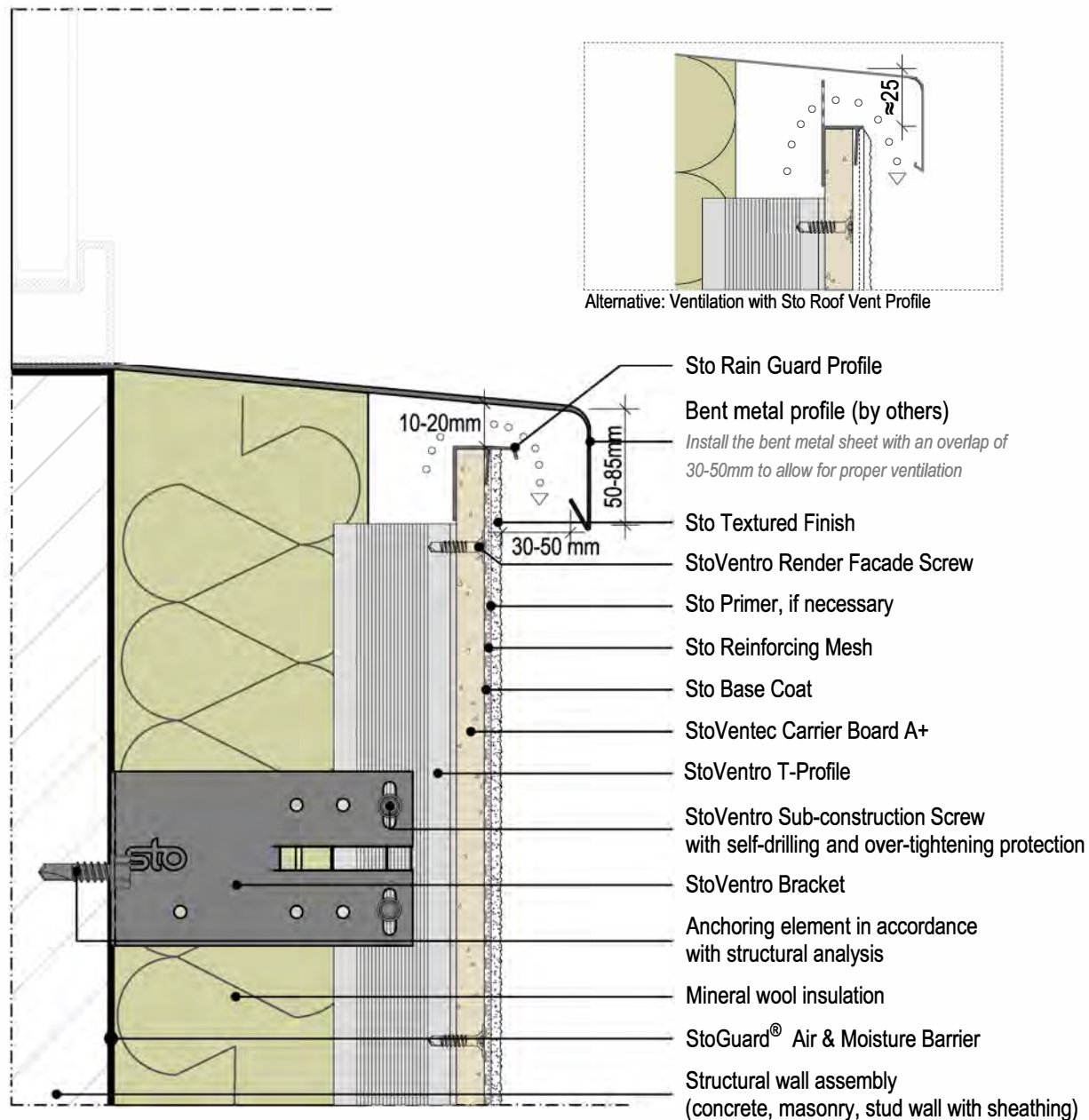
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StoVentec® Render Window Sill

Date: June 2020

Section View

Detail No.: 90.R.090



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StoVentec® Render

Soffit or Ceiling Installation - Not Insulated (Unconditioned)

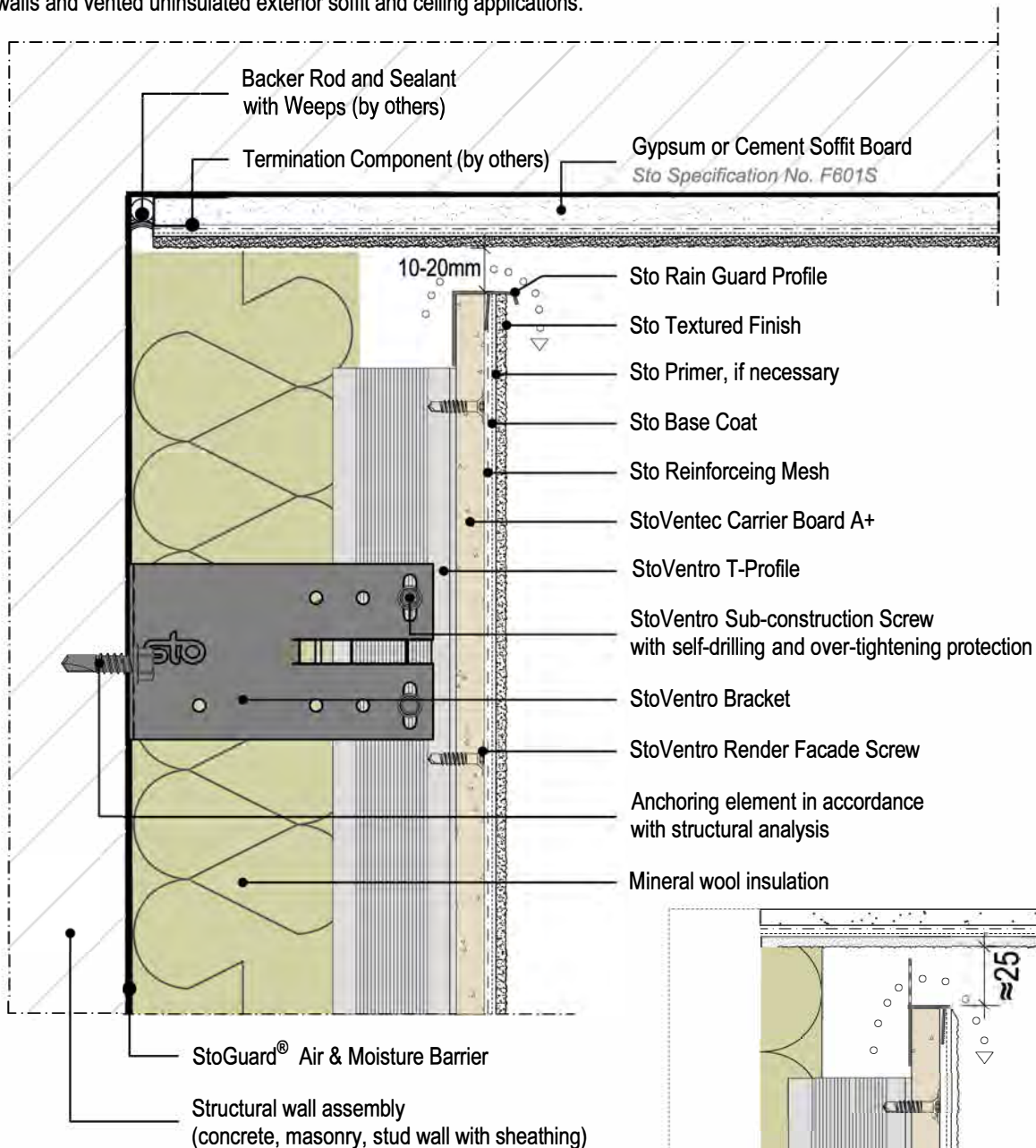
StoVentec Render and Sto Direct-applied Finish System for Soffits and Ceilings

Section View

Date: June 2020

Detail No.: 90.R.161

Note: Direct-applied Exterior Finish System (DEFS) for use on weather protected walls and vented uninsulated exterior soffit and ceiling applications.



