



**Carlisle SealTite™ Pro Spray Foam Insulation
for Residential Buildings**

Walls & Attics

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August 2020

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Carlisle SealTite™ Pro Spray Foam Insulation for Residential Buildings

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Information contained in this specification section is intended for use by Specifiers and Contractors when specifying or installing a Foamed-in-place insulation in walls or attics of residential buildings and wooden- framed commercial facilities. In this section, various insulating methods are described using the foamed-in-place polyurethane insulations with other exterior insulation boards or common cavity insulations. The closed cell foam can also be combined with open cell foam in a hybrid assembly insulating assembly.

PART I - GENERAL

1.01 Description

The Carlisle SealTite™ Pro is an open (light density) or closed (medium density) cell Foamed-in-place insulation that can be applied within the cavity wall to insulate exterior walls, vented or unvented attics of residential buildings and wooden- framed commercial facilities. The thickness of foam insulation used, will vary based on the desired R-Value, the geographic location and the type of foam used.

In addition, the SealTite™ Pro (closed or open cell) can be used in conjunction with exterior insulation boards to achieve the desired R-Value, The closed-cell foam may also be used with the open-cell foam or other cavity insulations (fiberglass batts, netted blown cellulose, netted blown fiberglass or spray-applied fiberglass) in a **hybrid assembly** improving air-tightness and sound deadening.

1.02 General Design Considerations

The total thickness of the spray foam insulation shall be determined by the specifier and must meets or exceeds the applicable local energy code.

Note: Several tables have been included in the installation details section that contain recommended R-Values in accordance with the 2018 International Residential Code (IRC). Designers shall refer to the appropriate table to determine the minimum R-value required for the specific climatic zone where the project is located.

- A. Projects with Steel-framed ceiling and walls, depending on their stud spacing, will require greater R-Values than those with wood frame. The applicable IRC table shall be referenced for the minimum required R-Value.
- B. For wooden-framed structures, exterior rigid insulation may be replaced by incorporating a hybrid insulating assembly using close cell foam combined with open cell foam or other cavity insulations. The tables included in the detail section shall be referenced to determine the appropriate thickness of the close cell foam required to prevent possible condensation.

- C. The residential Building code require separating all interior living space from SPF with a 15-minute thermal barrier that has fire resistive properties equivalent to 1/2-inch drywall, or equivalent fire performance. As an alternative, in attics and crawlspaces an intumescent, fire resistive coating may be used subject to specific product and design/ access conditions. The local zoning ordinance must be consulted.
- D. The Carlisle close cell spray foam insulation and the SealTite Pro OCX (open cell) foam meet the requirements of ICC-ES AC377 and Appendix X for use in attics and crawlspaces without the use of a prescriptive ignition barrier or intumescent coating when specific conditions are met. The specific product data sheet shall be referenced for applicable requirements.

1.03 Submittals

Prior to installation, the authorized spray Foam applicator must submit to the specifier the Manufacturer's data sheets, applicable evaluation reports and Certifications and Accreditation Credentials

- A. Manufacturer's data sheets and installation instructions on each product to be used, including:
 - 1. Preparation instructions and recommendations
 - 2. Storage and handling requirements
 - 3. Evidence of compliance for insulation products with specified requirements
 - 4. Installation methods (Indicating special procedures, substrate and conditions requiring special treatment.)
- B. Evaluation reports from one or more of the following organizations acceptable to the code official or authority having jurisdiction:
 - 1. ICC-ES (International Code Council Evaluation Service)
 - 2. IAPMO-ES (International Association of Plumbing and Mechanical Officials)
 - 3. Intertek
 - 4. QAI (Quality Auditing Institute, Ltd.)
 - 5. UL (Underwriter's Laboratories, Inc.)
 - 6. Others
- C. Submit Contractor Company Accreditation Certificate and current cards or certificates for all workers on the jobsite.

1.04 Quality Assurance

The building **owner, owner's representative** or **specifier** should verify local codes for applicable requirements and limitations. It is the responsibility of the specifier to review local, state, and regional codes to determine their impact on the specified spray foam insulation.

- A. The authorized spray foam applicator shall furnish all labor, materials, tools, and equipment necessary for the application of the spray foam insulation products, including accessory items, subject to the general provisions of the contract.
- B. The installation of the SPF insulation shall be performed by a company that is accredited by SPFA (Spray Polyurethane Foam Alliance) or authorized by CSFI.

- C. The installing workers and the field supervisor shall both be certified as part of the SPFA/PCP (Professional Certification Program) or CSFI applicator training program.

1.05 Site Conditions

- A. The substrates to which the insulation is to be applied must be clean, dry, and free of frost, ice, loose debris, or contaminants that may interfere with adhesion of the spray foam insulation. The insulation must not be applied in electrical boxes.

1.06 Delivery, Storage, and Handling

- A. Materials shall be delivered in tightly sealed containers or unopened package, all clearly labeled with the CSFI brand names, product identification, safety information, manufacture date, and lot numbers where appropriate.
- B. Containers shall be stored at 65° to 85°F (18 – 29 degrees Celsius) in a dry and well-ventilated area out of the weather and direct sunlight.
- C. All materials shall be stored in compliance with local safety requirements.

1.07 Safety Requirements

For protection against exposure to higher levels of MDI (greater than 1ppm) or for entry into confined spaces, workers must wear either a self-contained breathing apparatus, with full face piece, operated in a pressure-demand or other positive-pressure mode, or a combination respirator, including a Type C air-supplied respirator, with full face piece, operated in a pressure-demand or other positive-pressure mode, or an auxiliary self-contained breathing apparatus, operated in a pressure-demand or other positive-pressure mode.

- A. Proper disposal of waste materials and containers must be performed in accordance with federal, state, and local regulatory agencies.
- B. Personal protective clothing should be worn according to OSHA standards.
- C. API Bulletin AX-119, “MDI-Based Polyurethane Foam Systems “Guidelines for Safe Handling and Disposal” shall be referenced.

PART II – PRODUCTS

2.01 General

Carlisle spray foam insulation is registered under the trademark of SealTite™ Pro. SealTite™ Pro is available in various open cell and close cell formulations to accommodate specific project and labor conditions.

The SealTite™ Pro is a two component, open cell (light density) or a close cell (medium density), one-to-one by volume spray-applied polyurethane foam. These spray foam insulations are designed for use in residential and commercial structures in lieu of traditional forms of insulating materials.

The typical areas where the spray foam is applied are exterior and interior walls, vented and un-vented attic assemblies and between floors.

2.02 Open Cell Foam

A. SealTite™ Pro Open Cell

SealTite™ Pro Open Cell is a two component, light density, one-to-one by volume spray-applied

polyurethane foam. SealTite™ Pro Open Cell is an insulation system designed for use in commercial and residential applications.

Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. SealTite™ Pro Open Cell contains ZERO ozone depleting blowing agents and can be used in Assembly specific attic applications without an Ignition Barrier Coating. Refer to table in Paragraph F.

B. SealTite™ PRO High Yield

SealTite PRO High Yield is a two-component, light density, one-to-one by volume spray-applied polyurethane foam insulation optimized for yield. SealTite™ Pro High Yield is an insulation system designed for use in commercial and residential applications.

Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. SealTite™ Pro High Yield contains ZERO ozone depleting blowing agents and can be used in Assembly specific attic applications without an Ignition Barrier Coating. Refer to table in Paragraph F.

C. SealTite™ PRO No Mix

SealTite™ Pro No Mix is a two component, light density, one-to-one by volume spray-applied polyurethane foam that does not require mixing or agitation of the resin prior to application. SealTite™ Pro No Mix is an insulation system designed for use in commercial and residential applications.

Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. SealTite™ Pro No Mix contains ZERO ozone depleting blowing agents and can be used in Assembly specific attic applications without an Ignition Barrier Coating. Refer to table in Paragraph F.

D. SealTite™ PRO No Trim 21

SealTite™ Pro No Trim 21 is a two component, light density, one-to-one by volume spray-applied polyurethane foam. A single pass at 5" of SealTite™ Pro No Trim 21, in a typical 2X6 wall cavity, will achieve an insulation value of R-21.

SealTite™ Pro No Trim 21 eliminates the need to over spray and trim excess material to reach required insulation values. SealTite™ Pro No Trim 21 is an insulation system designed for use in residential applications. Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. SealTite™ Pro No Trim 21 contains ZERO ozone depleting blowing agents. Refer to table in Paragraph F.

E. SealTite™ PRO OCX

SealTite™ Pro OCX is a two component, light density, one-to-one by volume spray-applied polyurethane foam that complies with AC-377 Appendix X and can be installed in attics and crawl spaces without a prescriptive ignition barrier or intumescent coating.

SealTite™ Pro OCX is an insulation system designed for use in commercial and residential applications. Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. SealTite™ Pro OCX contains +/- 14% bio, renewable, recycled, and sustainable content and ZERO ozone depleting blowing agents. Refer to table in Paragraph F

F. Physical Properties of Open Cell Foam

Physical Property	Test Method ASTM	SealTite [™] Pro Open Cell	SealTite [™] Pro High Yield	SealTite [™] Pro No Mix	SealTite [™] Pro No Trim 21	SealTite [™] Pro OCX
R-Value, @ 1"	C 518	3.7	3.6	3.8	4.4	3.7
R-Value, @ 3.5"	C 518	13	13	13	15	12
Core Density, lb/c.f	D 1622	0.50	0.45	0.5	0.75	0.5
Open-cell content, %, min.	D 2856	90	97	97	97	95
Air Impermeable, max, (L/s-m ²) @ 3.5"	E 283	0.02	0.02	0.02	0.02	0.02
Tensile Strength, psi, min.	D 1623	3	5	5.19	4.7	3.71
Dimensional Stability, 28 days, percent volume change, max.	D 2126	15	15	5	4	15
Flame Spread, max.	E-84	25	10	20	20	0
Smoke Development, max.	E-84	450	250	400	400	300

Note: Consult product data sheet pertaining to use of these products and latest property data.

2.03 Closed Cell Foam

The CSFI closed Cell SealTite™ Pro spray foam is available in two formulations: the SealTite™ Pro Closed Cell and the SealTite™ Pro One Zero. Refer to paragraph B and C for additional product characteristics.

A. Physical Properties of Close Cell Foam

Physical Property	Test Method ASTM	SealTite™ Pro Closed Cell	SealTite™ Pro One Zero
R-Value, @ 1"	C 518	6.9	6.9
R-Value, @ 3.5"	C 518	24	24
Core Density, lb/c.ft.	D 1622	2.00	2.00
Closed-cell content, %, min.	D 2856	90	90
Water Vapor Transmission, Permeance @ 3.5"	E 96	0.23	0.23
Air Impermeable, max, (L/s- m2) @ 1"	E 2178	0.02	0.02
Tensile Strength, psi, min.	D 1623	60	60
Dimensional Stability, 28 days, percent volume change, max.	D 2126	9	9
Flame Spread, max.	E-84	25	25
Smoke Development, max.	E-84	450	450
Compressive Strength, psi	D-1621	47	47

B. SealTite™ PRO Close Cell

SealTite™ Pro Close Cell is a two-component, medium density, one to one by volume spray-applied polyurethane foam. SealTite™ Pro Closed Cell is an insulation system designed for use in commercial and residential applications. Use in lieu of more traditional forms of insulating materials such as

fiberglass, cellulose, or other loose fill products. Refer to table in Paragraph A.

C. SealTite™ PRO One Zero

SealTite™ Pro One Zero is a two-component, next generation HFO blown medium density spray-applied polyurethane foam. The HFO technology allows SealTite™ Pro One Zero to be produced with a Global Warming Potential (GWP) of less than One and with an Ozone Depletion Potential (ODP) of Zero. SealTite™ Pro One Zero is an insulation system designed for use in commercial and residential applications. Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose, or other loose fill products. Refer to table in Paragraph A.

