

February 22, 2011

To whom it may concern.

Reference: Coatings for Demilec foams.

All of Demilec's foams are totally compliant with the 2003, 2006 and 2009 editions of the International Building Codes (IBC) and the International Residential Code (IRC) and the latest International Code Council-Evaluation Service (ICC-ES) AC 377 Acceptance Criteria, dated October 2010.

The terms thermal barrier and ignition barrier are not clearly defined in the ICC codes. To better understand how they relate to the use of spray foam along with other terms used with foam, the following definitions are provided:

- **Thermal Barrier**, a material that will limit the average temperature rise of the unexposed surface to no more than 250°F above the ambient temperature after 15 minutes of fire exposure while complying with the ASTM E 119 or UL263 standard time temperature curve. The most common material to comply as a thermal barrier is ½" gypsum board. No paint will meet this requirement.
- **Ignition Barrier**, a covering or coating applied over polyurethane foam, that when exposed to a fire is intended to slow the temperature increase of the foam and to delay the foam's involvement in the fire.
- **Prescriptive Ignition Barrier**, one of six materials identified in the IRC and IBC to serve as an ignition barrier to protect the foam insulation against ignition. Tests performed by an SPFA task group at Southwest Research Institute resulted in the ICC-ES establishing a minimum time of 4:18 for the failure of a Prescriptive Ignition Barrier. The six materials identified as Prescriptive Ignition Barriers by the code are:
 - 1 1/2-inch-thick mineral fiber insulation
 - 1/4-inch-thick wood structural panels
 - 3/8-inch particleboard
 - 1/4-inch hardboard
 - 3/8-inch gypsum board
 - Corrosion-resistant steel having a base metal thickness of 0.016 inch.
- **Intumescent Coating**, a coating that is designed to swell or foam when exposed to heat; thus, stopping or delaying the coated substrate's exposure to the fire.
- **Mil thickness**, the common term used to identify the "film thickness" of a coating. One **mil** equals 1/ 1000 of an inch. A sheet of standard, 20 lb, typing or copy paper is 0.0038 thick or 3.8 Mils thick. There are various methods of measuring the Mil thickness. The most common method for measuring wet material is the use of a "wet film gauge". This gauge is very accurate but must be used on a flat surface in order to obtain an accurate reading. Measuring the dry film thickness, referred to as the DFT, is not as simple as measuring the wet film thickness. Although the AC 377 suggest the testing laboratories use an optical comparator to measure the film thickness of a sample of coated foam, we have found that there is a percentage of absorption of the coating into the surface of the foam; consequently, the optical comparator will not accurately measure the coating's DFT. We suggest the use of small squares (3"x3") of light gauge metal with a small hole drilled near the edge be attached to the surface of the foam that is being sprayed. Spray the foam and plates to the required wet thickness and allow to dry. The dried plates may be measured with a micrometer or accurate calipers to determine the total thickness of metal and coating. Subtract the thickness of the metal plate from the total thickness to determine the DFT of the coating. We recommend the use of several metal plates in a typical job to obtain an overall average. The plates may be labeled and retained for future verification of the film thickness.

The following is a clarification of the sections in the ESRs dealing with Thermal and Ignition Barriers:

- **Section 4.3 Thermal Barrier:** Will define the requirements for the foam that is installed with a thermal barrier (see definition above) directly over it. This does not require the thermal barrier to be in physical contact with the foam. There may be a gap between the foam and the thermal barrier. This section will define the maximum thickness for the foam in a wall and ceiling/floor cavity where the foam is protected with the thermal barrier. Obviously, there is no requirement for a coating or covering as the thermal barrier provides protection to the foam.
 - **Section 4.3.1 Application with a Prescriptive Thermal Barrier:** This subsection will be included if there is an application without a prescriptive thermal barrier. It will contain the information that is normally listed in Section 4.3
 - **Section 4.3.2 Application without a Thermal or Ignition Barrier:** This section will list the maximum vertical and horizontal thickness of the foam and the required thickness of the coating; e.g., Blazelok TB at 14 mils dry over SEALECTION 500. This section will approve the foam for use as an interior finish without a 15 minute thermal barrier. The foam and coating was tested to the NFPA 286 standard for 15 minutes in accordance with the IBC Section 803.1.2. This approval does NOT make the insulation and/or coating a 15 minute thermal barrier. It simply allows the foam/coating assembly to be used as an interior finish without a 15 minute thermal barrier. The use of "Thermal Barrier" in a coating's name is, in effect, a misnomer. The coating cannot pass the tests required for a 15

minute thermal coating; therefore, it is not a thermal barrier. There are several coating manufacturer that state their product is a thermal barrier coating based on the UL 1715 test standard. The IBC Section 2603.9 and the IRC 316.6 (2006 IRC Section 314.6) allow the UL 1715 test results to be used to specifically negate the thermal and ignition barrier requirements of the IBC 2603.4 thru 2603.7 and the IRC Section 316.3 thru 316.5 (2006 IRC Section 314.3 thru 314.6); however, it does not qualify the assembly to be used as an interior finish without a 15 minute thermal barrier. We always use the NFPA 286 test standard as it is a far more reliable and accurate test than the UL 1715.