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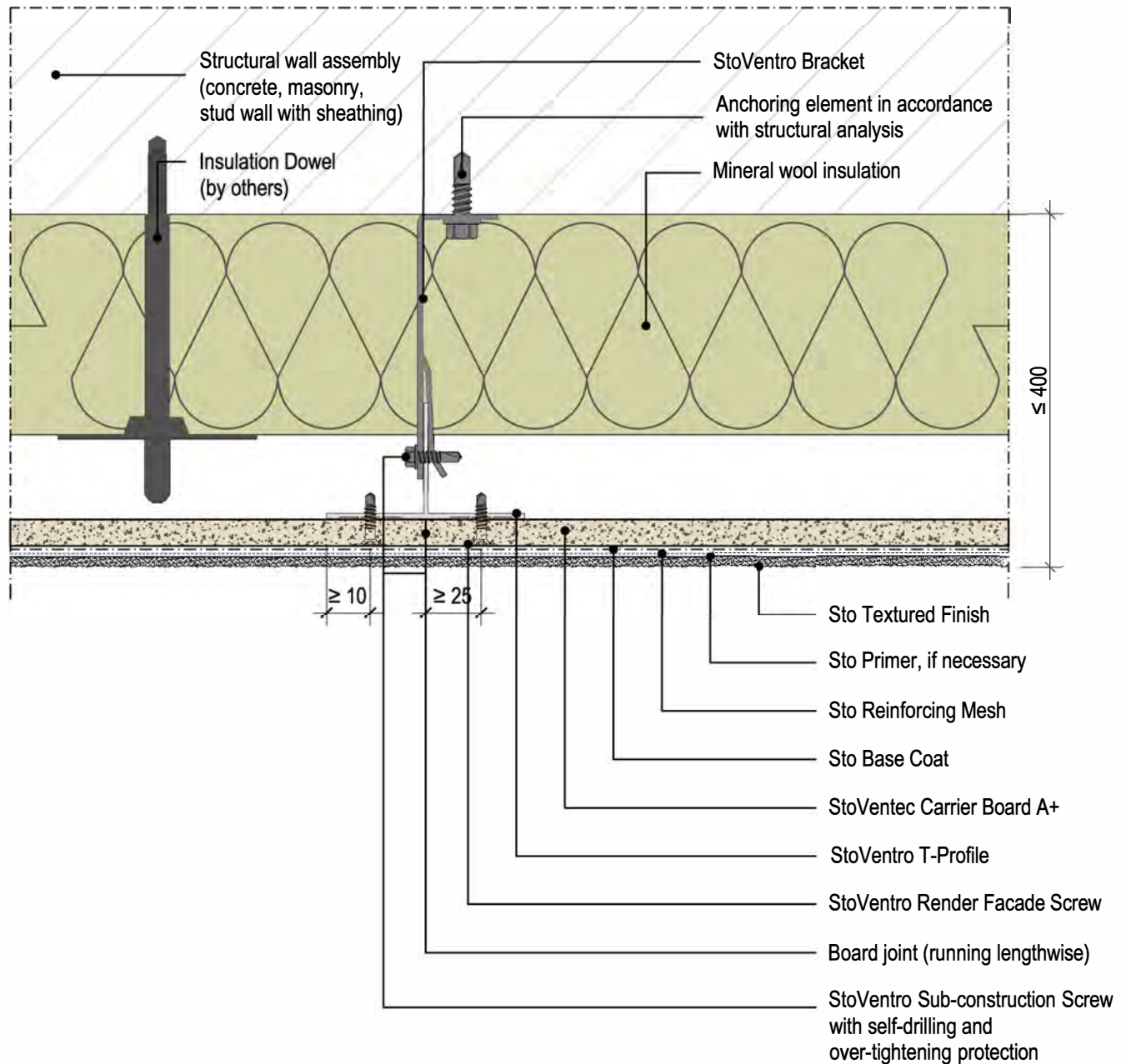
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Date: June 2020

Detail No.: 90.R.165

StoVentec® Render

Soffit or Ceiling Installation - Insulated (Conditioned)

Section View**ATTENTION**

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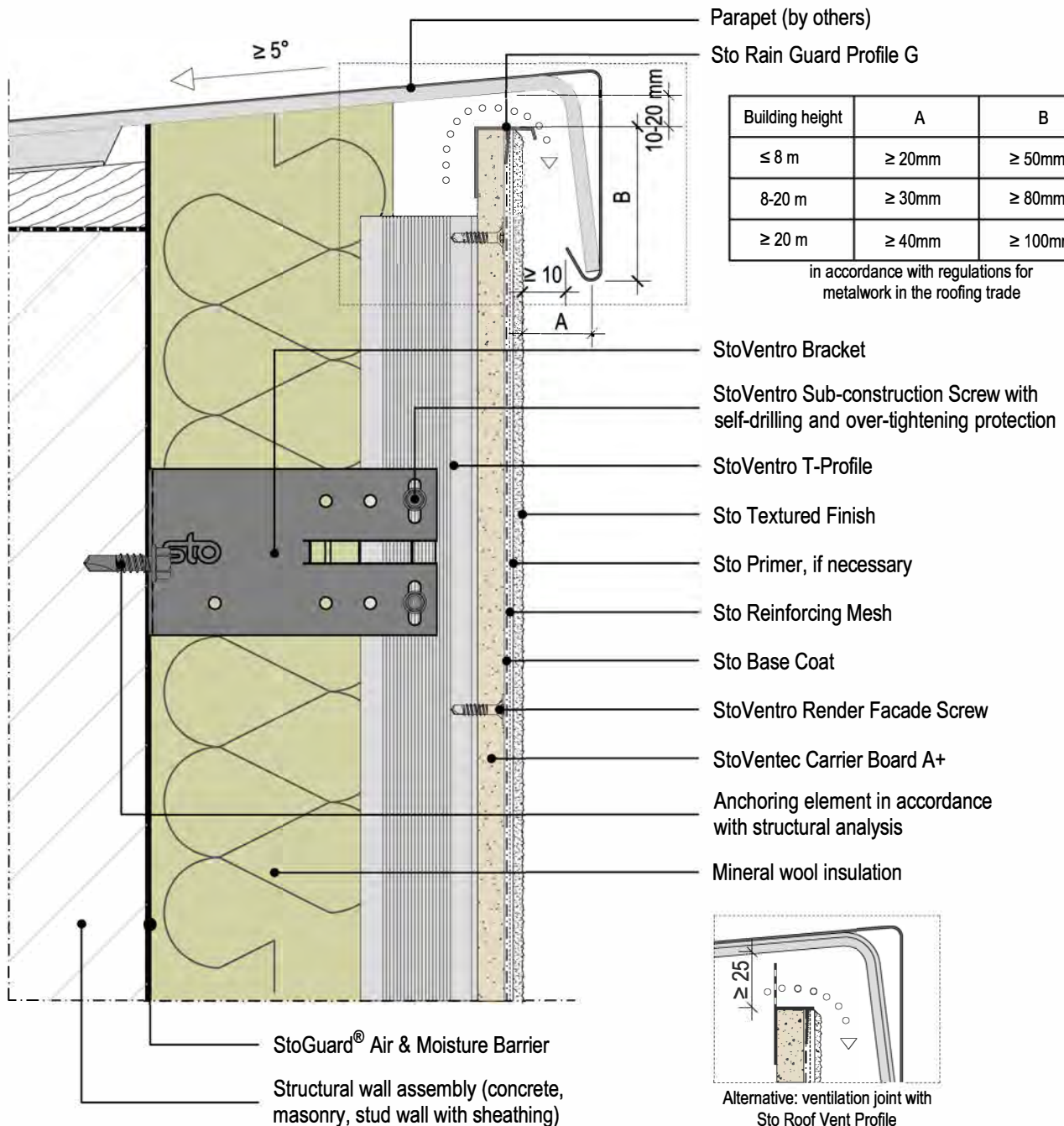
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Date: June 2020

Detail No.: 90.R.180

StoVentec® Render

Parapet with 10mm ventilation gap

Section View**ATTENTION**

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Plan View

Detail No.: 90.R.390

StoVentec Sub-construction Screw with self-drilling and over-tightening protection

StoVentec T-Profile

StoVentec Render Facade Screw

Sto Textured Finish

Sto Primer, if necessary

Sto Reinforcing Mesh

Sto Base Coat

StoVentec Carrier Board A+

Sto Edge Protection Profile G

20mm (13/16") max joint, in accordance with structural analysis

Sto Edge Protection Profile G

StoVentec L-Profile in accordance with structural analysis

StoVentec Render Facade Screw

Anchoring element in accordance with structural analysis

StoVentec Bracket

StoVentec Sub-construction Screw with self-drilling and over-tightening protection

Mineral wool insulation

StoGuard® Air & Moisture Barrier

Structural wall assembly (concrete, masonry, stud wall with sheathing)

Cantilever See 90.R.046

Cantilever See 90.R.046

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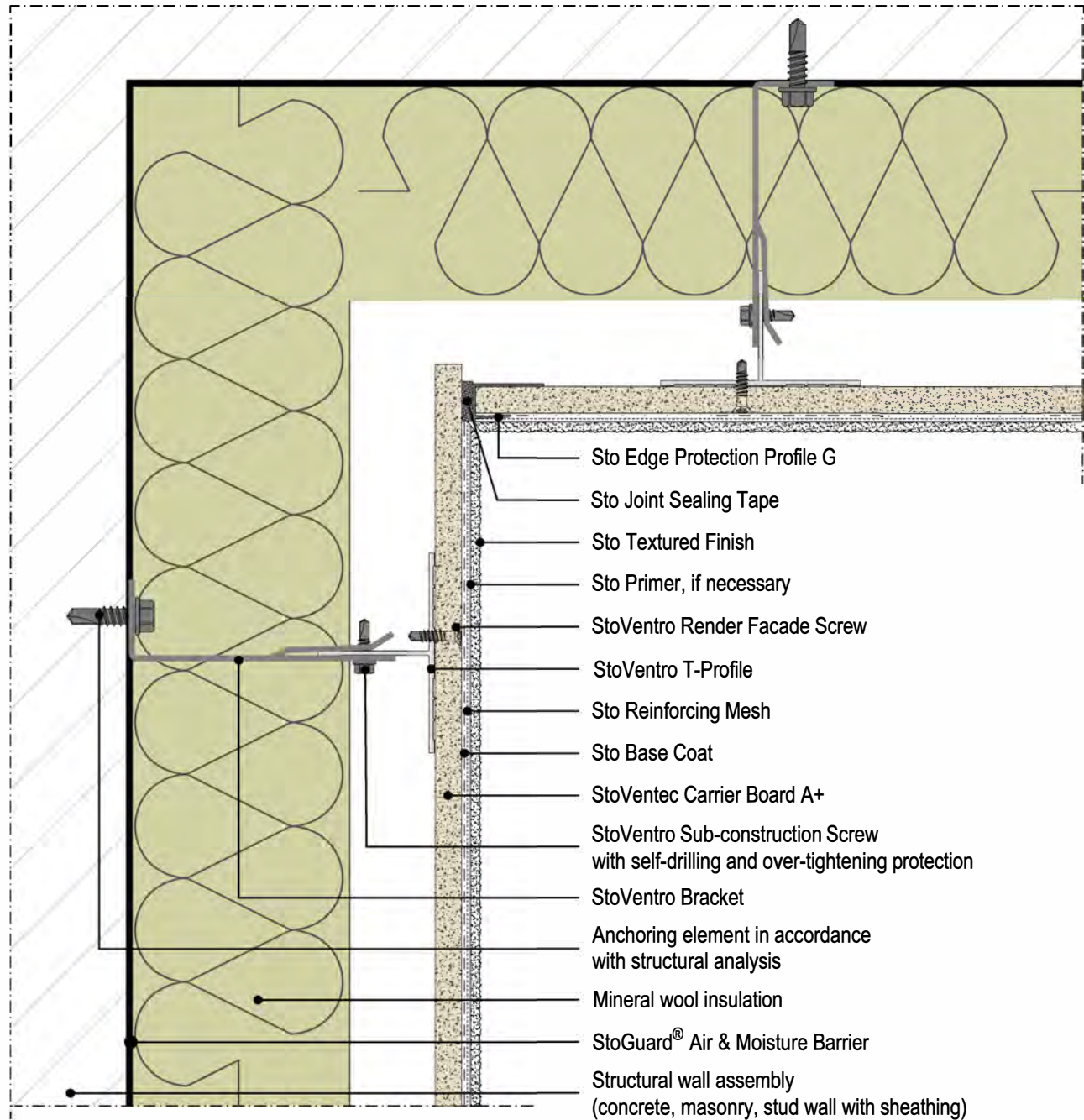
StoVentec® Render