2.04 Ignition Barriers

- A. The SealTite™ Pro OCX open cell foam, SealTite™ Pro Closed cell foam and SealTite™ Pro One Zero closed cell foam meet the requirements of ICC-ES AC377 Appendix X for use in attics and crawlspaces without a prescriptive ignition barrier or intumescent coating when the following conditions are met:
1. Entry is only to service utilities in the attic or crawlspace and no storage is permitted.
 2. Attic or crawlspace areas cannot be connected.
 3. Air from the attic or crawlspace cannot be circulated to other parts of the building.
 4. In accordance with IBC Section 1203.3 or IRC Section R408.1, under floor (crawlspace) ventilation is provided as applicable.
 5. In accordance with IBC 1203.2 or IRC Section R806, attic ventilation is provided as applicable.
 6. In accordance with 2012 and 2009 IMC (International Mechanical Code®) Section 701, or 2006 IMC Sections 701 and 703, combustion air is provided.
 7. The foam plastic insulation is limited to the maximum thickness and density tested.
 8. The installed coverage rate of coatings, if part of the insulation system shall be equal or greater than that tested.
- B. Excluding foams listed in 2.04A, all other Carlisle SealTite™ Pro open cell foam meets the requirements of ICC-ES AC377 Appendix X for use in attics and crawlspaces without a prescriptive ignition barrier when covered with one of the following approved intumescent coatings and the following conditions are met:
1. Entry is only to service utilities in the attic or crawlspace and no storage is permitted.
 2. Attic or crawlspace areas cannot be connected.
 3. Air from the attic or crawlspace cannot be circulated to other parts of the building.
 4. In accordance with IBC Section 1203.3 or IRC Section R408.1, under floor (crawlspace) ventilation is provided as applicable.
 5. In accordance with IBC 1203.2 or IRC Section R806, attic ventilation is provided as applicable.
 6. In accordance with 2012 and 2009 IMC (International Mechanical Code®) Section 701, or 2006 IMC Sections 701 and 703, combustion air is provided.

7. The foam plastic insulation is limited to the maximum thickness and density tested.
 8. The installed coverage rate of coatings, if part of the insulation system shall be equal or greater than that tested.
- C. For intumescent coatings required for code compliance, the specific CSFI foam PDS must be referenced for coating type and application rate.

PART III – EXECUTION

3.01 Site Preparation

Personal Protection Equipment including chemical resistant suits, personal respirators, eye, hand, and face coverings, and other items required per manufacturer requirements must be made available to all workers along with Scaffolding, working fresh air ventilation and exhaust equipment.

- A. The location of the discharge of the SPF ventilation system must be a minimum of 25 feet (7.6 meters) away from unprotected individuals. Place controlled access warning barricades and signs around the 25-foot zone. If workers or occupants of adjacent lots or units are within this 25-foot area, subcontractor must re-locate the point of the exhaust discharge to fulfill the 25-foot minimum.
- B. Restrict access to the residence, ensuring no one enters except a properly trained and protected spray foam worker. Signs are to be posted at each entryway with a date identifying how long other trades must stay away.
- C. Inspect all equipment, hoses, and generators, etc. Do not use frayed, damaged, or defective equipment. Contractor cannot use shore power on jobsite. Generator must be provided.
- D. Make sure any openings to the HVAC system are properly covered. Verify the system is turned off. Fully cover and mask with plastic all electrical outlets, vents, fireplaces, windows, tubs, showers, doors, floors, etc. in areas to receive SPF material prior to the spray application.
- E. Install attic measuring cards at roof sheathing surfaces for ease of gauging the thickness of the installed product.

3.02 Substrate Preparation

The substrates to which the insulation is applied must be clean, dry, and free of frost, ice, loose debris, or contaminants that will interfere with adhesion of the spray foam insulation. The insulation must not be applied in electrical boxes.

A. Wood

1. Plywood shall contain no more than 18% water, as measured in accordance with ASTM D-4449 and 4444-84.
2. Most untreated and unpainted wood surfaces need not be primed. The spray polyurethane foam can be applied directly to the dry wood. Priming may be required in certain instances. Contact a CSFI representative for specific details.

B. Steel

1. Primed: If the primed metal surface is free of loose scale, rust, weathered or chalking paint. It can

be cleaned using vacuum equipment and hand or power tools to remove loose dirt.

2. Grease, oil, or other contaminants shall be removed with proper cleaning solutions.

C. Concrete and Masonry

Must be cured, and loose dirt and any other contaminants, such as asphaltic materials, removed. If a primer is required, prime with Thermo Prime, at the rate of one gallon per 200 square feet (18.58 square meters).

D. Sheathing Board

Most sheathing boards need not be primed prior to the application of sprayed-in-place polyurethane foam.

3.03 Primer Application

When required, the primer shall be applied to the properly prepared substrate in accordance with the CSFI guidelines to achieve a minimum thickness of dry mils. Many primers require a curing time of 24 hours prior to application of spray polyurethane foam. Refer to the appropriate CSFI primer datasheet for application procedures.

3.04 Installation

Installation must meet manufacturer requirements including proper product mixture and application (i.e. spray distance from surface as well as angle of spray) to allow for proper and even thickness across the intended surface.

- A. Apply spray foam at the correct depth to all edges of the specified area (e.g. wall cavities, attic ceilings, etc.). Do not leave any holes or gaps in sprayed material. Utilize “picture framing” method where applicable. Ensure electrical and low voltage wires are not pushed out past the wall stud plane (if wall cavity application).
- B. Ensure SPF does not come within 3-inches of any building component that may get hot, such as fireplace flues, B-vents and can lights. Spray the product up to the enclosure designed to create clearance from these items to provide a tight, continuous seal. Observe the enclosure to confirm there are no gaps or holes that may allow air or moisture infiltration.
- C. Install SPF at the thickness required to meet the applicable (e.g. ASTM, IRC, project specification) requirements. The average thickness of the foam insulation must meet or exceed the required R-value (resistance to heat flow) as specified to meet specified code requirements.
- D. Closed Cell, due to its exothermic reaction is limited to its thickness sprayed per pass. Confirm specific product maximum thickness per pass before application.
- E. Consider the type of product to be sprayed and the location to receive the SPF to determine the specific thermal and ignition barrier requirements. If intumescent coating is required, apply the coating as required by the third-party SPF product evaluation report or the intumescent coating manufacturer.

Note: Adjust the schedule to allow enough time to apply the intumescent coating while no other trades are present.

3.05 Spray Polyurethane Foam Application

- A. The spray polyurethane foam components (A) and (B) shall be processed in accordance with instructions found on the appropriate product datasheet.
- B. Applicators must recognize and anticipate climatic conditions prior to application to ensure highest quality foam and to maximize yield. Ambient air, substrate temperatures and relative humidity, are all critical when determining the foam quality.

Note: Variations in ambient air and substrate temperature will influence the chemical reaction of the two components, directly affecting the expansion rate, amount of rise, yield, adhesion, and the resultant physical properties of the foam insulation.

- C. Applicators should limit open-cell thickness to 6 inches (approximately 15 centimeters) per pass for optimal processing and physical properties. Second passes if necessary, should be applied after 10 minutes of cure time. If additional passes are needed, applicators should wait 30 minutes between passes for optimal foam processing.
- D. Applicators should limit closed-cell foam thickness to 2" per pass for optimal processing and physical properties. Second passes if necessary, should be applied after 10 minutes of cure time. If additional passes are needed, applicators should wait 30 minutes between passes for optimal foam processing.
- E. Spray Foam Application with a Prescriptive Ignition Barrier. When spray foam systems are installed within attics or crawl spaces where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6 and IRC Section R314.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code and must be installed in a manner so that the foam plastic insulation is not exposed. Spray foam insulation, as described in these sections, may be installed in unvented attics in accordance with IRC Section R806.4

3.06 Application with Ignition Barrier

In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters. The foam plastic must be covered with a minimum thickness of intumescent coating.

- A. The coating is applied over the spray foam insulation in accordance with the manufacturer's instructions. Surfaces to be coated must be dry, clean, and free of dirt, loose debris, and any other substances that could interfere with the adhesion of the coating.
- B. The coating is applied with a medium size nap roller, soft brush, or conventional airless spray equipment at a rate of 1 gallon per 100 square feet (9.29 square meters) to achieve the minimum thickness required by the coating manufacture.
- C. The coating must be applied when ambient and substrate temperatures are above 50°F and the coating requires a 4-hour curing time after application. Spray foam insulation, as described in this section, may be installed in unvented conditioned attics in accordance with IRC Section R806.4.
- D. Application with Minimum ½" (1.27 centimeters) Gypsum Board in Attics. In attics, spray foam insulation may be spray-applied to the underside of roof sheathing and roof rafters. In crawlspaces, closed-cell spray foam insulation may be spray-applied to the underside of floors as described in this section.

Note: Spray foam insulation must be separated from the area beneath the attic by an approved thermal barrier

in accordance with IBC Section 2603.4.1.6 and IRC Section R314.5.3.

3.07 Cleaning

At the end of each workday, remove rubbish, empty containers, rags, and other discarded items from the site. After completing work, clean glass and spattered surfaces.

3.08 Troubleshooting

Manufacturers publish guidelines and training materials shall be referenced when troubleshooting the installation of spray foam. Mix issues and degraded or contaminated product may be diagnosed through the foam color, cell structure, or the surface texture of the sprayed product.

- A. Poor mixing can create noticeable issues with the color, curing time, cell structure, surface texture, shrinkage, or consistency (sticky, rubbery, or brittle).
- B. Degraded product may manifest in the cure time, hotter reaction, and foam color, separation in drum, change of smell, noisy, density, or shrinkage.
- C. Contaminated product may be evident in hotter reaction and then collapse, smell, color, incorrect density, shrinkage, cracking, pulling from substrate, popcorn surface or bubbling.
- D. The above conditions must not be overlooked. Discontinue the application until the issue is identified and corrected measures are taken. CSFI Technical Services team may be contacted for further support in identifying and correcting material related issues.
- E. Remove any degraded, off ratio, or contaminated product before proceeding with further spraying.

3.07 Post Installation

Scrape floors, sweep-up, bag, and remove all excess/loose debris and foam from jobsite daily. No overnight storage of full or empty A or B side drums on the jobsite.

- A. Remove all masking, plastic and coverings used to protect electrical outlets, windows, tubs, showers, doors, fireplaces, floors, etc.
- B. Ensure wall studs and ceiling surfaces are smooth and ready for drywall installation, e.g. no bulging or excess foam extending beyond stud edges, unless area is not intended to receive drywall (as in an attic application).
- C. Ensure caution tape and restricted access zones signs remain in place until the time noted on the restricted access signs. Remove the caution tape and signs after the time designated on the signs.

End of Section

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This Specification represents the applicable information available at the time of its publication. Owners, Specifiers and Carlisle authorized roofing applicators should consult CSFI or their Manufacturer's Representative for any information that has subsequently been made available.