- **Section 4.4 Attics and Crawl Spaces:**

- **Section 4.4.1 Application with a Prescriptive Ignition Barrier:** The surface of the foam must be covered with one of the prescriptive ignition barriers listed above. Access is limited to the servicing of utilities. Utilities are any item provided for the operation of the structure; e.g., HVAC systems and ducts, electrical wiring, water and plumbing systems, low voltage data, television and alarm wiring and chimneys and flues. Neither this section nor its referenced code sections state anything concerning storage.
- **Section 4.4.2. Application without a Prescriptive Ignition Barrier:** This section addresses the installation of foam in attics and crawl space without the installation of one of the six prescriptive ignition barriers listed above.
 - **Subsection 4.4.2.1 General:** Identifies the six requirements (a thru f), as applicable, that must be met to satisfy Section 4.4.2. This subsection does identify “*no storage is permitted*” and other topics associated with ventilation and combustion air.
 - **Subsection 4.4.2.2 and subsequent subsections; e.g., 4.4.2.3:** Identifies the specific requirements for the foam application including the maximum vertical and horizontal foam thicknesses and if required, the type of coating or covering and its thickness. The requirement for a coating or covering is based on how the foam is tested. The NFPA 286 test modified in accordance with the AC 377, Appendix X does not require the use of a coating or covering; however, if one is used, it must be applied to the total area of surface of the foam.
- **Section 4.4.3 Use on Attic Floors:** Defines the maximum thickness of the foam that may be applied to the top of the gypsum board ceiling. This thickness will be based on the maximum vertical thickness of the foam and the coating or covering requirements are the same as identified in subsection 4.4.2.2.
- **Note;** The ICC-ES is not consistent in the numbering of subsections or paragraphs; e.g., in the ESR 1172 dated Feb 1, 2011 erroneously labeled subsection 4.4.3 as subsection as 4.4.2.5 and ESR 3210 dated March 1, 2011 labeled the section on attic floors as subsection 4.4.2.1.2. It is imperative that the users of the ESRs study and know what sections are applicable to the specific task at hand.

The following are the specific requirements for the use of our foams in attics and crawl spaces in compliance with the AC 377, Appendix X criteria without a *prescriptive ignition barrier*:

1. Heatlok Soy 200 (ESR 3210, issue date March 1, 2011.)
 - a. May be applied to the vertical surfaces to a maximum thickness of 9-1/4”.
 - b. May be applied to the horizontal surfaces (underside of floor or roof deck) to a maximum thickness of 11-1/4”
 - c. The foam does not require a prescriptive ignition barrier or a coating/covering.
2. SEALECTION 500 (ESR 1172, issue date February 1, 2011.)
 - a. May be applied to the vertical surfaces to a maximum thickness of 9-1/2”.
 - b. May be applied to the horizontal surfaces (underside of floor or roof deck) to a maximum thickness of 11-1/2”
 - c. The surface of the foam must be coated with one of the following coatings listed below. Please see table below for the required thicknesses.
 - i. Blazelok IB4
 - ii. Andek Firegard
 - iii. No-Burn Plus XD
3. Agribalance (ESR 2600, issue date February 1, 2011.)
 - a. May be applied to the vertical surfaces to a maximum thickness of 9-1/4”.
 - b. May be applied to the horizontal surfaces (underside of floor or roof deck) to a maximum thickness of 11-1/4”
 - c. The surface of the foam must be coated with one of the following coatings listed below.
 - i. Blazelok IB4
 - ii. No-Burn Plus XD
 - d. Composite assembly with Heatlok Soy 200.
 - i. Vertical surfaces, Agribalance to a maximum thickness of 5-1/4” and a 2” layer of Heatlok Soy 200.
 - ii. Horizontal surface, (underside of floor or roof deck) Agribalance to a maximum thickness of 9-1/4” and a 2” layer of Heatlok Soy 200.
 - iii. The foam does not require a prescriptive ignition barrier or a coating/covering.

Please review the attached drawings for details of the application of the above materials in attics and crawl spaces.

The following are the specific requirements for the use of the foams in applications of an interior finish without a 15 minute thermal barrier.

1. Heatlok Soy 200.
 - a. May be applied to the vertical surfaces to a maximum thickness of 9-1/4".
 - b. May be applied to the horizontal surfaces (underside of floor or roof deck) to a maximum thickness of 11-1/4"
 - c. The surface of the foam must be coated with the following coatings listed below.
 - i. Blazelok TB 200 Primer.
 - ii. Blazelok TB 200 Coating
2. Sealection 500
 - a. May be applied to the vertical surfaces to a maximum thickness of 5-1/2".
 - b. May be applied to the horizontal surfaces (underside of floor or roof deck) to a maximum thickness of 10"
 - c. The surface of the foam must be coated with Blazelok TB. No primer is required.

Note: Blazelok TB and Blazelok TB 200 are different formulations and may not be interchanged. Blazelok TB 200 coating must be applied over the Blazelok TB 200 Primer. No other brand primer is approved.

The following table provides the wet and dry thicknesses and the coverage of the coatings currently approved over our foams.