Inside Corner

Date: June 2020

Plan View

Detail No.: 90.R.400

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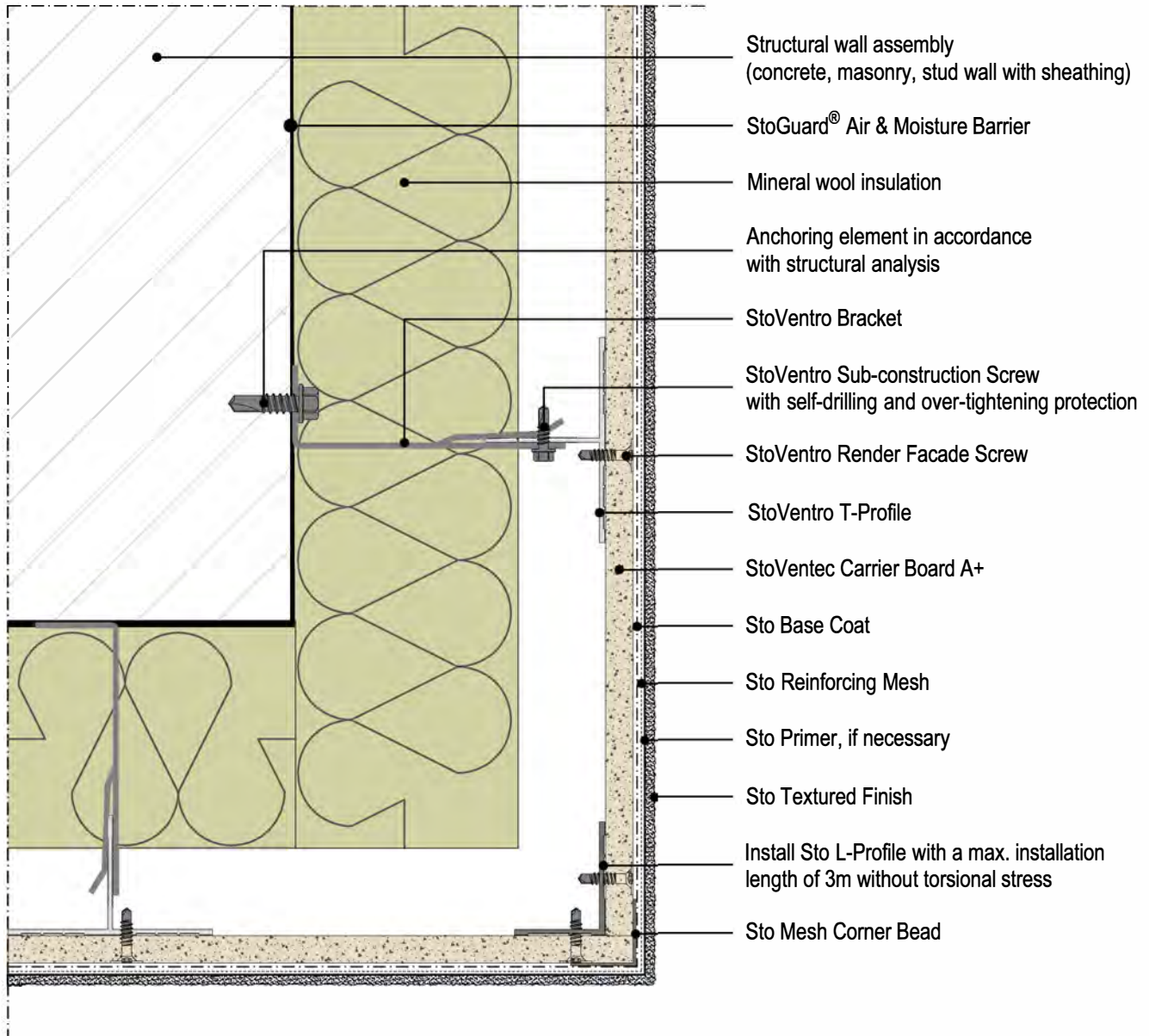
StoVentec® Render

Outside Corner

Date: June 2020

Plan View

Detail No.: 90.R.410



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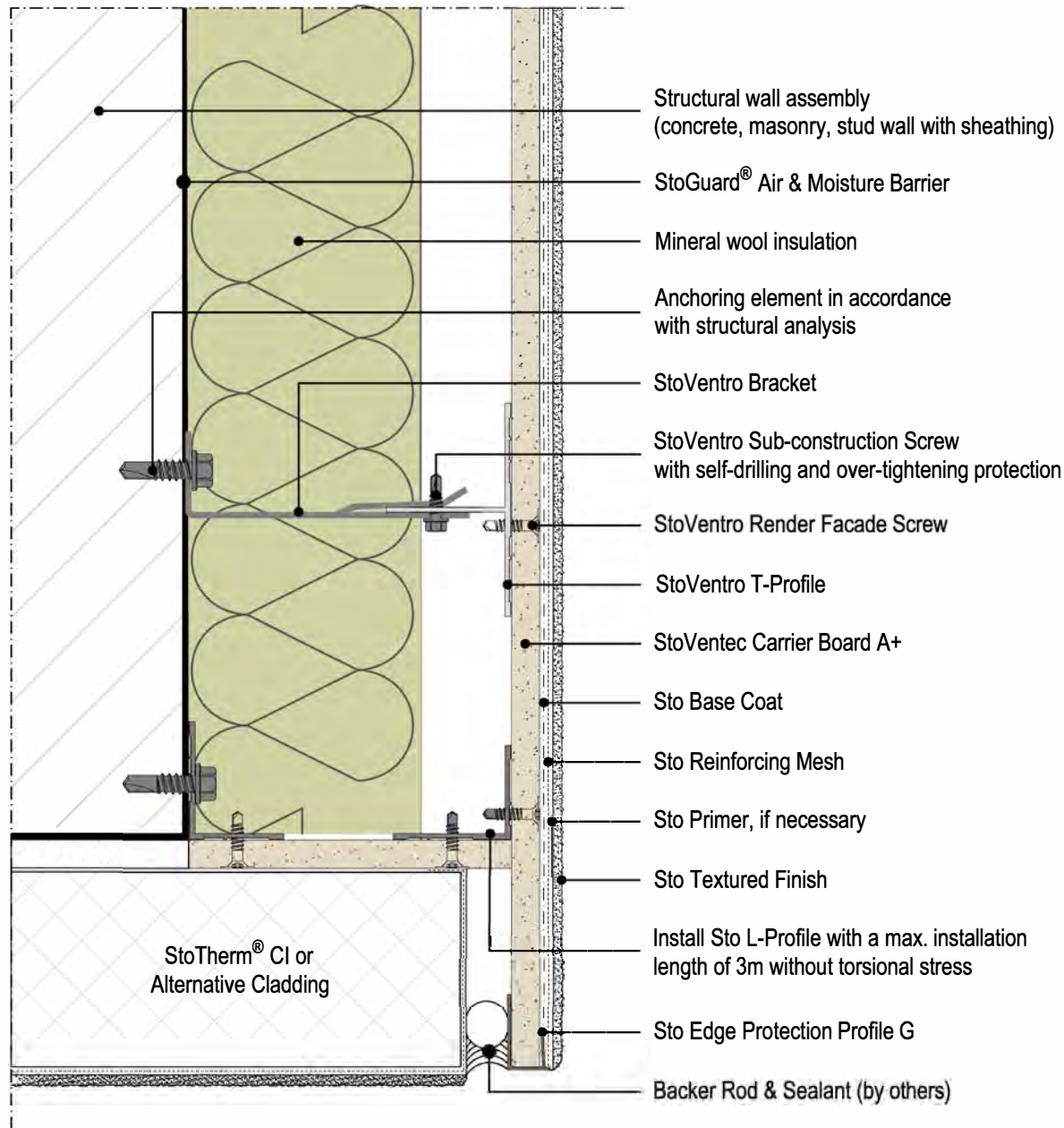
StoVentec® Render