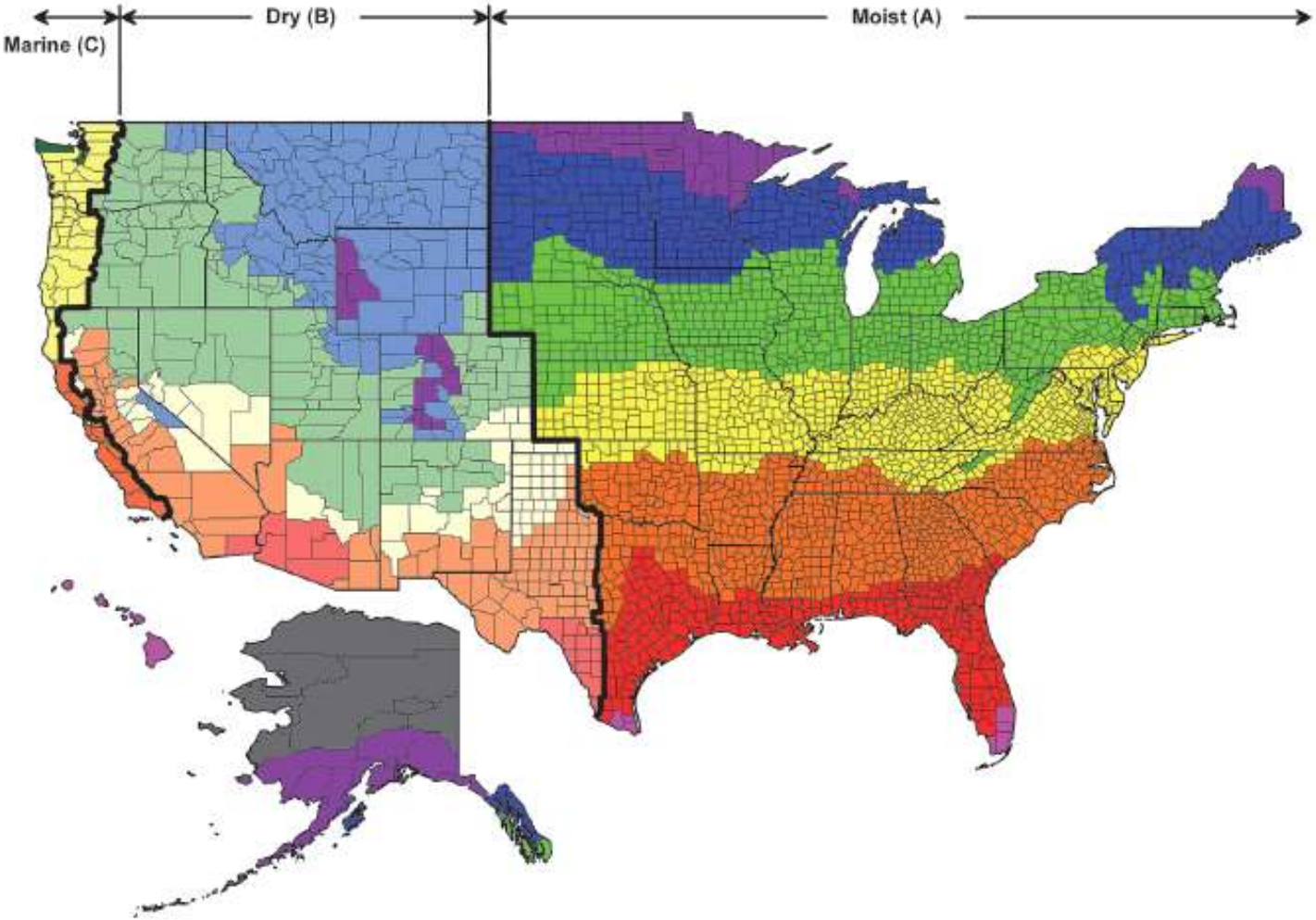
Carlisle SealTite™ Pro Spray Foam Insulation for Residential Buildings

CSFI Residential Details for Walls and Attics

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Steep Roof: ccSPF Insulation.....	R3.2
Steep Roof: Hybrid ocSPF & ccSPF Insulation.....	R3.3
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- | | | | |
|--|------------------------|--|-------------------------|
| | Zone 1A Very Hot Humid | | Zone 4C Mixed Marine |
| | Zone 1B Very Hot Dry | | Zone 5A Cool Humid |
| | Zone 2A Hot Humid | | Zone 5B Cool Dry |
| | Zone 2B Hot Dry | | Zone 5C Cool Marine |
| | Zone 3A Warm Humid | | Zone 6A Cold Humid |
| | Zone 3B Warm Dry | | Zone 6B Cool Dry |
| | Zone 3C Warm Marine | | Zone 7 Very Cold |
| | Zone 4A Mixed Humid | | Zone 8 Subarctic/Arctic |
| | Zone 4B Mixed Dry | | |

NOTE:

VERIFY APPLICABLE CLIMATE ZONE AT THE COUNTY LEVEL AND COORDINATE WITH LOCAL JURISDICTION.



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

MAP: ASHRAE CLIMATE ZONES – USA

For additional information, refer to Specifications

R1.1



- Zone 5A Cool Humid
- Zone 5B Cool Dry
- Zone 5C Cool Marine
- Zone 6A Cold Humid
- Zone 6B Cool Dry
- Zone 7 Very Cold
- Zone 8 Subarctic/Arctic

NOTE:

CLIMATE ZONES MAY ALSO BE REFEREED AS A, B, C & D CORRESPONDING TO 5, 6, 7 & 8 ACCORDINGLY.



MAP: ASHRAE CLIMATE ZONES – CANADA

R1.2

SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

For additional information, refer to Specifications

Table 1		R-Values (SEALTITE PRO vs. Other Insulation Types)					
	Insulation Type	R-Value / inch		2x4		2x6	
		Min.	Max.	Min.	Max.	Min.	Max.
SEALTITE PRO	CLOSED CELL (ONE ZERO) (R-21 for 3")		R-6.9		R-24		R-38
	SEALTITE PRO NO TRIM 21 (R-14 @ 3.5" & R-21 @ 5")		R-4.4		R-15		R-24
	OPEN CELL (HIGH YIELD) (OCX) (NO MIX)		R-3.7		R-13		R-20
OTHERS	Fiberglass Batt*	R-3.1	R-3.4	R-11	R-12	R-16	R-18
	Fiberglass Blown (Wall)*	R-3.7	R-4.3	R-13	R-15	R-19	R-23
	Cellulose Blown (Wall)*	R-3.8	R-3.9	R-13	R-14	R-20	R-21
* Source: www.greatdayimprovements.com/insulation-r-value-chart.aspx							2X6 Can be filled full cavity upto 5.5". See Table 2 below for other sizes.

TABLE 2		Maximum Possible R-Values for SEALTITE PRO Within North American Standard 2-by Lumber		
NOMINAL WOOD DIMENSIONS	MAX. DEPTH OF 2-BY FILLED WITH FOAM	SEALTITE PRO CLOSED CELL OR SEALTITE PRO ONE ZERO	SEALTITE PRO NO TRIM 21	SEALTITE PRO (OPEN CELL, NO MIX, HIGH YIELD OCX)
		R-VALUE 6.9 PER INCH	R-VALUE 4.4 PER INCH	R-VALUE 3.7 PER INCH
		R-VALUE WITHIN WOOD FRAME		
2X4	3.5"	R-24	R-15	R-13
2X6	5.5"	R-38	R-24	R-20
2X8	7.25"	R-50	R-32	R-27
2X10	9.25"	R-64	R-41	R-34
2X12	11.25"	R-77	R-49	R-41



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

R-VALUES: COMPARISON OF SEALTITE PRO VS. OTHER INSULATION TYPES

For additional information, refer to Specifications

R1.3

A	B	C	D	E	F	G	H	I	J
TABLE 1	CSFI RECOMMENDED R-VALUES IN WALL ASSEMBLIES								
Blue rows: 2x4 Green rows: 2x6 Red: Footnotes		SealTite PRO ccSPF (OPEN CELL)		PLUS	^a C.I. (CONTINUOUS INSULATION) REQUIREMENT	TOTAL R-VALUE (COLUMN D+F)	SealTite PRO ccSPF (CLOSED CELL)	TOTAL R-VALUE (SINGLE LAYER)	
Climate Zone	Stud Sizes	Thickness (inches)	R-Value		R-Value				Thickness (inches)
1	2x4	3.5"	R-13	+	0	R-13	2"	R-13	
	2x6	5.5"	R-20	+	0	R-20	3"	R-20	
2	2x4	3.5"	R-13	+	0	R-13	2"	R-13	
	2x6	5.5"	R-20	+	0	R-20	3"	R-20	
3	2x4	3.5"	R-13	+	0	R-13 ^c	3"	R-21 ^c	
	2x6	5.5"	R-20	+	0	R-20 ^c	3"	R-21 ^c	
4	2x4	3.5"	R-13	+	R-5	R-18 ^c	3"	R-21 ^c	
	2x6	5.5"	R-20	+	0	R-20 ^c	3"	R-21 ^c	
5 ^b	2x4	3.5"	R-13	+	R-5	R-18 ^c	3"	R-21 ^c	
	2x6	5.5"	R-20	+	0	R-20	3"	R-21 ^c	
6	2x4	3.5"	R-13	+	R-10	R-23 ^c	3.75"	R-26 ^c	
	2x6	5.5"	R-20	+	R-5	R-25 ^c	3.75"	R-26 ^c	
7	2x4	3.5"	R-13	+	R-10	R-23 ^c	3.75"	R-26 ^c	
	2x6	5.5"	R-20	+	R-5	R-25 ^c	3.75"	R-26 ^c	
8	2x4	3.5"	R-13	+	R-10	R-23 ^c	3.75"	R-26 ^c	
	2x6	5.5"	R-20	+	R-5	R-25 ^c	3.75"	R-26 ^c	
Note: SealTite PRO ccSPF insulation products satisfies the continuous insulation requirements and eliminates the need for exterior continuous insulation in all climate zones.									
^a Exterior continuous insulation required. Refer to 2018 IRC Table R702.7.1									
^b Interior vapor retarder needed in climate zone 5.									
^c R-Values are comparatively increased to compensate for thermal bridging due to wood studs @ 16" o.c.									

TABLE 2	INTERIOR CAVITY WALL HYBRID ASSEMBLIES				
Climate Zones	Min. Air Permeable Insulation needed		SealTite PRO ccSPF (Closed Cell)		TOTAL ASSEMBLY R-VALUE
	Thickness (inches)	R-Value	Thickness (inches)	R-Value	
5	2"	R-6	2"	R-13	R-18
6	3"	R-11	2"	R-14	R-25
7	3"	R-11	2"	R-14	R-25
8	3"	R-11	2"	R-14	R-25
Note: Table values are based on 2x6 wood framing cavities only.					



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

WALL ASSEMBLIES:
CODE COMPLIANCE R-VALUES –
2018 IRC/IECC

For additional information, refer to Specifications

R1.4

TABLE 1	ROOFS/ATTICS			
Climate Zones	SealTite PRO ocSPF (OPEN CELL)		SealTite PRO ccSPF (CLOSED CELL)	
	Thickness (inches)	R-Value	Thickness (inches)	R-Value
1	8.5"	R-31	4.5"	R-31
2	10.5"	R-39	6"	R-41
3	10.5"	R-39	6"	R-41
4	13.5"	R-50	7.25"	R-50
5			7.25"	R-50
6			7.25"	R-50
7			7.25"	R-50
8			7.25"	R-50

TABLE 2	UNVENTED ATTIC HYBRID ASSEMBLIES				
Climate Zones	SealTite PRO ocSPF (OPEN CELL) (R-VALUE 3.7 PER INCH)		SealTite PRO ccSPF (CLOSED CELL) (R-VALUE 6.9 PER INCH)		TOTAL ASSEMBLY R-VALUE
	Thickness (inches)	R-Value	Thickness (inches)	R-Value	
5	8"	R-29	3"	R-21	R-50
6	7"	R-26	3.5"	R-24	R-50
7	5.25"	R-19	4.5"	R-31	R-50
8	4.25"	R-16	5"	R-34	R-50
Note: R-Values in decimal are rounded.					