Brand of Coating	Foam	Wet Mils	Wet mm	Dry Mils	Dry mm	Coverage per gal.
Blazelok IB4	SEALECTION 500 and Agribalance	9 mils	0.23	5 mils	0.13	175 sq ft per gal
Andek Firegard	SEALECTION 500	20 mils	0.51	10 mils	0.25	100 sq ft per gal
No-Burn Plus XD	SEALECTION 500 and Agribalance	10 mils	0.25	6 mils	0.15	160 sq ft per gal
Blazelok TB	SEALECTION 500	25 mils	0.64	14 mils	0.36	82 sq ft per gal
Blazelok TB 200	Heatlok Soy 200	14 mils	0.36	8 mils	0.20	120 sq ft per gal
Blazelok TB 200 Primer	Heatlok Soy 200	7 mils	0.18	4 mils	0.10	175 sq ft per gal

The ESRs reflect compliance with many other code requirements in addition to the attics and crawl space. We strongly suggest that you study each ESR and fully understand each section's relationship to the applicable code requirement. Only by thoroughly understanding each ESR can you maximize your sales effort while enjoying the fact that you are providing the customer with the best products on the market in a safe and code compliant manner.

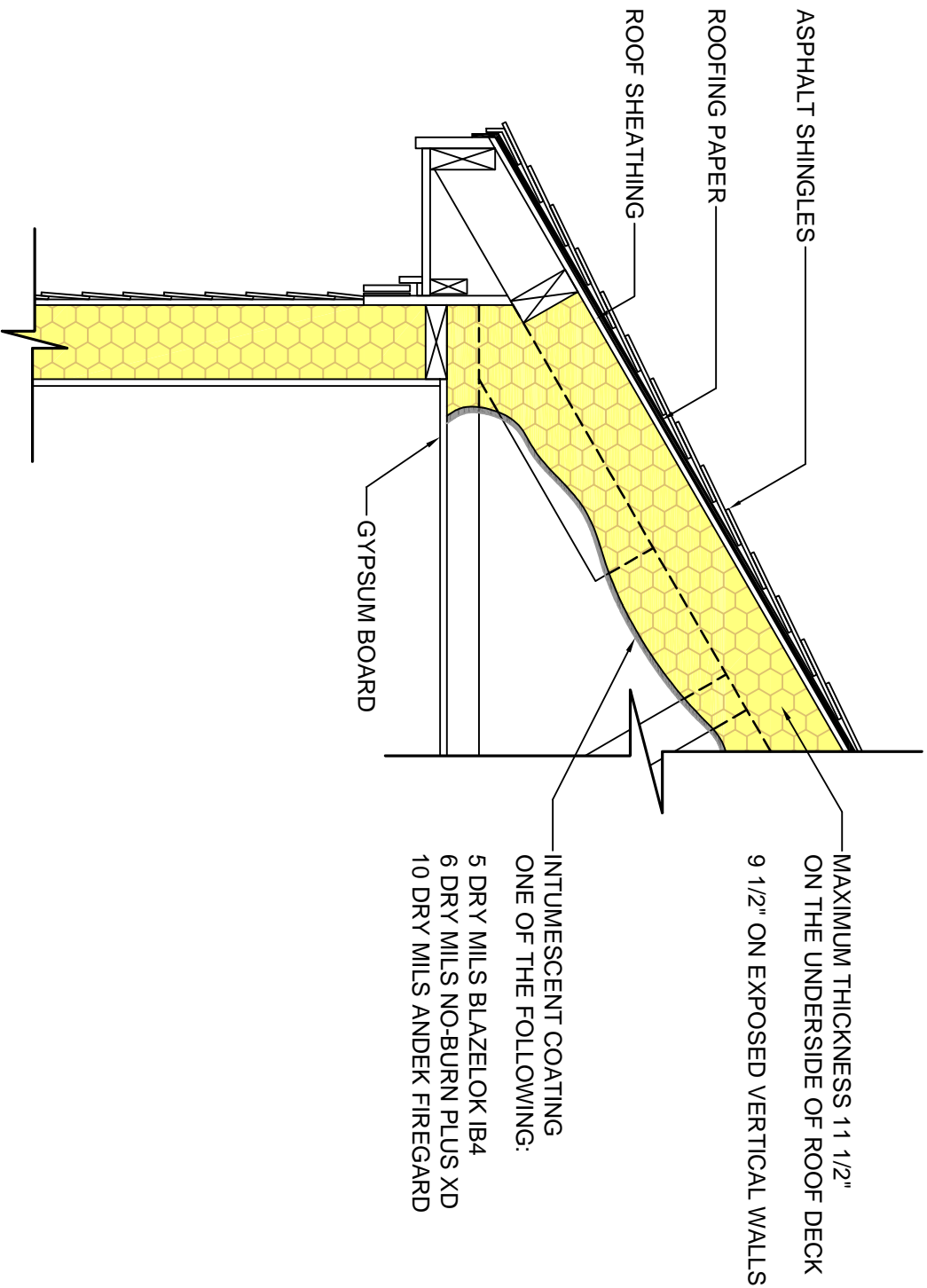
We have an aggressive development and testing program in place and continue to test our foams and various coatings to obtain the safest, highest quality and most economical foam products in the industry. We will continue to keep you, our most valued partners, abreast of our latest efforts.