Installation at Outside Corner to alternative facade

Date: June 2020

Plan View

Detail No.: 90.R.419

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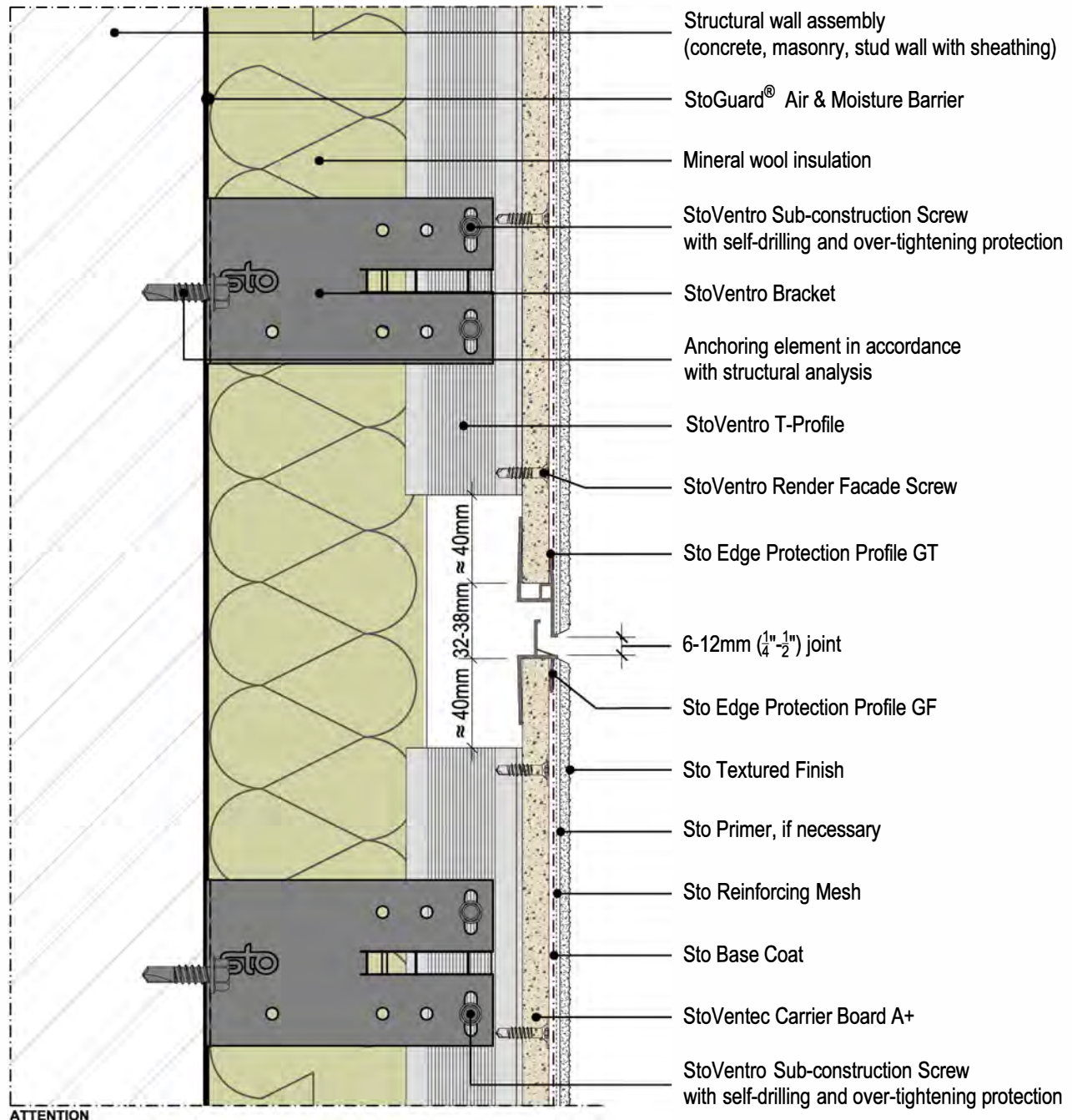
Date: June 2020

Detail No.: 90.R.450

StoVentec® Render

Horizontal Expansion Joint

with Sto Edge Protection Profile GT to Sto Edge Protection Profile GF

Section View*Note: Maximum span without joints: 25m (~82 feet), length to height ratio not in excess of 2:1.*

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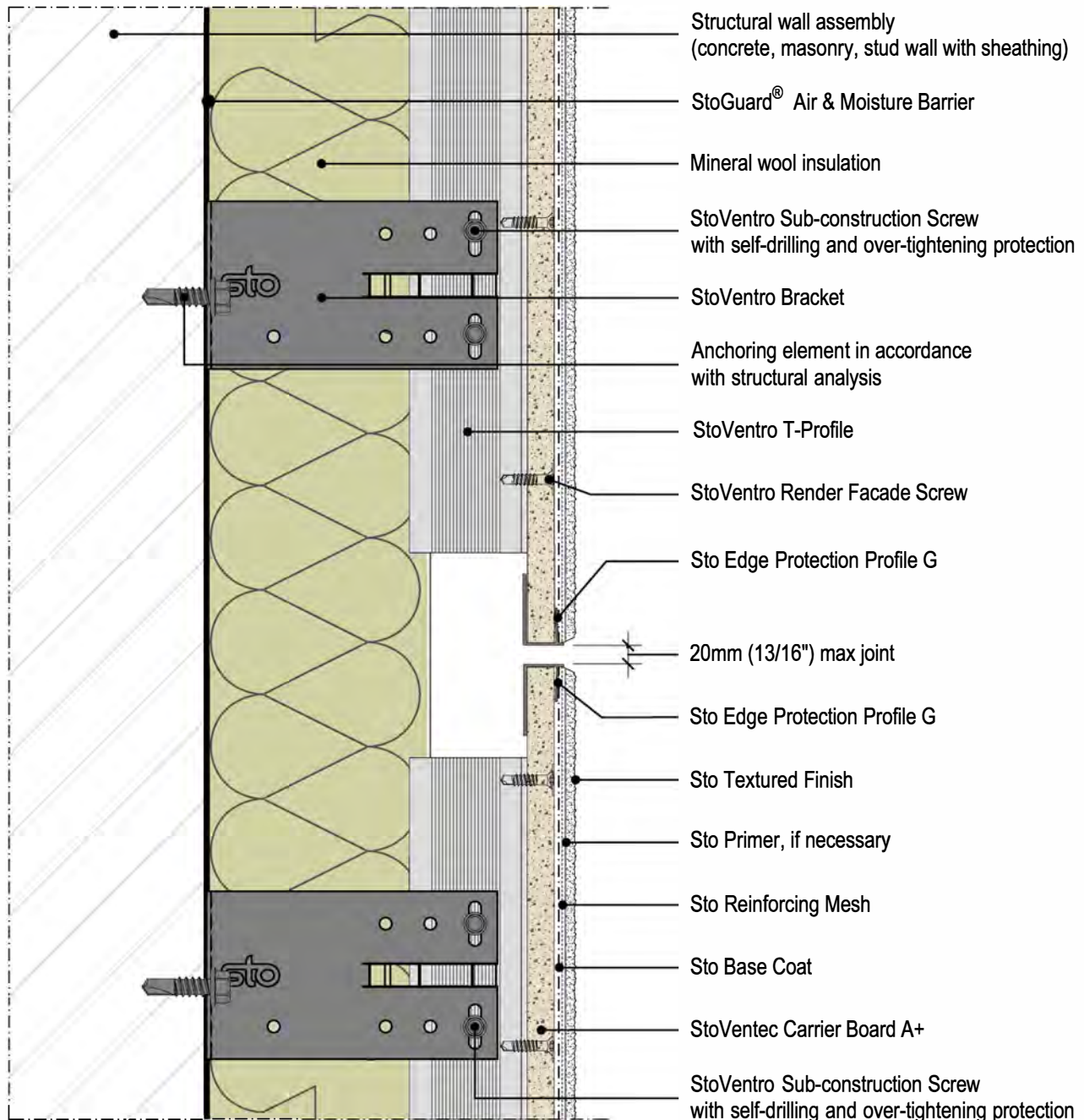
Date: June 2020

Detail No.: 90.R.451

StoVentec® Render

Horizontal Expansion Joint

with Sto Edge Protection Profile G to Sto Edge Protection Profile G

Section View*Note: Maximum span without joints: 25m (~82 feet), length to height ratio not in excess of 2:1.***ATTENTION**