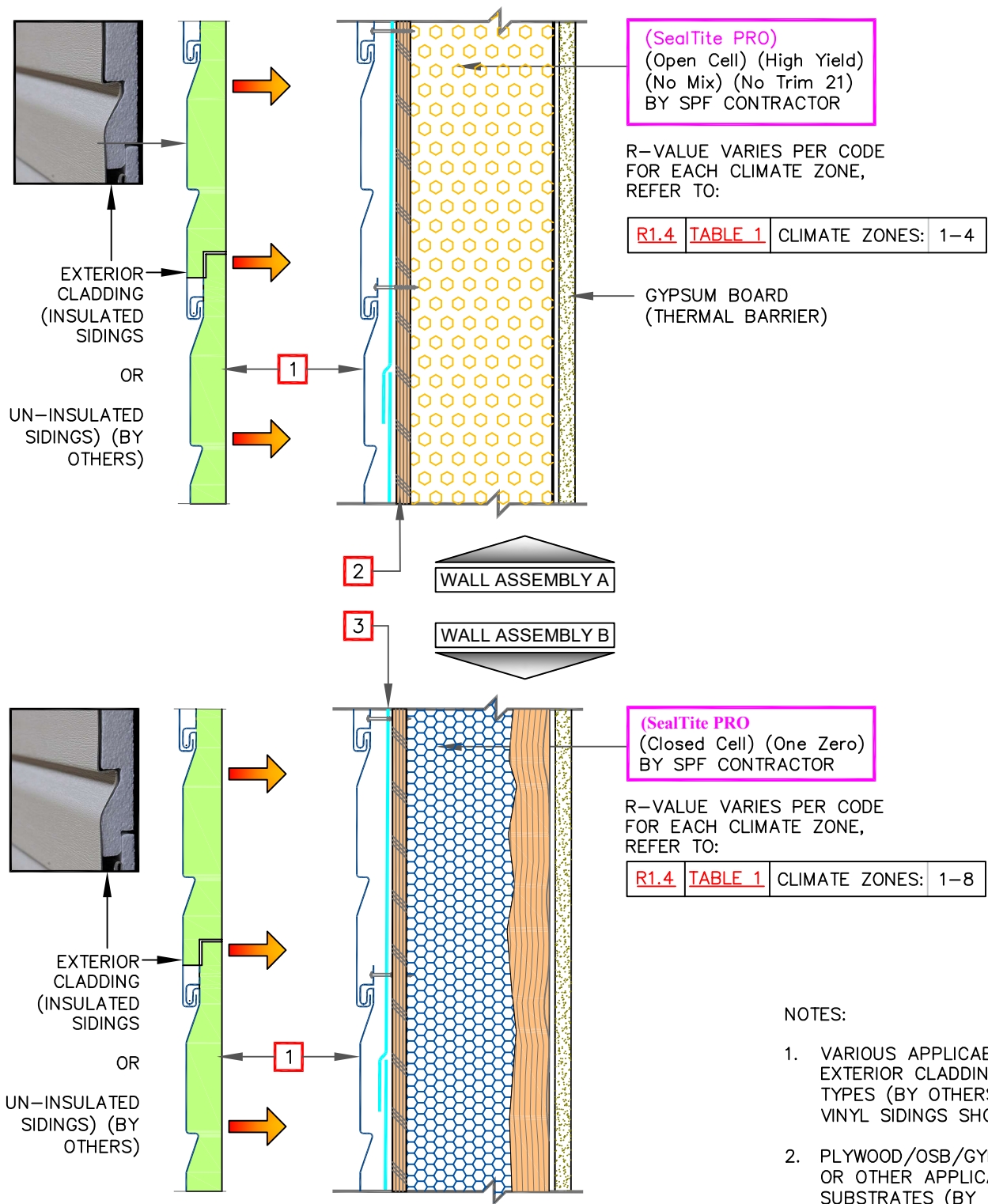


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

ATTIC ASSEMBLIES:
CODE COMPLIANCE R-VALUES –
2018 IRC/IECC

For additional information, refer to Specifications

R1.5

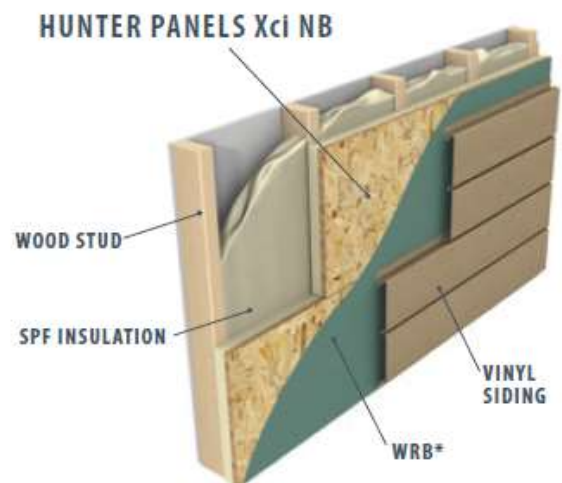
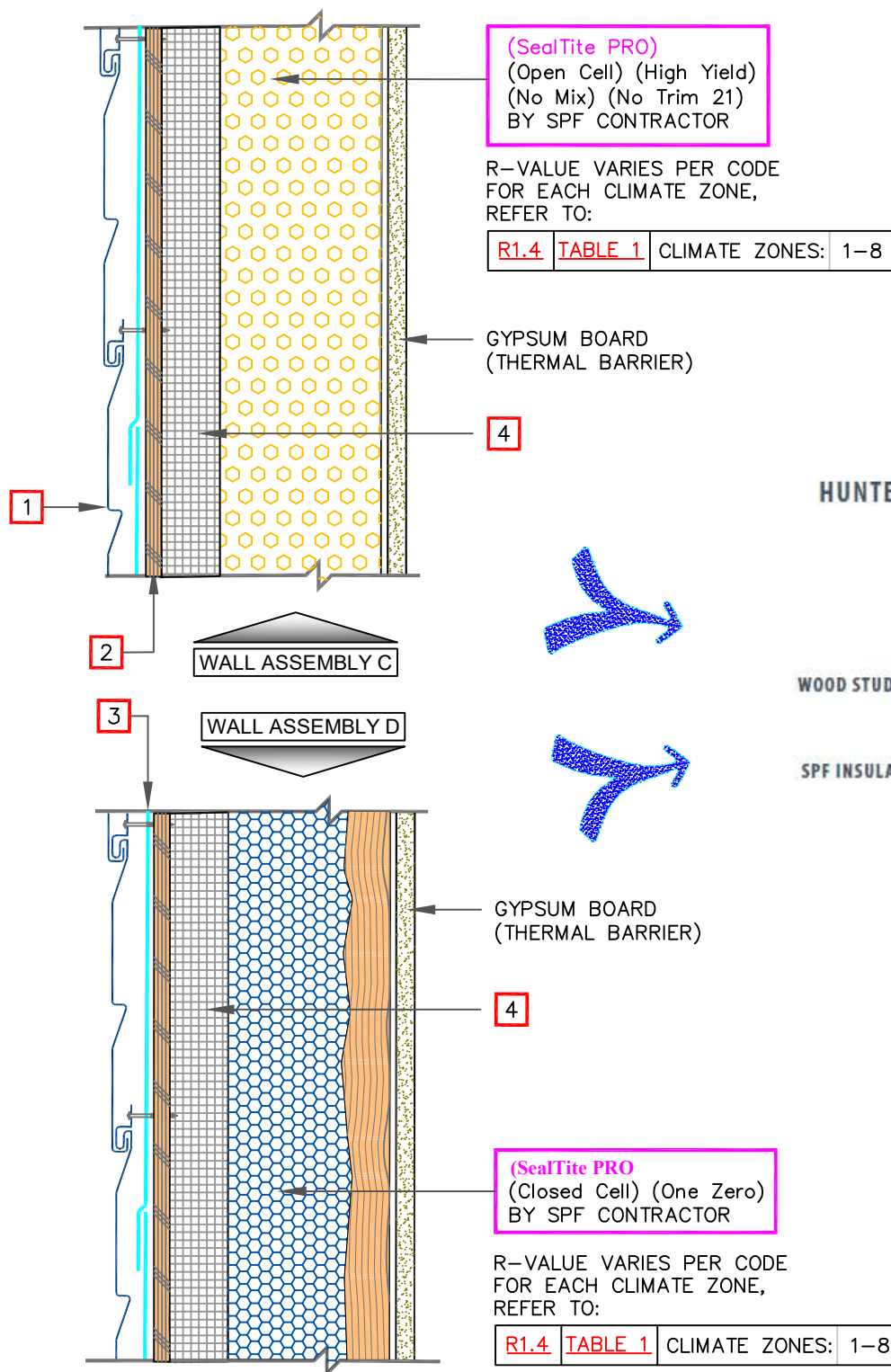


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

WALL ASSEMBLY A: ocSPF &
WALL ASSEMBLY B: ccSPF

For additional information, refer to Specifications

R2.1



NOTES:

1. VARIOUS APPLICABLE EXTERIOR CLADDING TYPES (BY OTHERS). VINYL SIDINGS SHOWN.
2. PLYWOOD/OSB/GYPSUM, OR OTHER APPLICABLE SUBSTRATES (BY OTHERS).
3. WEATHER RESISTANT BARRIER (BY OTHERS)
4. CONTINUOUS RIGID BOARD INSULATION (THICKNESS VARIES, AS REQUIRED FOR EACH CLIMATE ZONE) OR USE HUNTER PANELS Xci NB (COMPOSITE OF INSULATION & PLYWOOD/OSB)

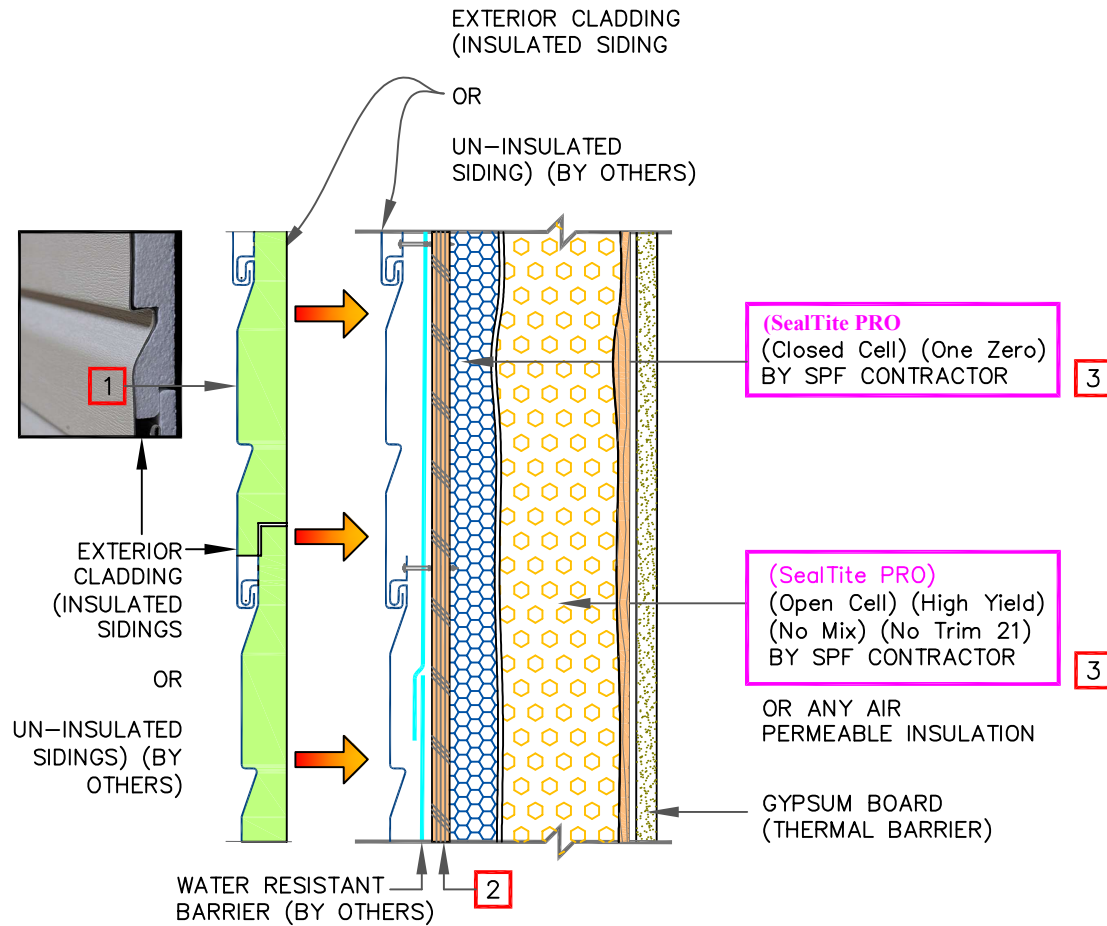


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

WALL ASSEMBLY C: ocSPF &
WALL ASSEMBLY D: ccSPF WITH
RIGID BOARDS

For additional information, refer to Specifications

R2.2



NOTES:

1. VARIOUS APPLICABLE EXTERIOR CLADDING (BY OTHERS).
2. PLYWOOD/OSB/GYPSUM OR OTHER APPLICABLE SUBSTRATES (BY OTHERS).
3. R-VALUES VARY PER CODE FOR EACH CLIMATE ZONE. REFER TO:

R1.4 TABLE 2 CLIMATE ZONES: 5-8

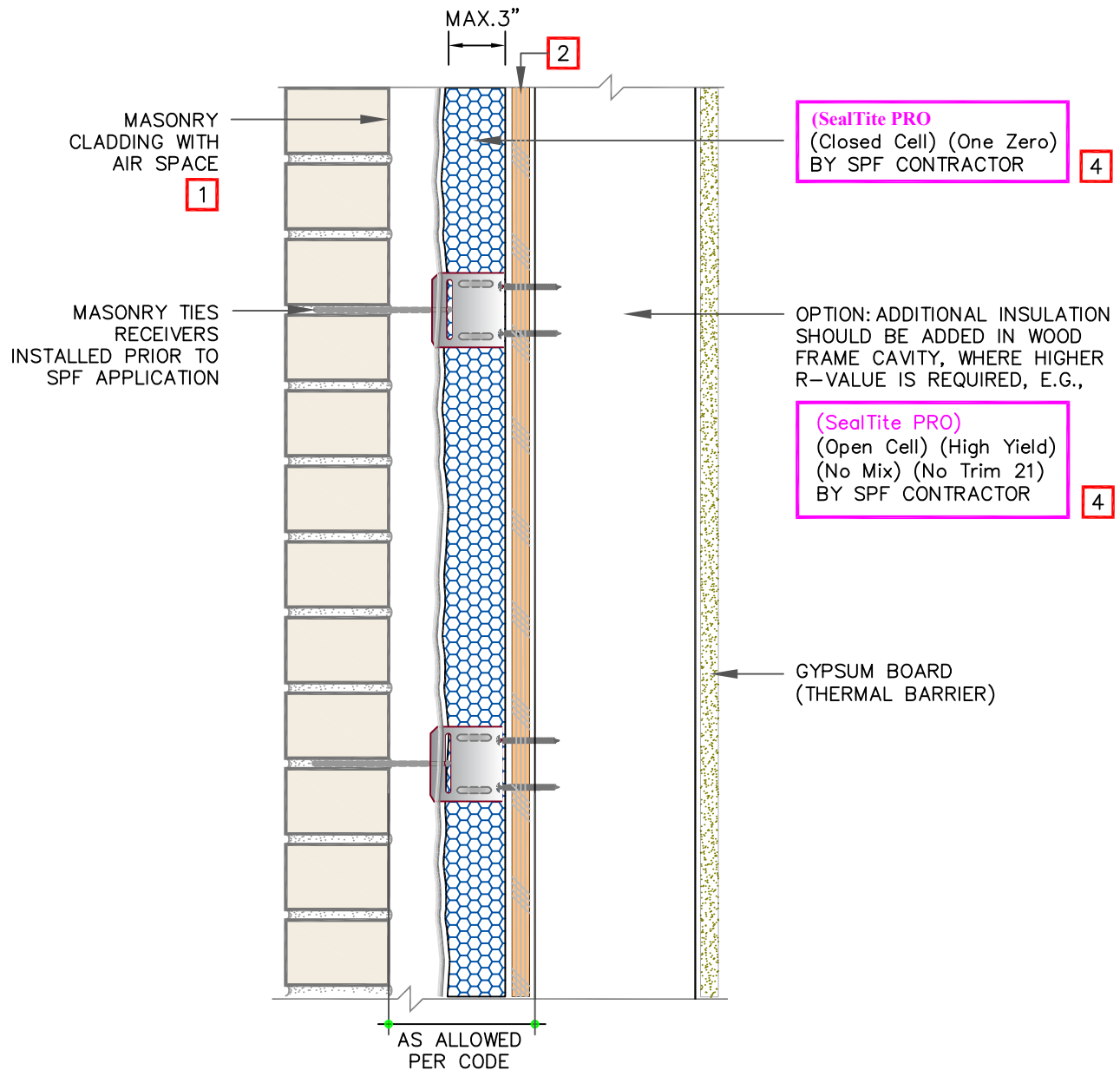


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

WALL ASSEMBLY E:
HYBRID ccSPF & ocSPF
INSULATIONS

For additional information, refer to Specifications

R2.3



NOTES:

1. VARIOUS APPLICABLE EXTERIOR CLADDING TYPES (BY OTHERS).
2. PLYWOOD/OSB/GYPSUM, OR OTHER APPLICABLE SUBSTRATES (BY OTHERS).
3. SPRAY FOAM CONTRACTOR TO COORDINATE WITH MASONRY CONTRACTOR FOR SEQUENCE OF CONSTRUCTION. ANY INSPECTIONS REQUIRED FOR SPF INSTALLATION MUST BE COMPLETED PRIOR TO MASONRY WORK.
4. R-VALUES VARY PER CODE FOR EACH CLIMATE ZONE. REFER TO:

R1.4 TABLE 1 CLIMATE ZONES: 1-8



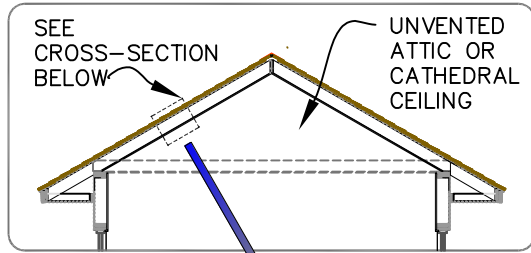
SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

WALL ASSEMBLY F:
ccSPF IN MASONRY CAVITY

For additional information, refer to Specifications

R2.4

STEEP SLOPE ROOF



SYMBOL FOR:

- ASPHALT SHINGLES
- CLAY & CONCRETE TILES
- METAL SHINGLES & SYNTHETICS
- METAL ROOF PANELS
- SLATE
- WOOD SHAKES & WOOD SHINGLES (BY OTHERS)

1 2

UNDERLAYMENT MAT INSTALLED PRIOR TO SPF APPLICATION

ROOF DECK

WOOD RAFTERS / TRUSSES – DEPTH VARIES

ocSPF DEPTH VARIES – AS REQUIRED BY CODE

GYPSUM BOARD (THERMAL BARRIER)

(SealTite PRO)
(Open Cell) (High Yield)
(No Mix) (No Trim 21)
BY SPF CONTRACTOR

FOR THICKNESS & R-VALUES, REFER TO:

R1.5 TABLE 1 CLIMATE ZONES: 1–4

NOTES:

1. FOR WOOD SHAKES & WOOD SHINGLES, AIR GAP IS REQUIRED PER CODE R806.5.3.
2. PRODUCTS RECOMMENDED BY THEIR MANUFACTURERS IN INSULATED ROOF ASSEMBLIES, MAY BE SELECTED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



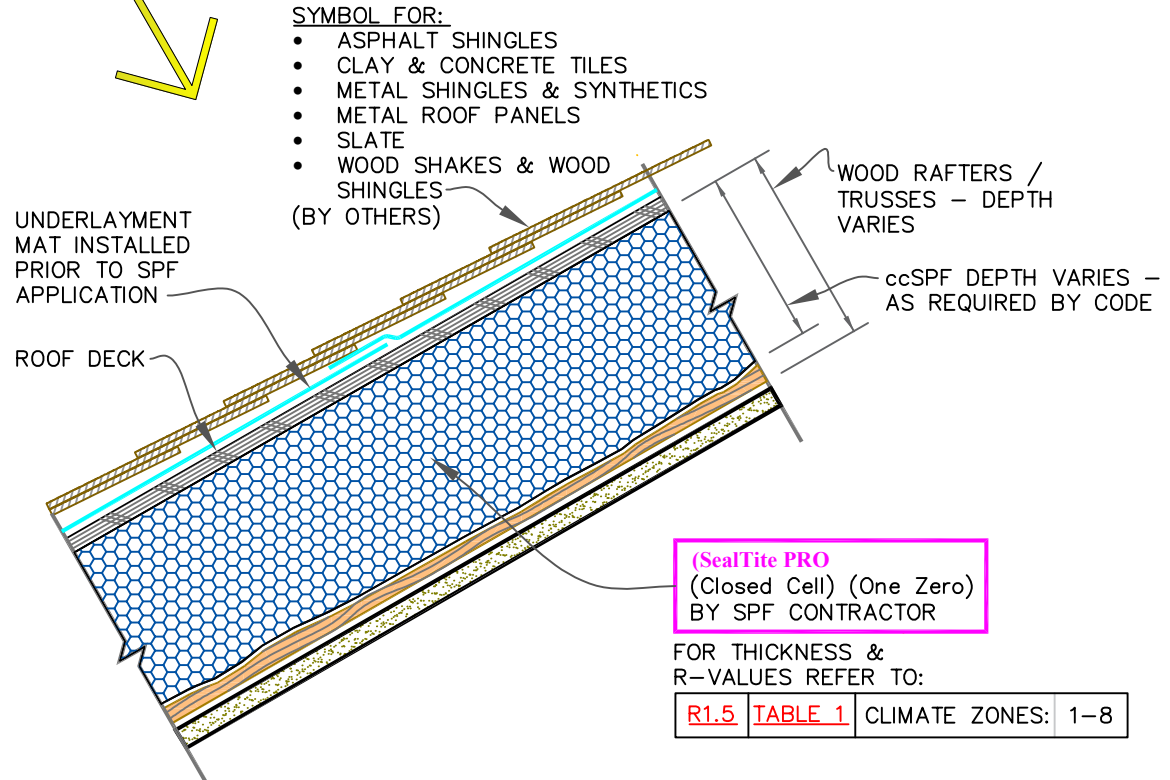
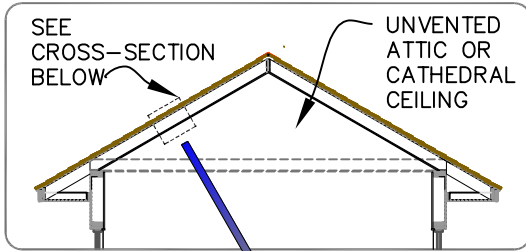
SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

STEEP ROOF: ocSPF INSULATION

For additional information, refer to Specifications

R3.1

STEEP SLOPE ROOF



NOTES:

1. FOR WOOD SHAKES & WOOD SHINGLES, AIR GAP IS REQUIRED PER CODE R806.5.3.
2. PRODUCTS RECOMMENDED BY THEIR MANUFACTURERS IN INSULATED ROOF ASSEMBLIES, MAY BE SELECTED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