Sincerely,



Charles Waggoner
Product Engineer
(817) 879-8659

Attachment: Drawings of attic and crawl space foam applications.

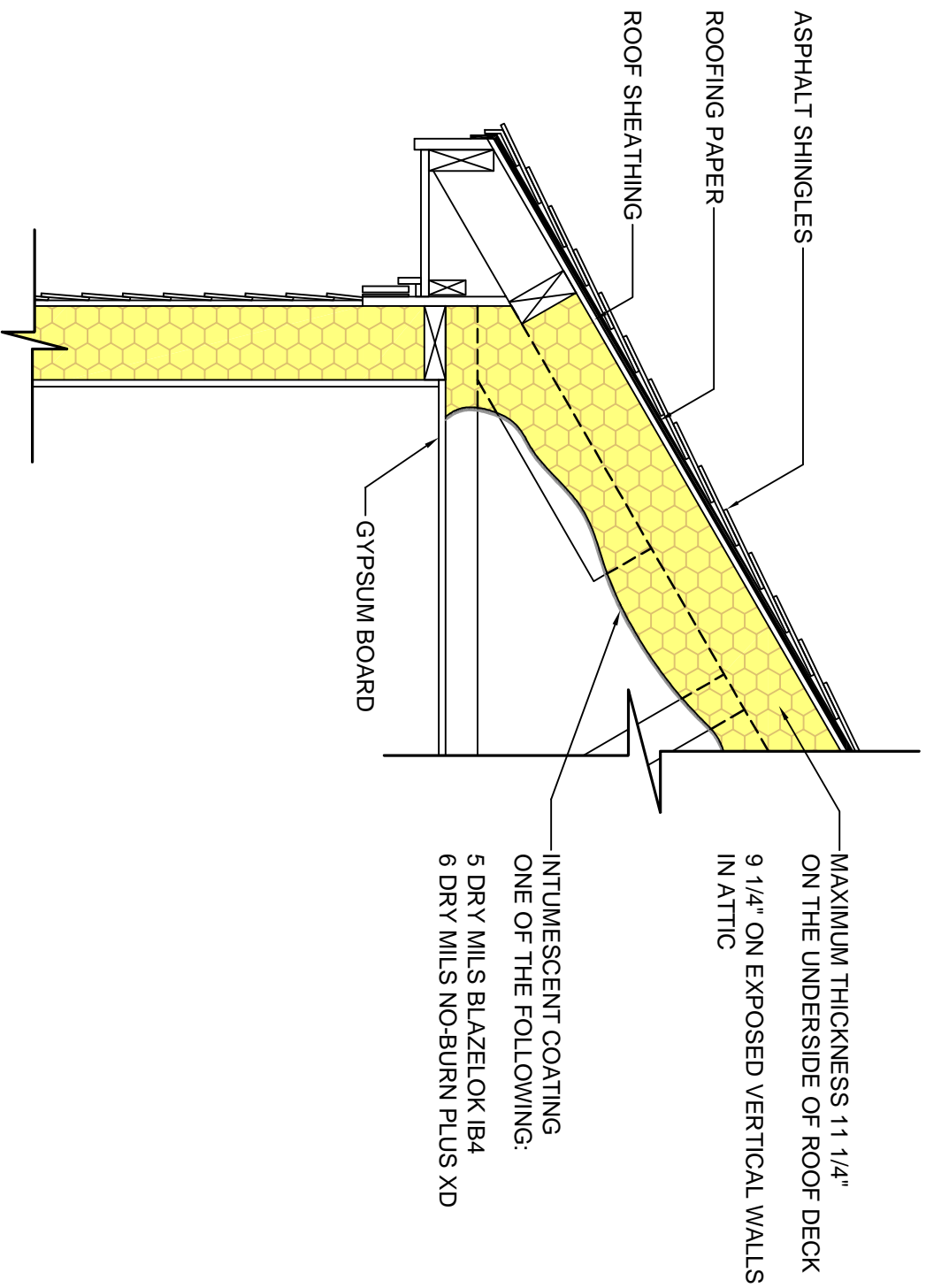


SEALECTION® 500

PER ESR 1172, DATED FEBRUARY 01, 2011

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ARCH-37		SHEET NO. 1
DATE 03-22-10		