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VR-SAR-0294

StoVentec® Render

Vertical Expansion Joint

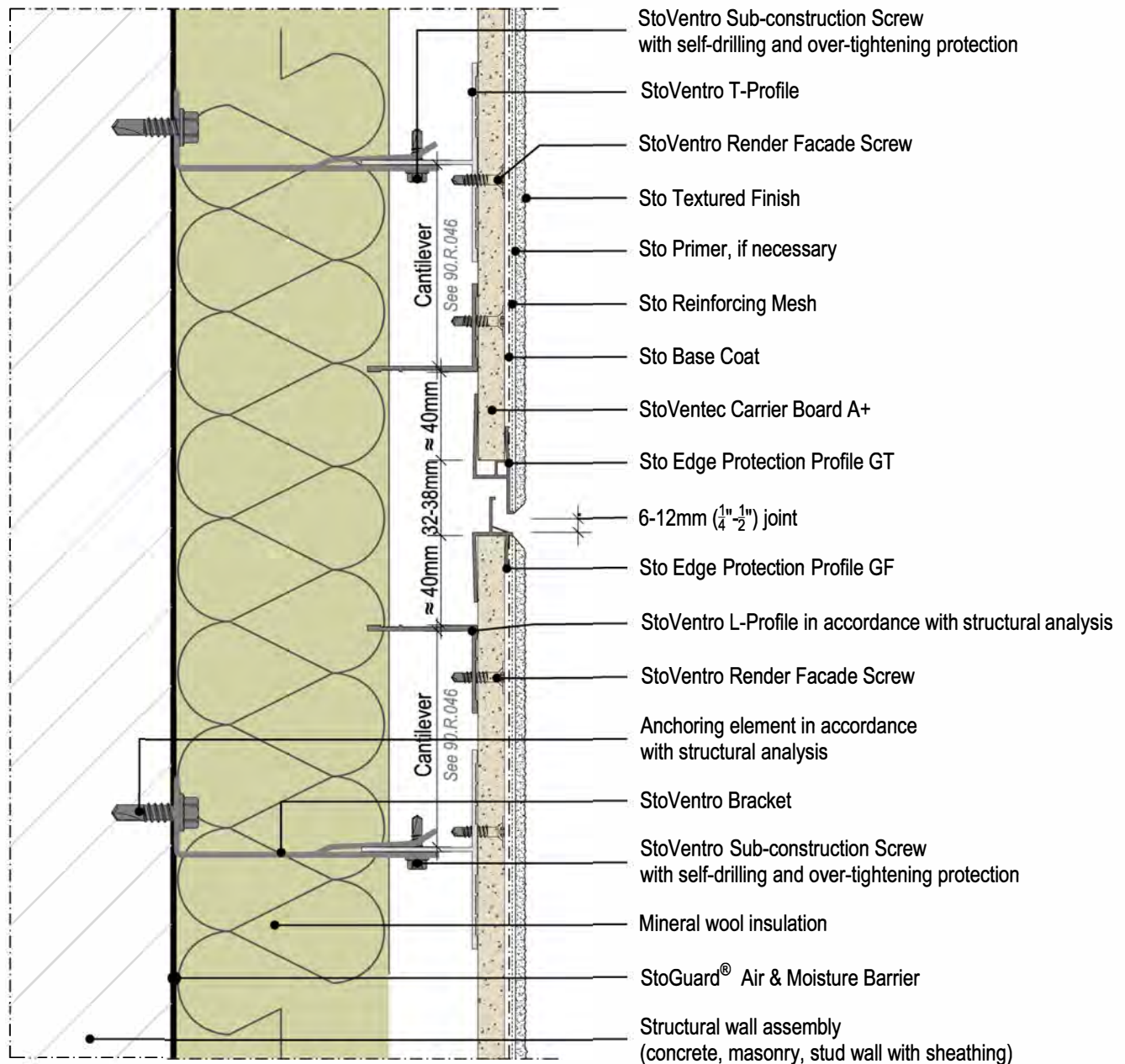
with Sto Edge Protection Profile GT to Sto Edge Protection Profile GF

Plan View

Date: June 2020

Detail No.: 90.R.460

Note: Maximum span without joints: 25m (~82 feet), length to height ratio not in excess of 2:1.



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StoVentec® Render

Vertical Expansion Joint

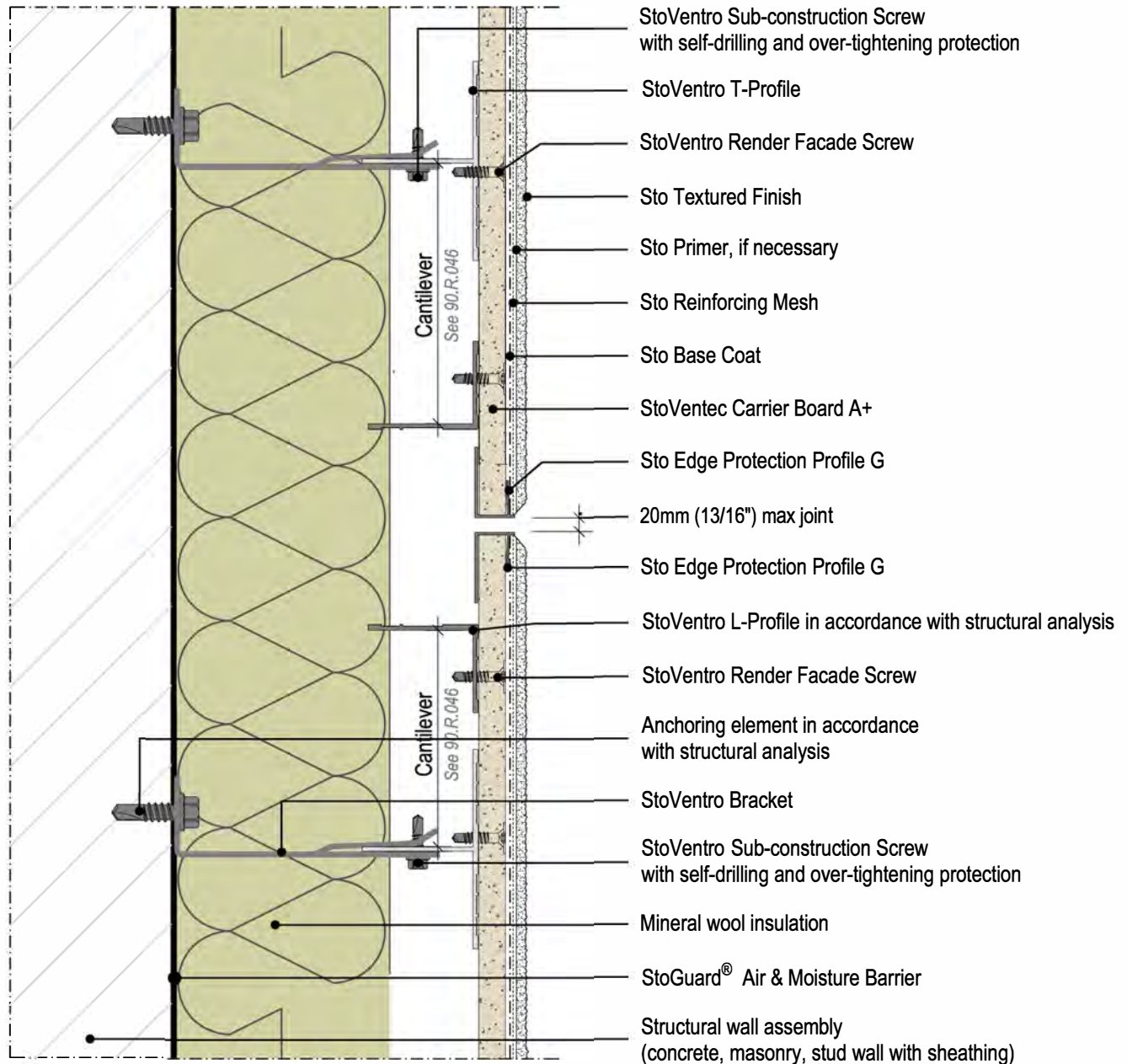
with Sto Edge Protection Profile G to Sto Edge Protection Profile G

Plan View

Date: June 2020

Detail No.: 90.R.461

Note: Maximum span without joints: 25m (~82 feet), length to height ratio not in excess of 2:1.



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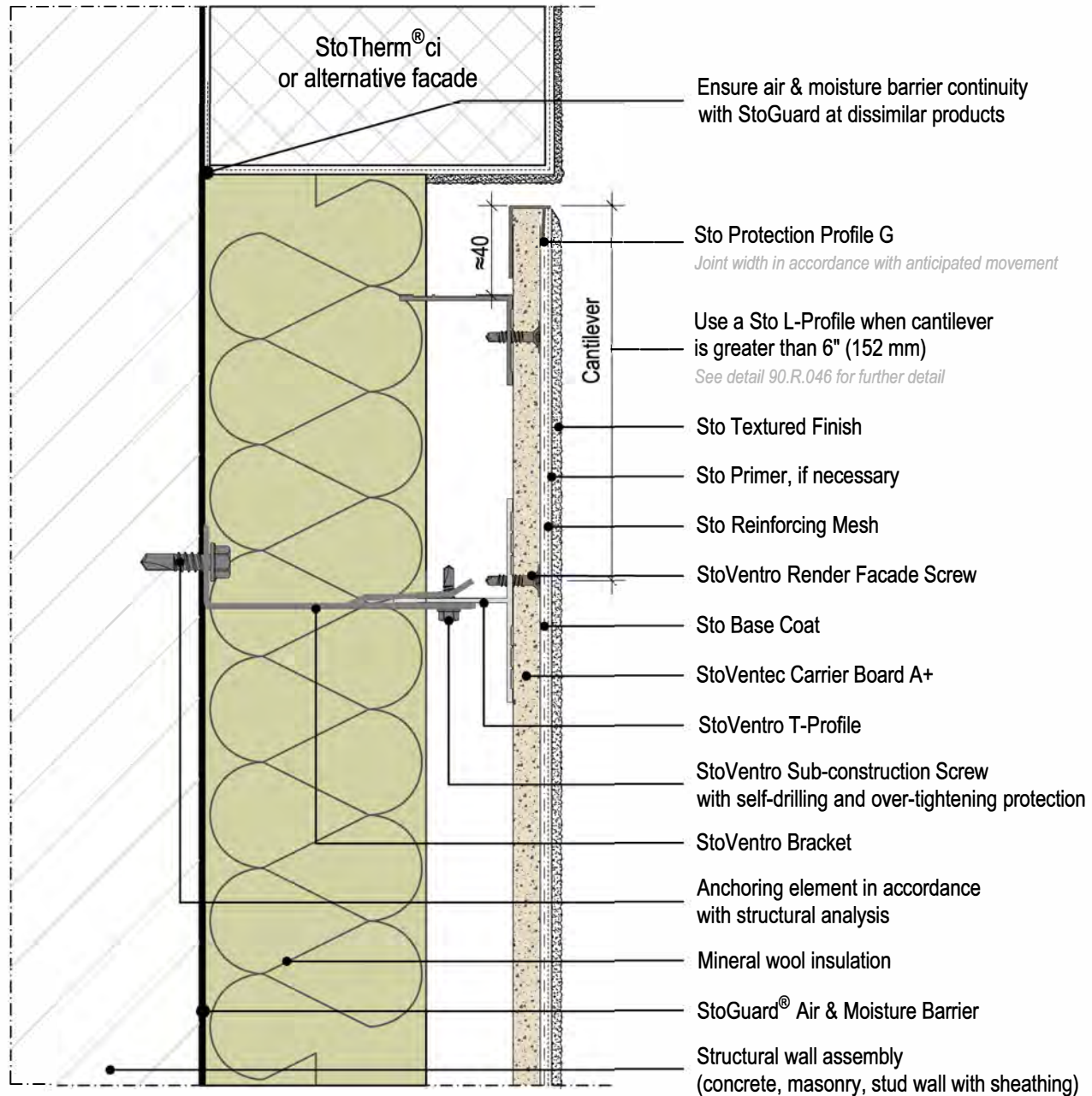
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Date: June 2020