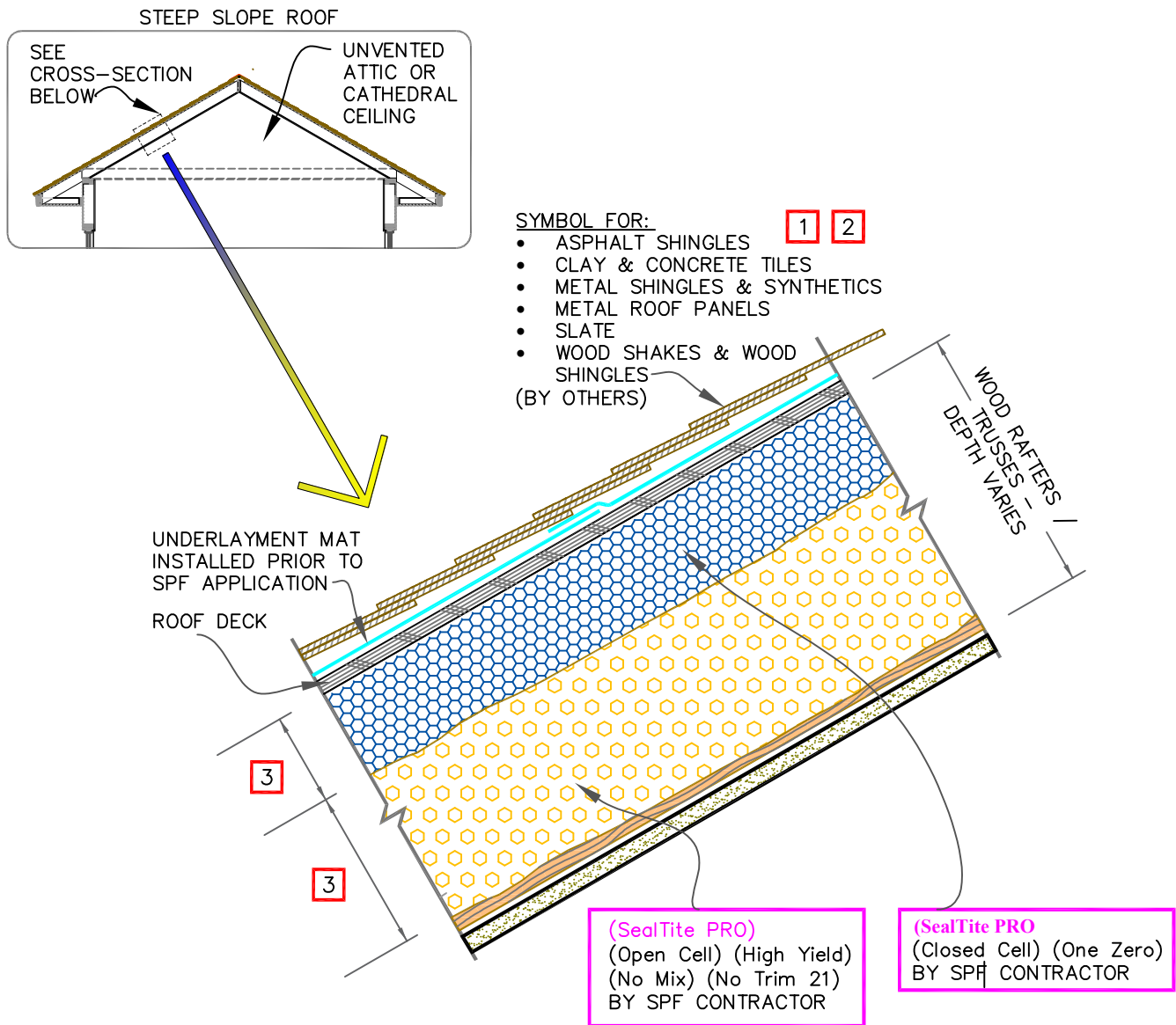


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

STEEP ROOF: ccSPF INSULATION

For additional information, refer to Specifications

R3.2



NOTES:

1. FOR WOOD SHAKES & WOOD SHINGLES, AIR GAP IS REQUIRED PER CODE R806.5.3.
2. PRODUCTS RECOMMENDED BY THEIR MANUFACTURERS IN INSULATED ROOF ASSEMBLIES, MAY BE SELECTED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
3. FOR THICKNESS & R-VALUES REFER TO:

R1.5 TABLE 2 CLIMATE ZONES: 5-8

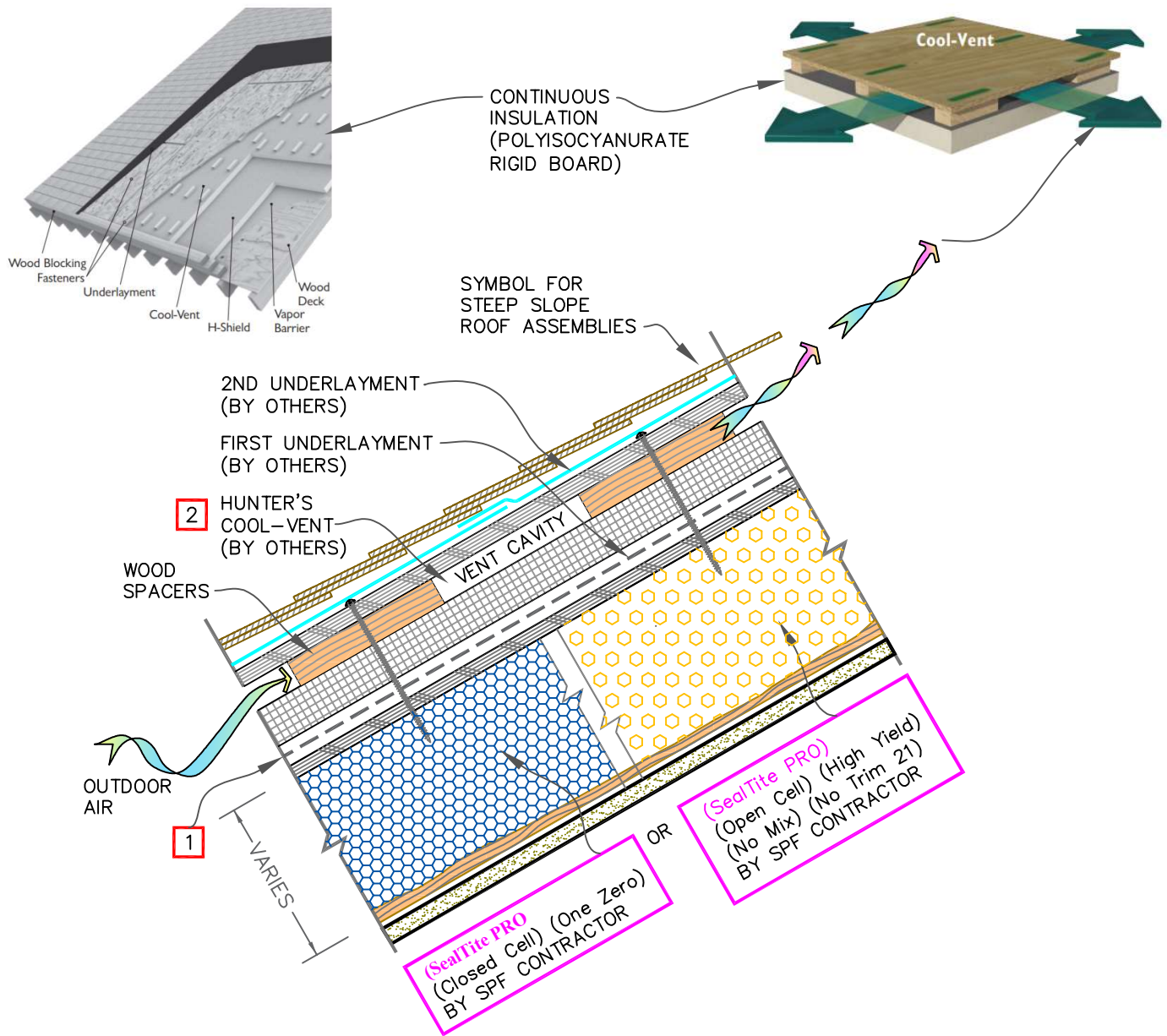


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

STEEP ROOF:
HYBRID ocSPF and ccSPF
INSULATIONS

For additional information, refer to Specifications

R3.3



NOTES:

1. FIRST UNDERLAYMENT / VAPOR BARRIER MAY NOT BE REQUIRED, IF DECK IS ALREADY COVERED WITH COOL-VENT PRIOR TO SPF APPLICATION. OTHERWISE, INSTALL IT TO PROTECT SPF FROM ELEMENTS.
2. DESIGNER TO REFER TO COOL-VENT GUIDE BY HUNTER PANELS FOR EAVE & RIDGE DETAILS AND ADDITIONAL INFORMATION.
3. FOR THICKNESS & R-VALUES, REFER TO:

R1.5 TABLE 1 CLIMATE ZONES: 5-8



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

STEEP ROOF:
ocSPF/ccSPF AND RIGID BOARD
WITH VENTED DECK

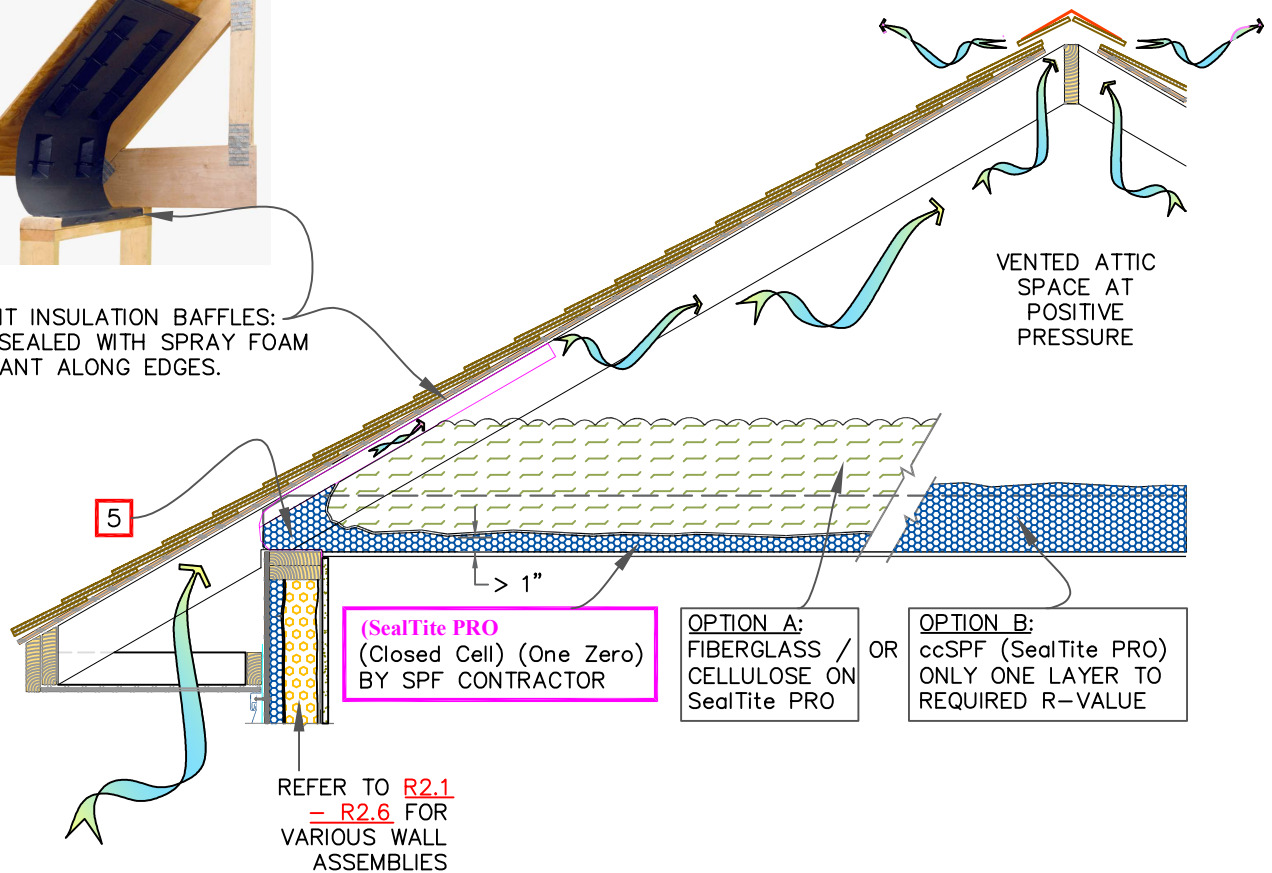
For additional information, refer to Specifications

R3.4

SHOWN: AccuVent SOFFIT INSULATION BAFFLE



SOFFIT INSULATION BAFFLES: AIR-SEALED WITH SPRAY FOAM SEALANT ALONG EDGES.