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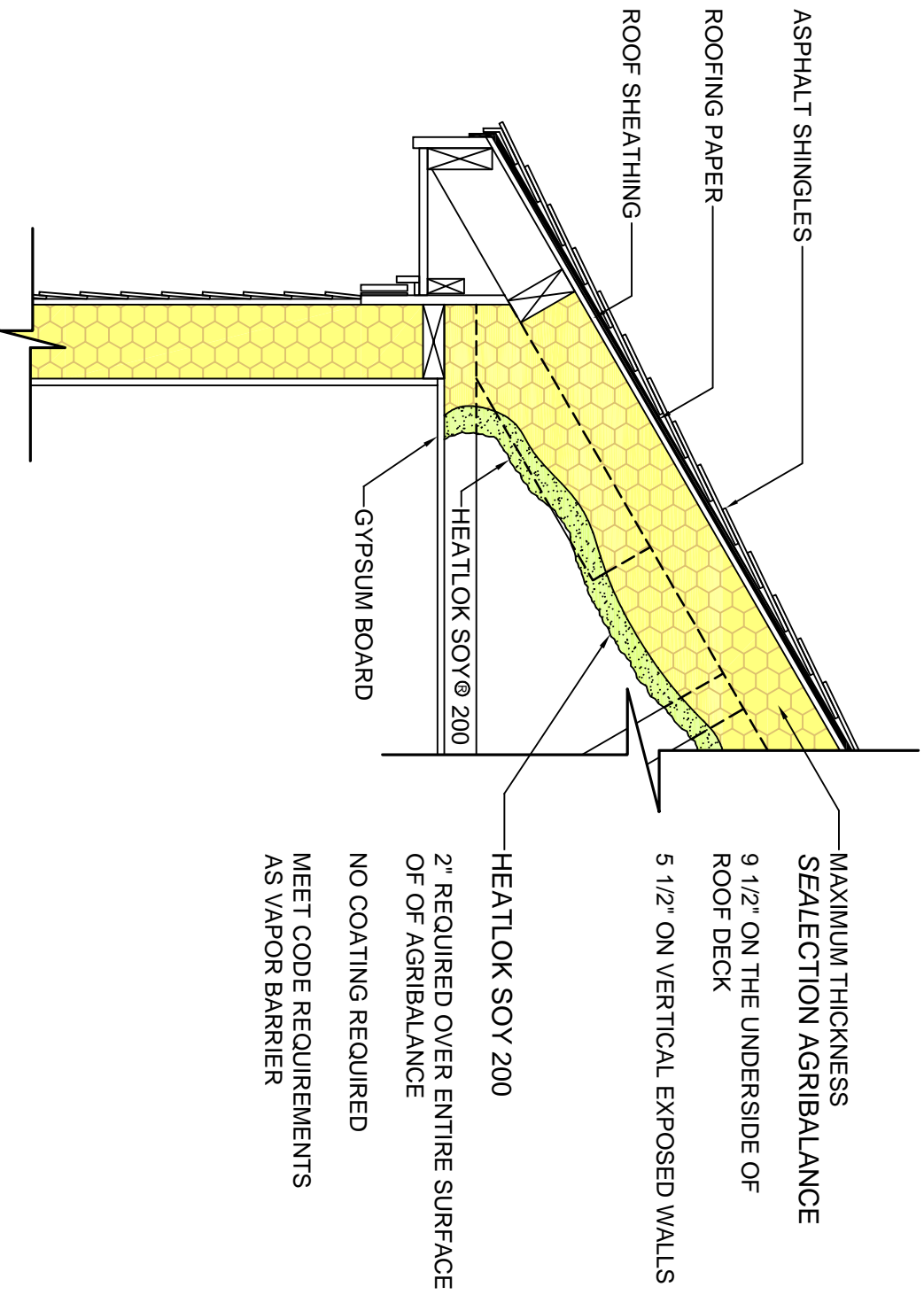


SEALECTION AGRIBALANCE®

PER ESR 2600, DATED FEBRUARY 01, 2011

DRAWN BY M.S.	DEMILEC USA LLC. SPRAY FOAM INSULATION ARCHITECTURAL DETAILS ROOF ASSEMBLY NO. 2	SCALE 3/4" = 1'-0"
ARCH-37b		SHEET NO. 2
DATE 03-22-10		