Detail No.: 90.R.470

StoVentec® RenderVertical Transition of StoVentec Render
to Alternative Facade/wall substrate

Plan View

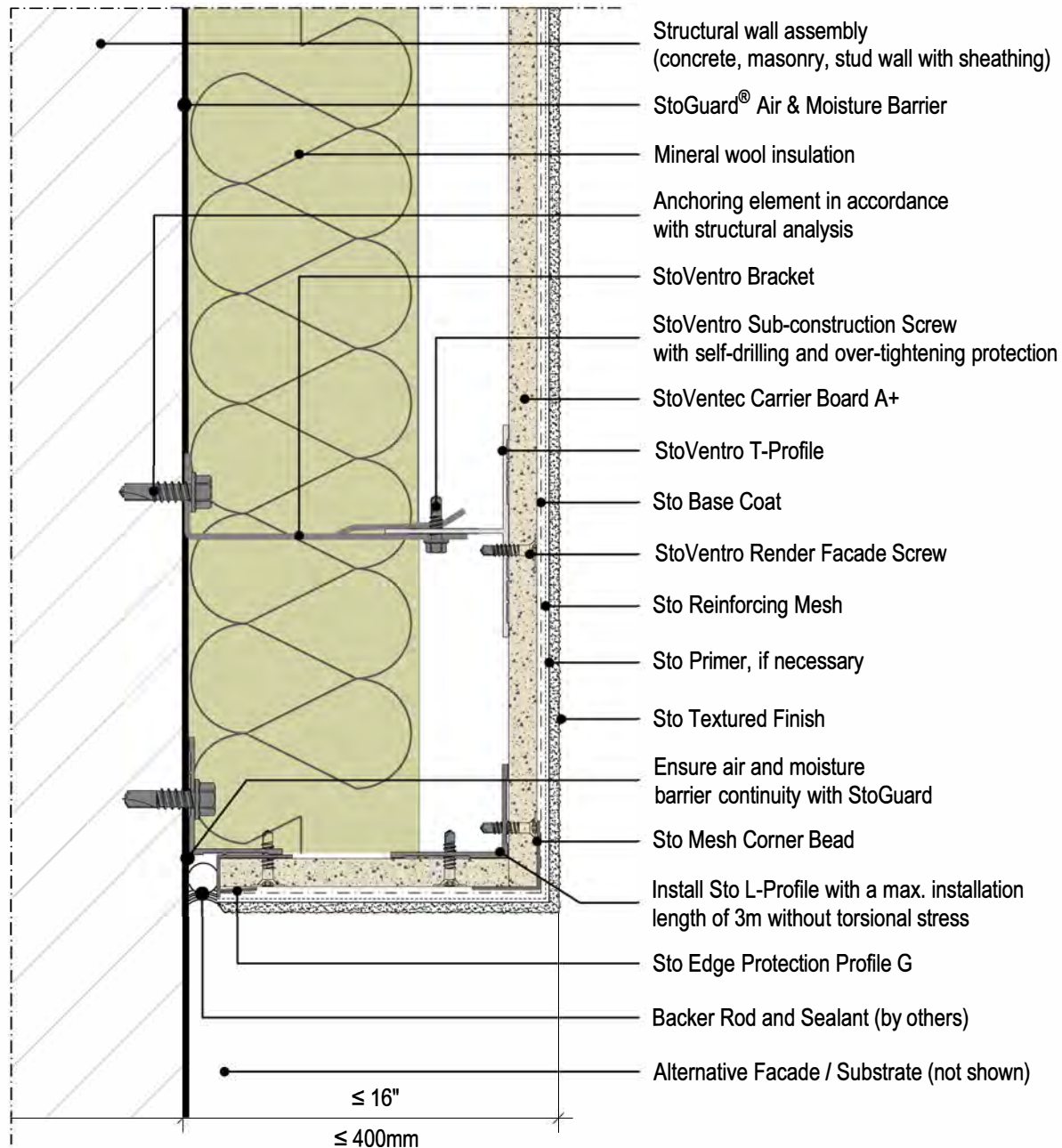
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StoVentec® Render

Returning StoVentec Render to Alternative Facade/Substrate

Date: June 2020**Plan View****Detail No.: 90.R.474****ATTENTION**

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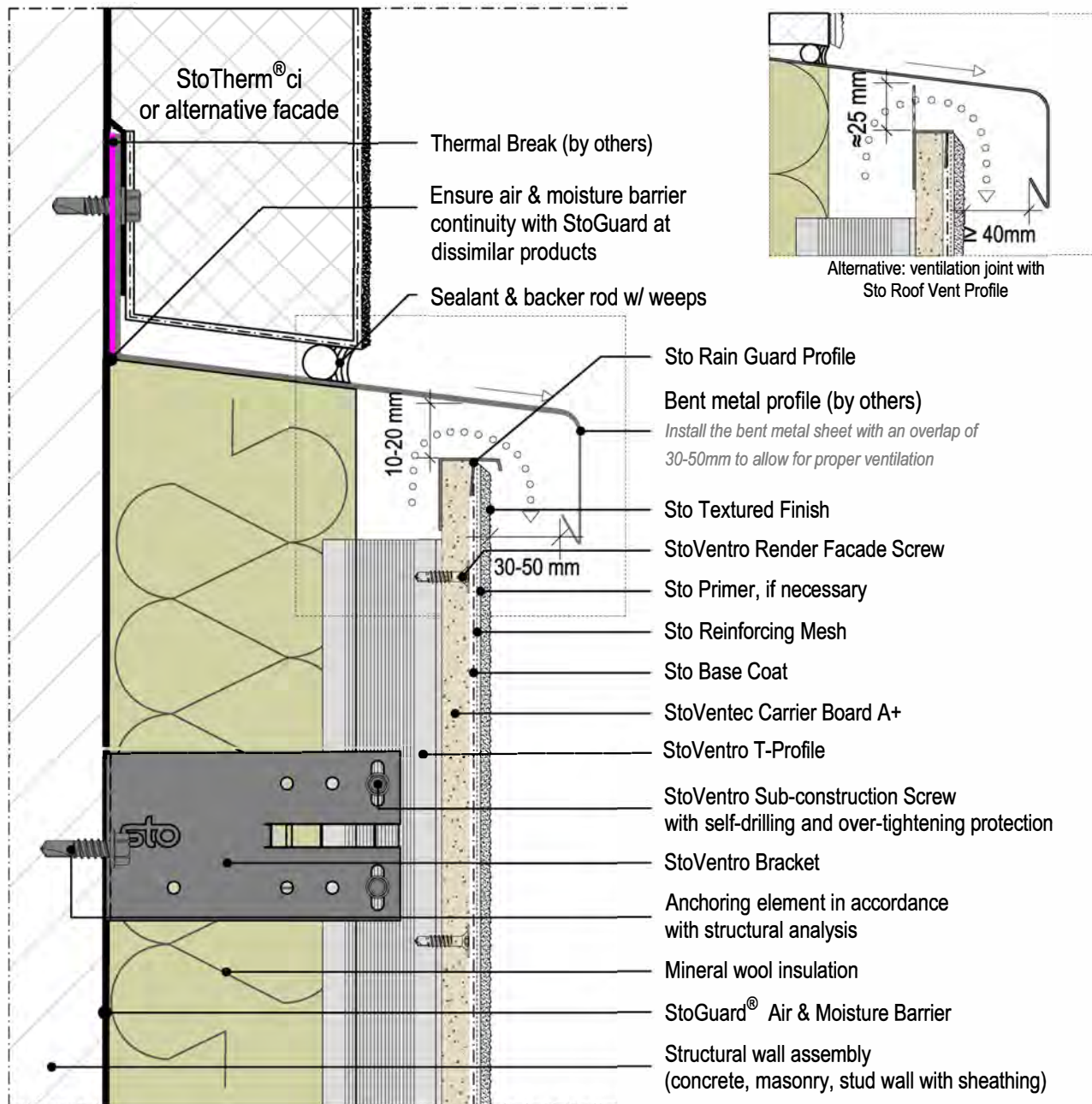
StoVentec® Render