NOTES:

1. PROVIDE PROPER VENTILATION DURING SPF INSTALLATION & 24 HOURS AFTER INSTALLATION.
2. INSPECT ccSPF, FOR AIR TIGHTNESS ON ATTIC FLOOR, PRIOR TO COVERING IT WITH OTHER INSULATION TYPES.
4. SEAL AROUND PENETRATIONS, LIGHT FIXTURES WITH PROPER GASKETS. (BY OTHERS). SPF CONTRACTOR TO ENSURE THAT CEILING PENETRATIONS ARE KEPT CLEAN FROM SPF.
5. INSULATION R-VALUE ABOVE THE TOP PLATE TO BE GREATER THAN THE R-VALUE OF WALL ASSEMBLY.
6. R-VALUES PER APPLICABLE CODE.



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

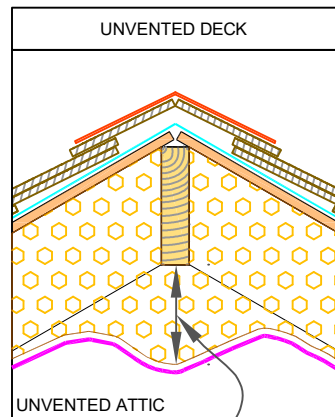
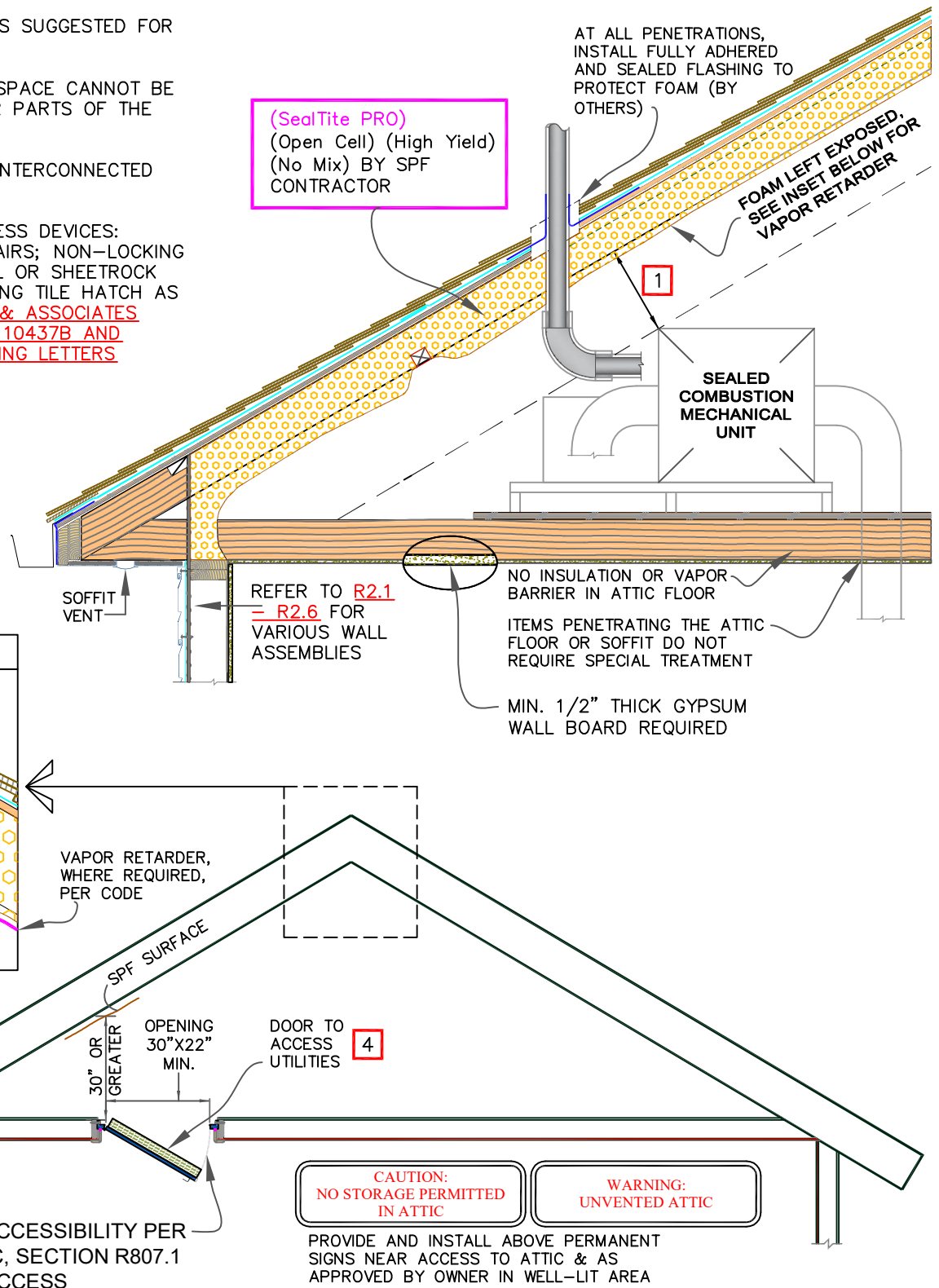
STEEP ROOF:
VENTED ATTIC WITH
ccSPF ON ATTIC FLOOR

R3.5


For additional information, refer to Specifications

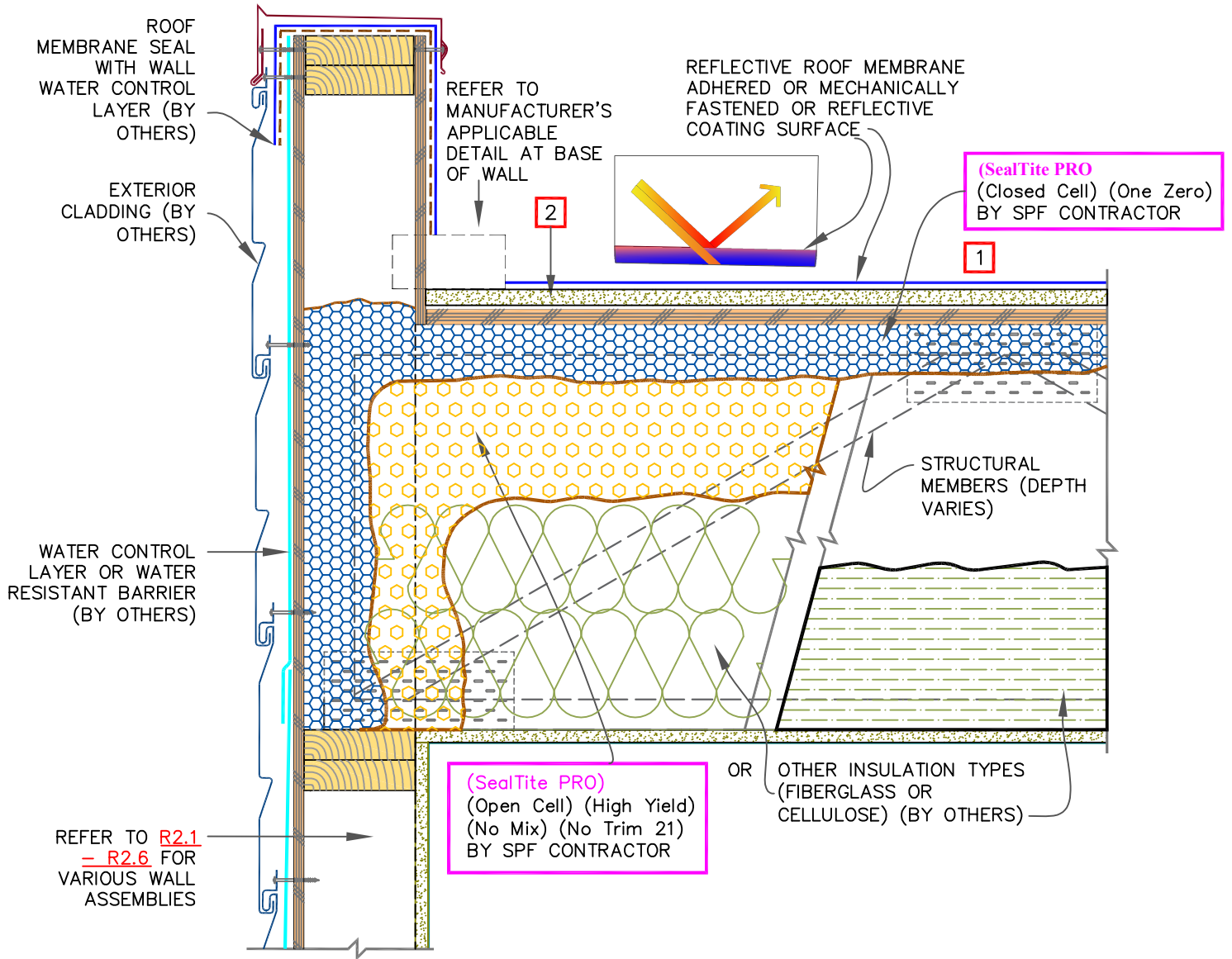
NOTES:

1. MIN. 12" CLEARANCE IS SUGGESTED FOR ACCESSIBILITY.
2. AIR FROM THE ATTIC SPACE CANNOT BE CIRCULATED TO OTHER PARTS OF THE BUILDING.
3. THERE SHALL BE NO INTERCONNECTED ATTIC SPACES.
4. APPROVED ATTIC ACCESS DEVICES: PULL-DOWN ATTIC STAIRS; NON-LOCKING SPRING LOADED METAL OR SHEETROCK SWING HATCHES; CEILING TILE HATCH AS DESCRIBED IN [PRIEST & ASSOCIATES CONSULTING, LLC EEV 10437B AND ASSOCIATED ENGINEERING LETTERS](#)



IN COLD CLIMATE, ADDITIONAL FOAM MUST BE APPLIED AT ALL POINTS OF THERMAL BRIDGING

<div></div>			STEEP ROOF: ACCESSIBLE UNVENTED ATTIC (IGNITION BARRIER FREE)	R3.6
SPF	SPRAY POLYURETHANE FOAM	<div><div>0</div>NOTES</div>		
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	<div><div></div>ccSPF</div>	For additional information, refer to Specifications	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	<div><div></div>ocSPF</div>		



NOTES:

1. DETAIL IS SUITABLE FOR [NEW CONSTRUCTION](#) TO AVOID FUTURE CONDENSATION DUE TO REFLECTIVE ROOF MEMBRANES OR REFLECTIVE ROOF COATINGS RESULTING IN LOWER DEW POINT TEMPERATURES WITHIN ROOF ASSEMBLY. THICKNESS AS REQUIRED TO CREATE AN AIR/VAPOR/THERMAL BARRIER TO RESIST CONDENSATION.
2. THERMAL BARRIER AS REQUIRED PER CODE.
3. R-VALUE & THICKNESS OF ATTIC INSULATION PER APPLICABLE CODE.