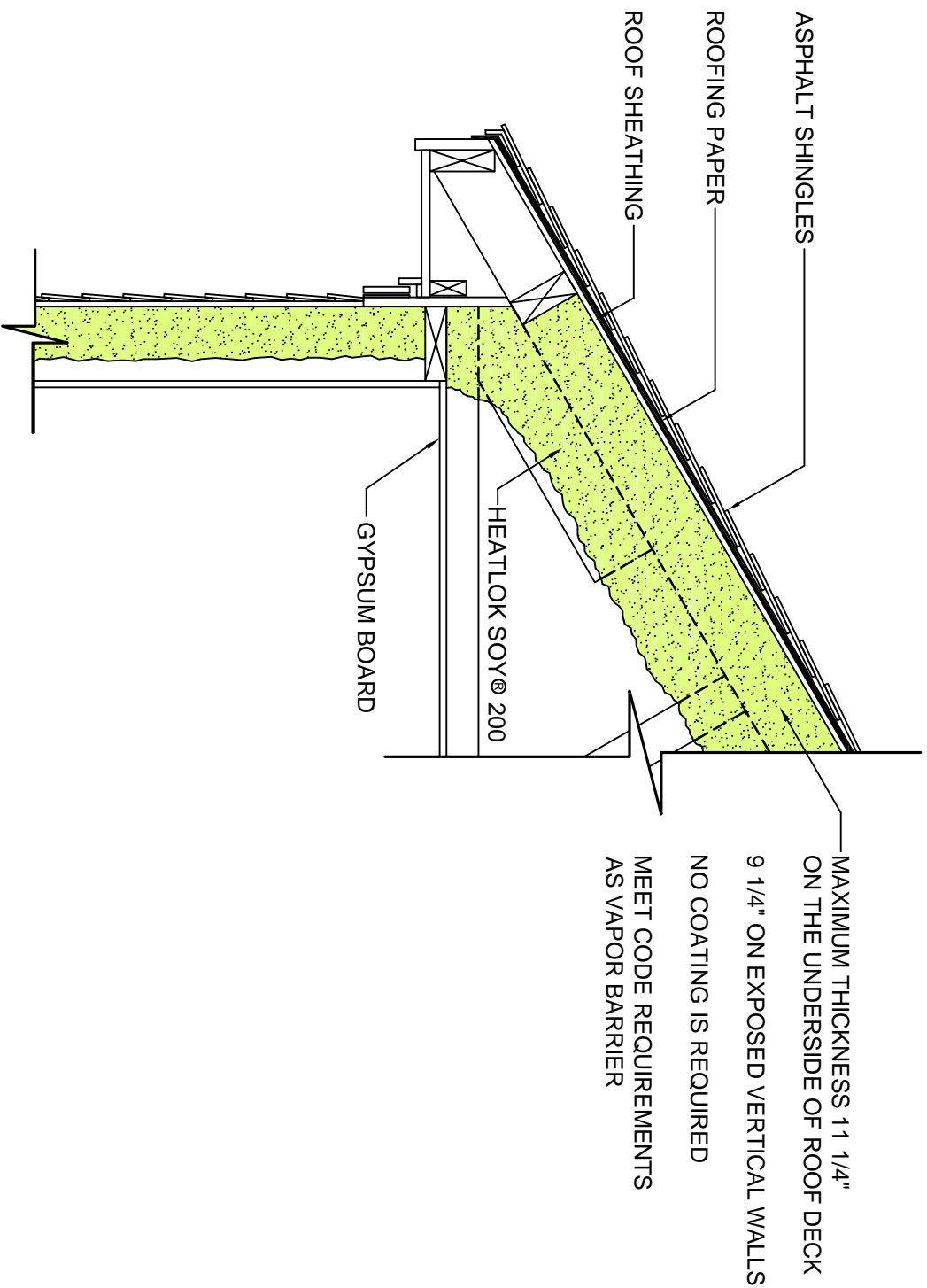
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**SEALLECTION AGRIBALANCE®
AND HEATLOK SOY® 200**
PER ESR 2600, DATED FEBRUARY 01, 2011

DRAWN BY M.S.	DEMILEC USA LLC. SPRAY FOAM INSULATION ARCHITECTURAL DETAILS ROOF ASSEMBLY NO. 3	SCALE 3/4" = 1'-0"
ARCH-37c		SHEET NO. 3
DATE 03-22-10		

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HEATLOK SOY® 200 PER ESR 3210, DATED MARCH 01, 2011

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ARCH-37d			SHEET NO. 4
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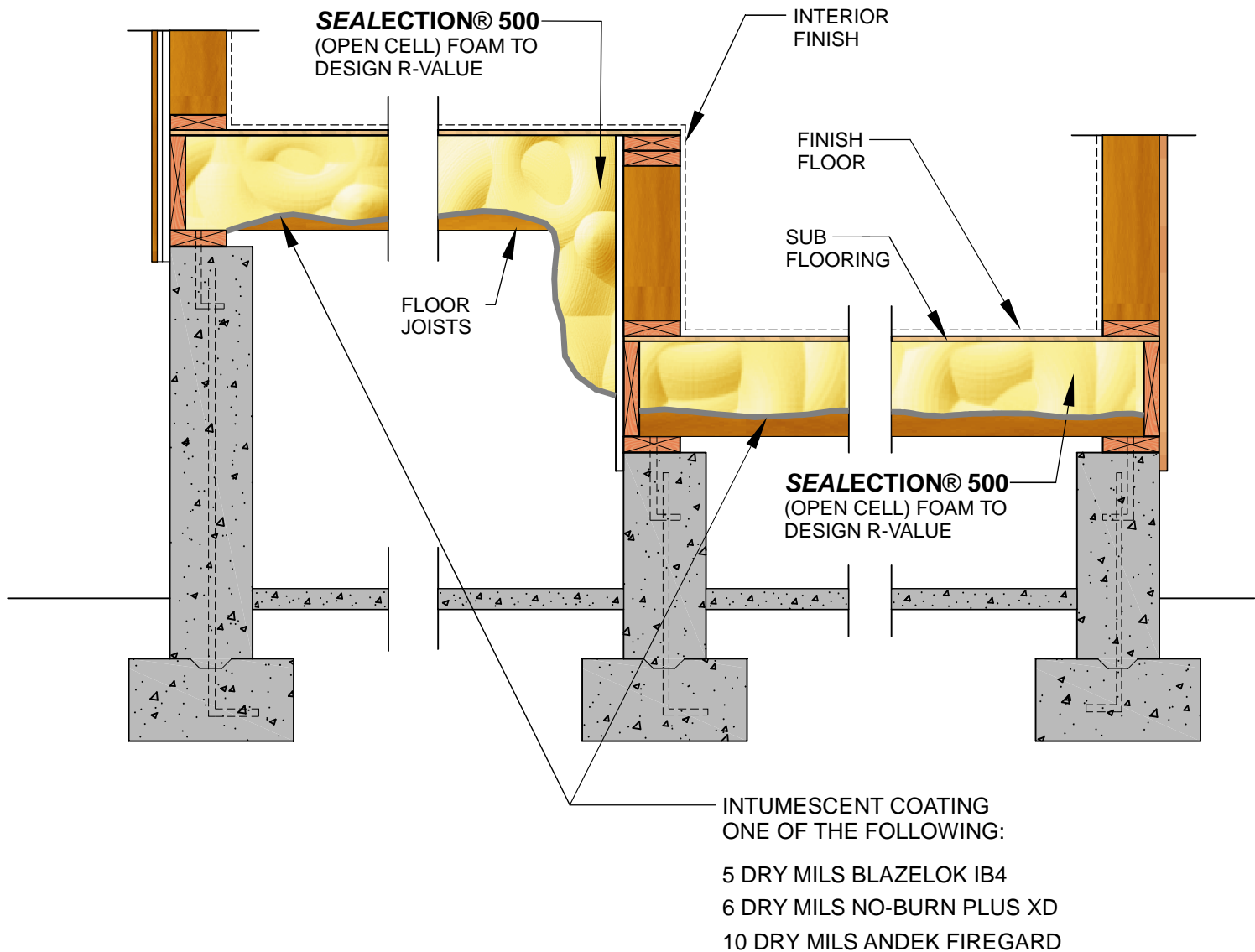
SEALECTION® 500