Horizontal transition to alternative facade/wall substrate above

Date: June 2020

Section View

Detail No.: 90.R.475



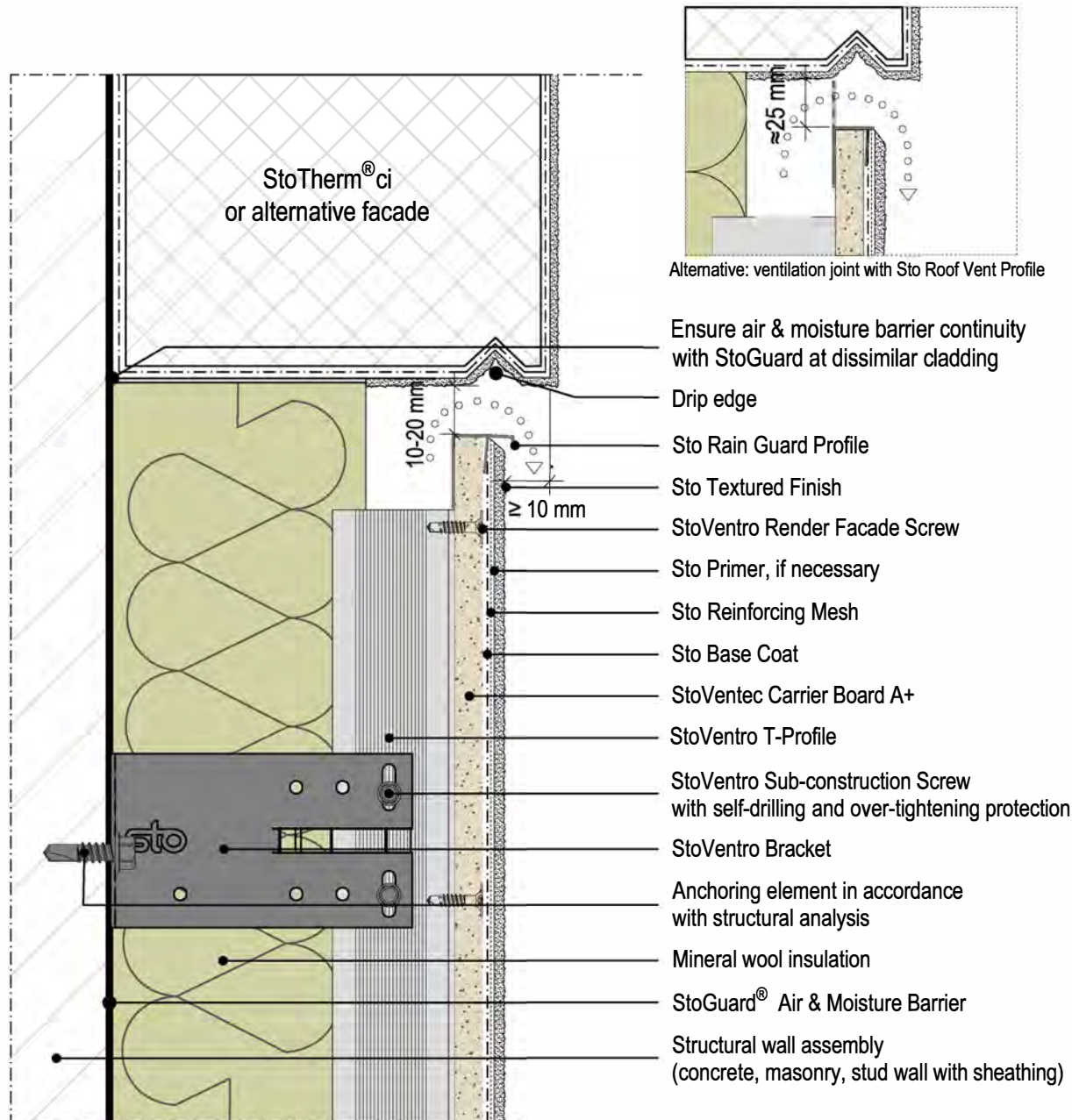
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Date: June 2020

Detail No.: 90.R.476

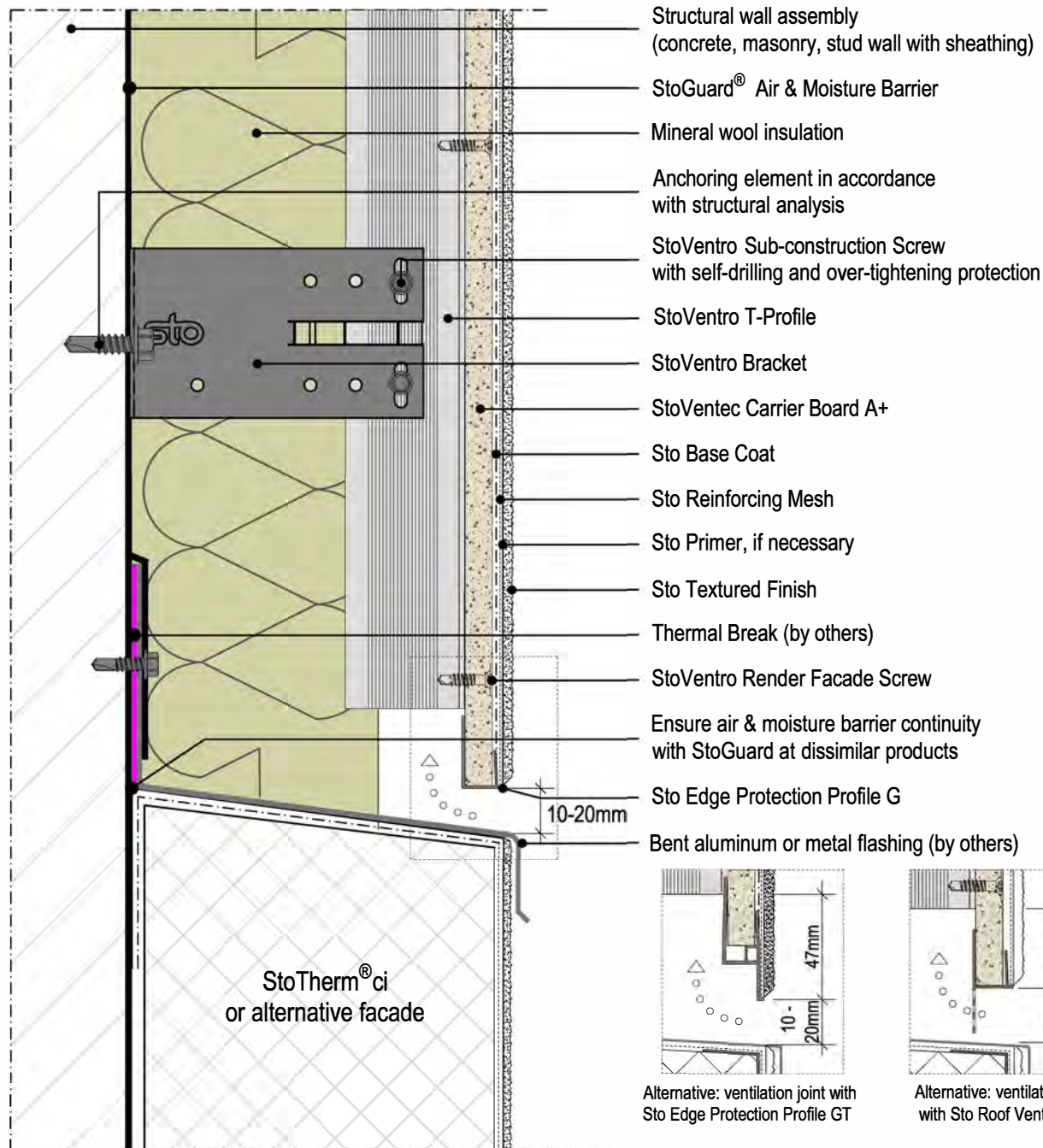
StoVentec® RenderHorizontal Transition of StoVentec Render under
alternative facade/wall substrate**Section View****ATTENTION**

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Date: June 2020

Detail No.: 90.R.478

StoVentec® RenderHorizontal Transition of StoVentec Render above
alternative facade/wall substrate (Render facade flush)**Section View****ATTENTION**

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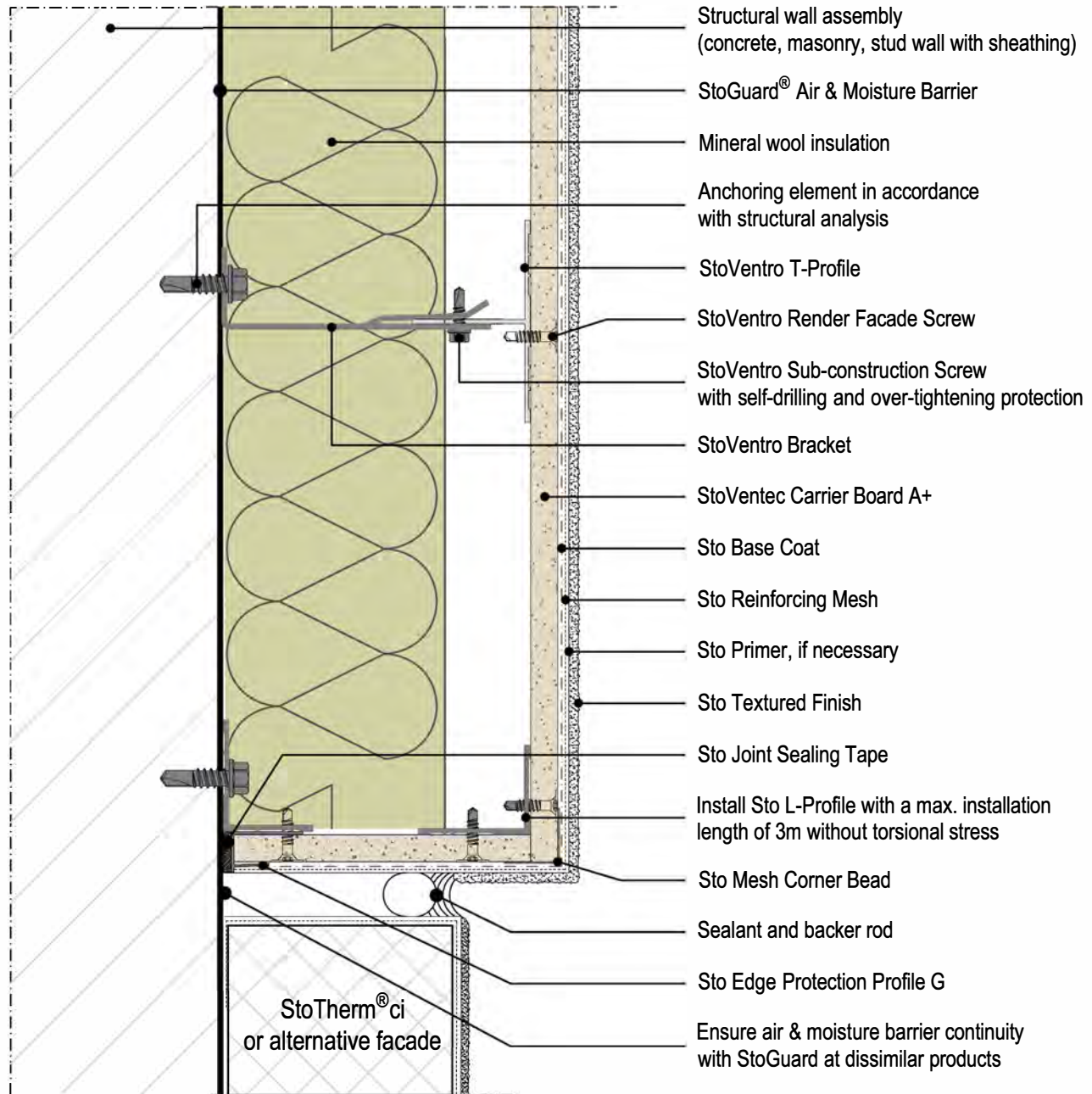
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Date: June 2020