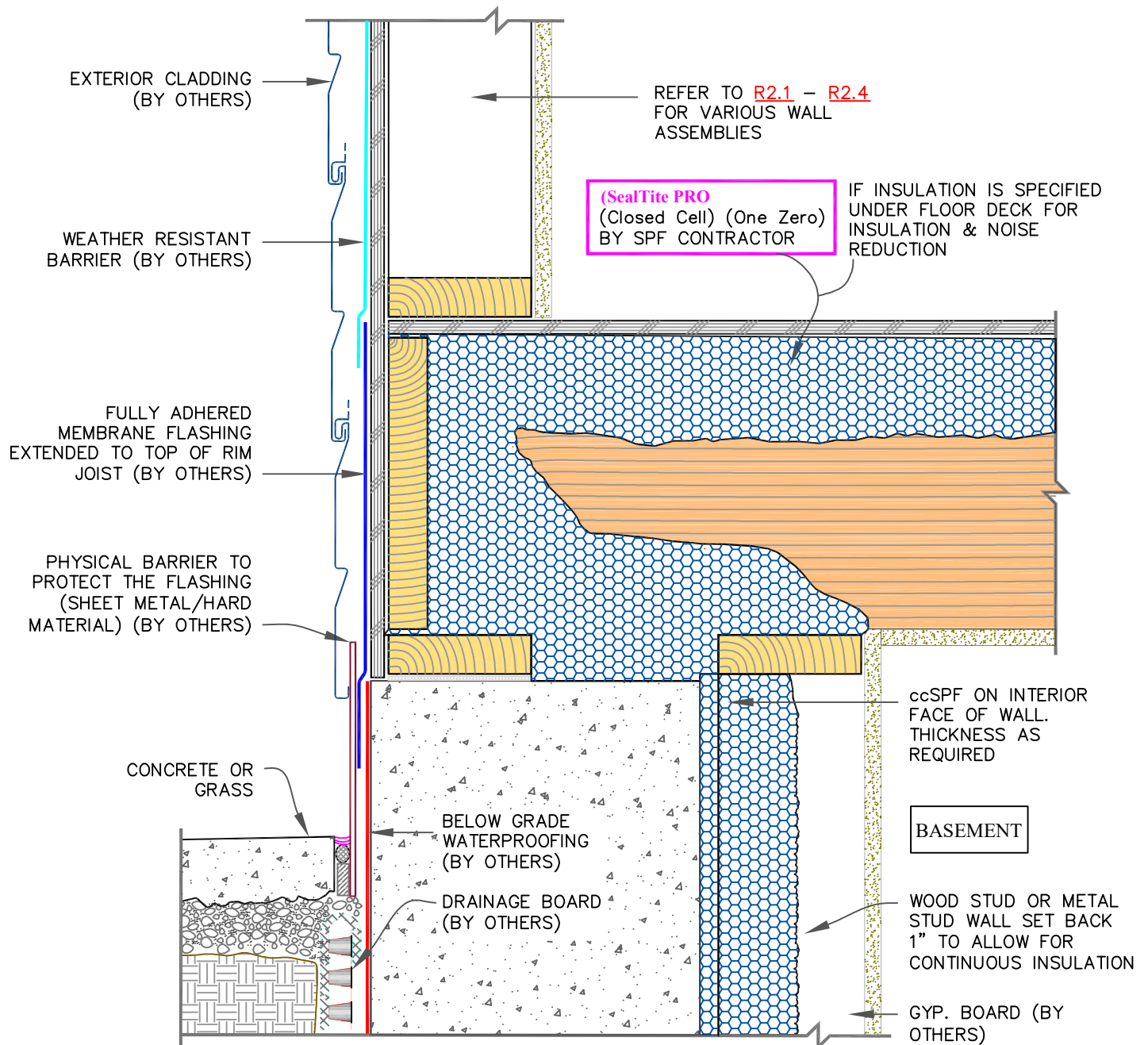
SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM	ccSPF	
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM	ocSPF	

LOW-SLOPE ROOF: SEALING THE UNDERSIDE OF THE DECK TO PREVENT CONDENSATION

For additional information, refer to Specifications

R3.7

1st / GROUND FLOOR

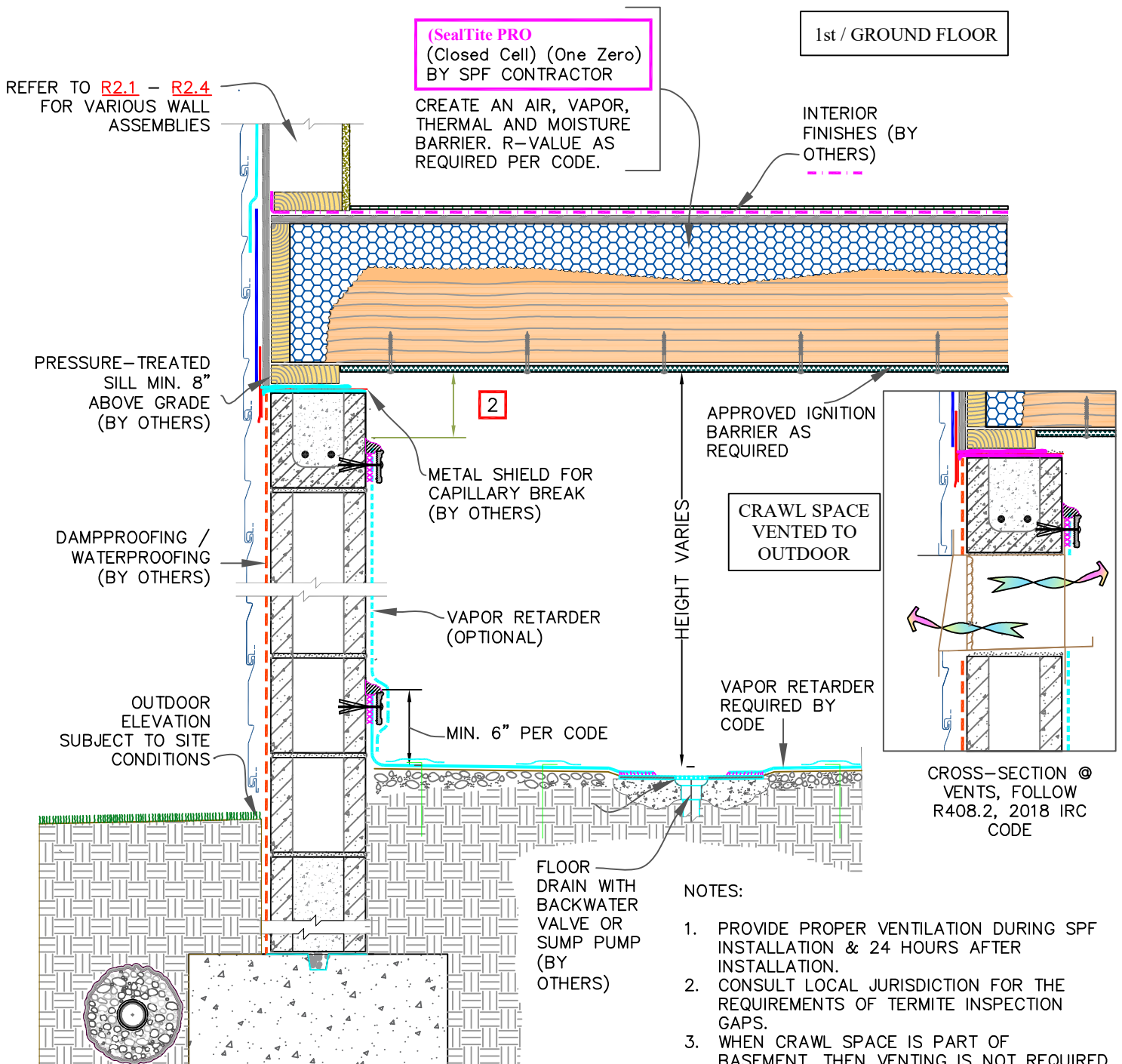


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

BASEMENT:
GROUND FLOOR TO BASEMENT
JUNCTION

For additional information, refer to Specifications

R4.1

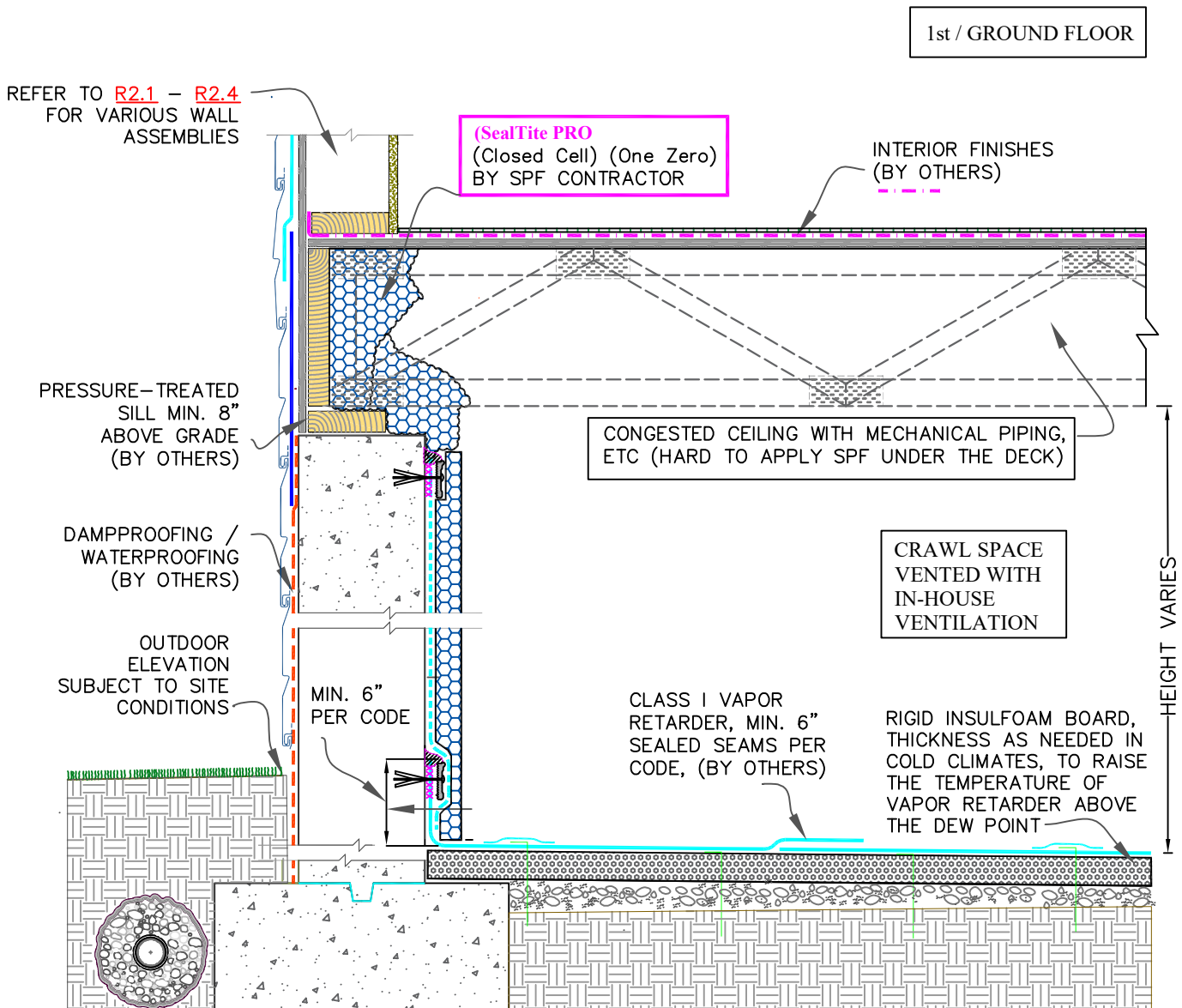


SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

UNCONDITIONED CRAWL SPACE WITH INSULATED CEILING

R5.1

For additional information, refer to Specifications



NOTES:

1. MOISTURE PROTECTION IS NOT INTENDED FOR FLOOD PROTECTION. FOR FLOOD ZONES OR COASTAL AREAS, COORDINATE WITH DESIGNER.
2. CONSULT LOCAL JURISDICTION FOR THE REQUIREMENTS OF TERMITE INSPECTION GAPS.
3. PROVIDE PROPER VENTILATION DURING SPF INSTALLATION & 24 HOURS AFTER INSTALLATION.
4. PERMANENT MECHANICAL VENTILATION (BY OTHERS)



SPF	SPRAY POLYURETHANE FOAM	0	NOTES
ccSPF	CLOSE CELL SPRAY POLYURETHANE FOAM		ccSPF
ocSPF	OPEN CELL SPRAY POLYURETHANE FOAM		ocSPF

CONDITIONED CRAWL SPACE WITH INSULATED WALLS

R5.2

For additional information, refer to Specifications