9 ½" MAXIMUM WALL THICKNESS

11 ½" MAXIMUM THICKNESS UNDER FLOOR

PER ESR 1172, DATED FEBRUARY 01, 2011

VENTED CRAWL SPACE



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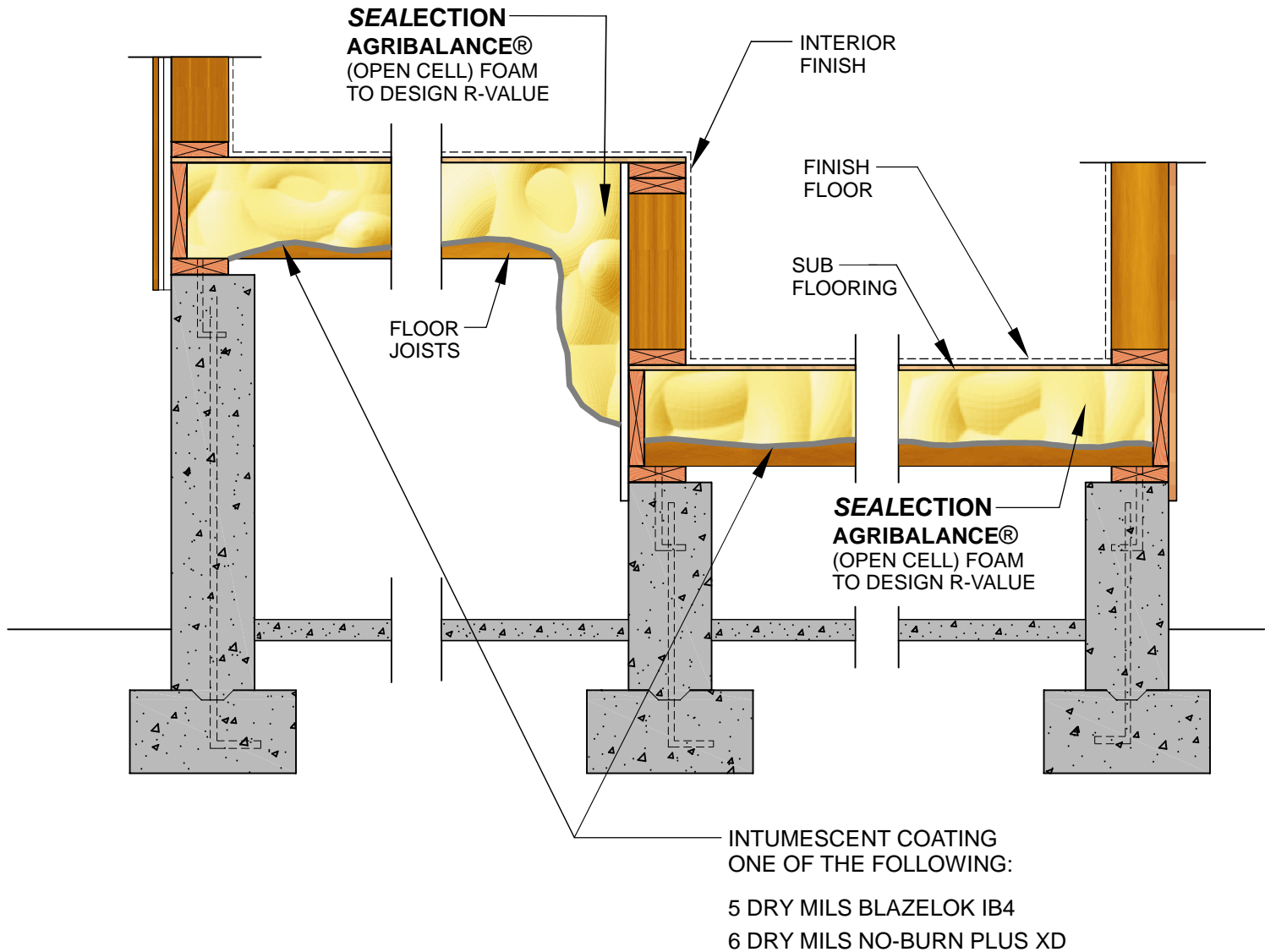
SEALECTION AGRIBALANCE®