Detail No.: 90.R.486

StoVentec® RenderVertical Transition of StoVentec Render to Alternative Facade/
wall substrate (Render proud)

Plan View

**ATTENTION**

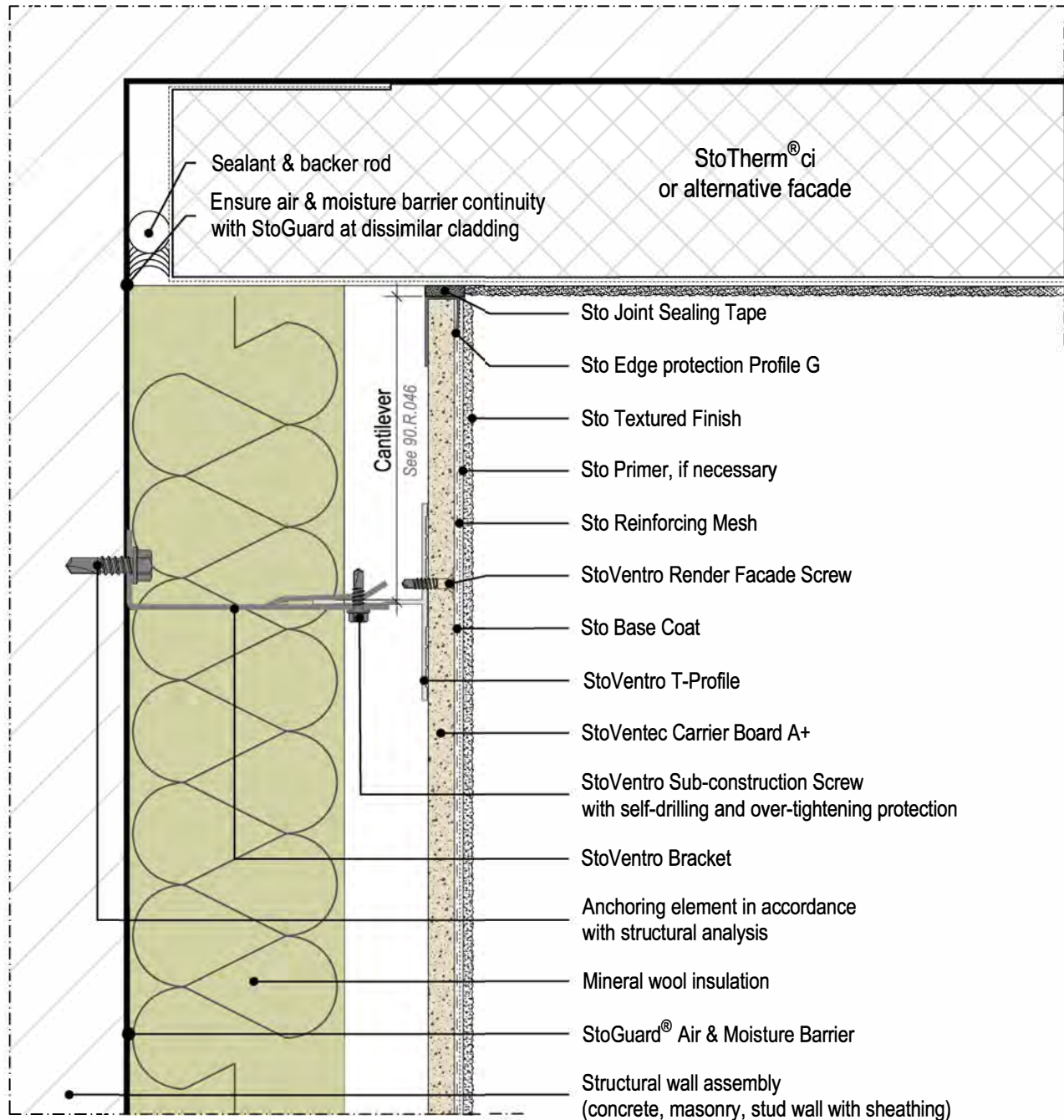
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Date: June 2020

StoVentec® Render

Inside corner to alternative facade/wall substrate

Plan View**Detail No.: 90.R.490****ATTENTION**

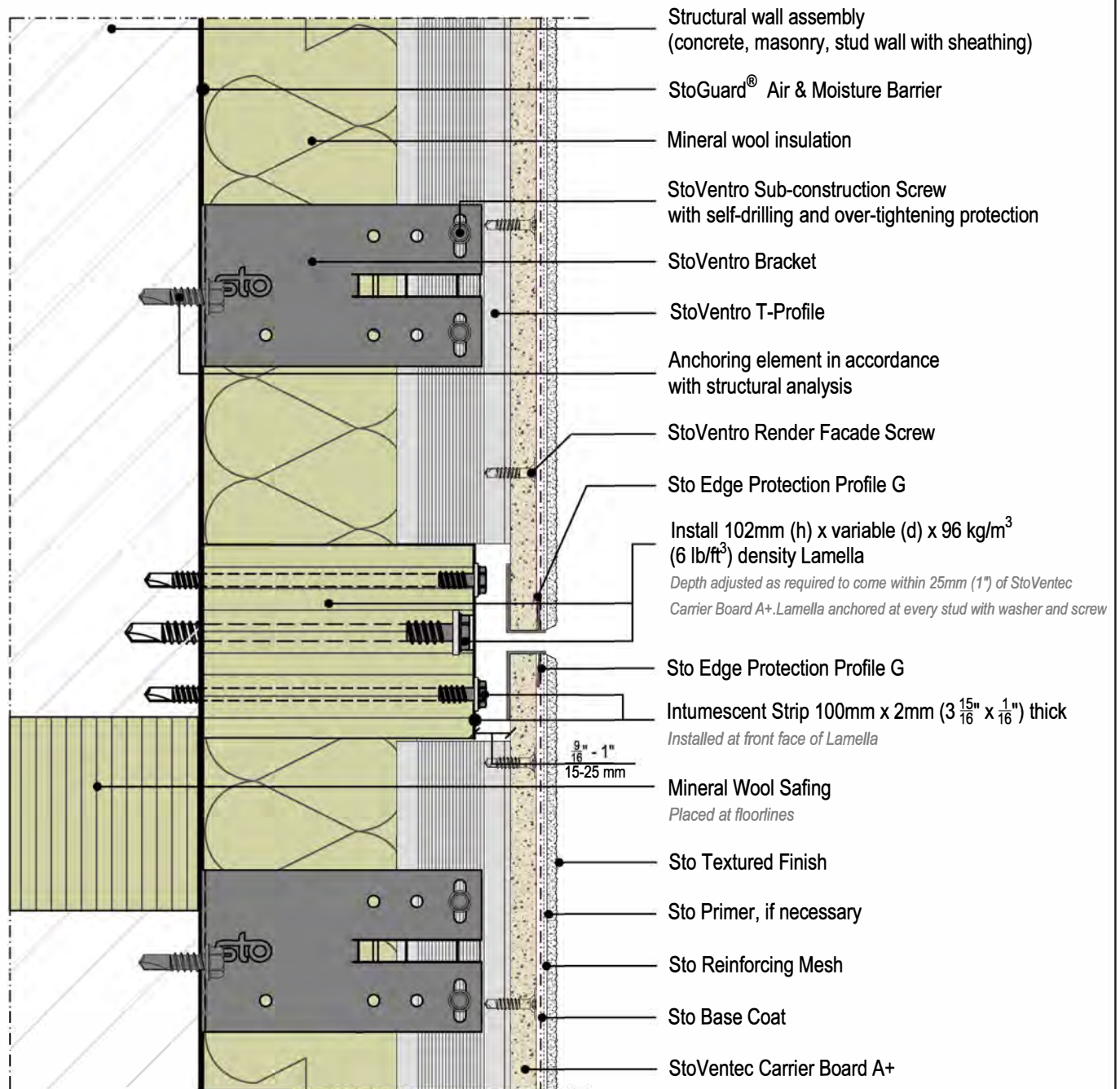
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VR-SAR-0225

Date: June 2020

Detail No.: 90.R.550

StoVentec® RenderFire Protection at Floor Lines with Lamella and Intumescent Tape Fire Break
NFPA 285 Compliant, Intertek Design listing No. STO/CWP 30-02**Section View****ATTENTION**

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