9 1/4" MAXIMUM WALL THICKNESS

11 1/4" MAXIMUM THICKNESS UNDER FLOOR

PER ESR 2600, DATED FEBRUARY 01, 2011

VENTED CRAWL SPACE



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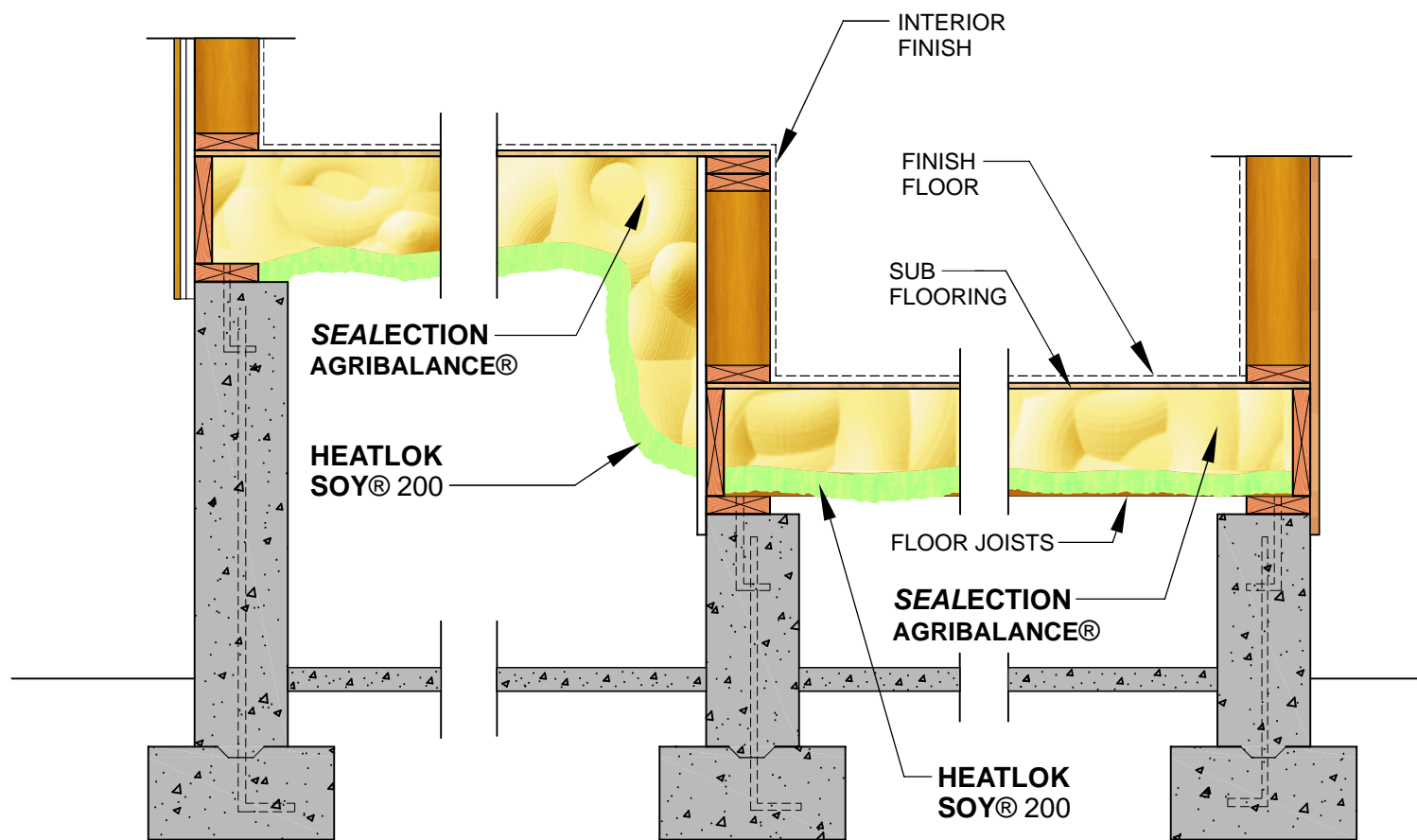
VENTED
CRAWL
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ARCH-65b

**SEALECTION AGRIBALANCE®
AND HEATLOK SOY® 200**

VENTED CRAWL SPACE

- 5 1/2" MAXIMUM WALL THICKNESS OF AGRIBALANCE
- 9 1/2" MAXIMUM UNDER FLOOR THICKNESS OF AGRIBALANCE
- 2" REQUIRED THICKNESS OF HEATLOK SOY 200 OVER ENTIRE SURFACE OF AGRIBALANCE
- PER ESR 2600, DATED FEBRUARY 01, 2011



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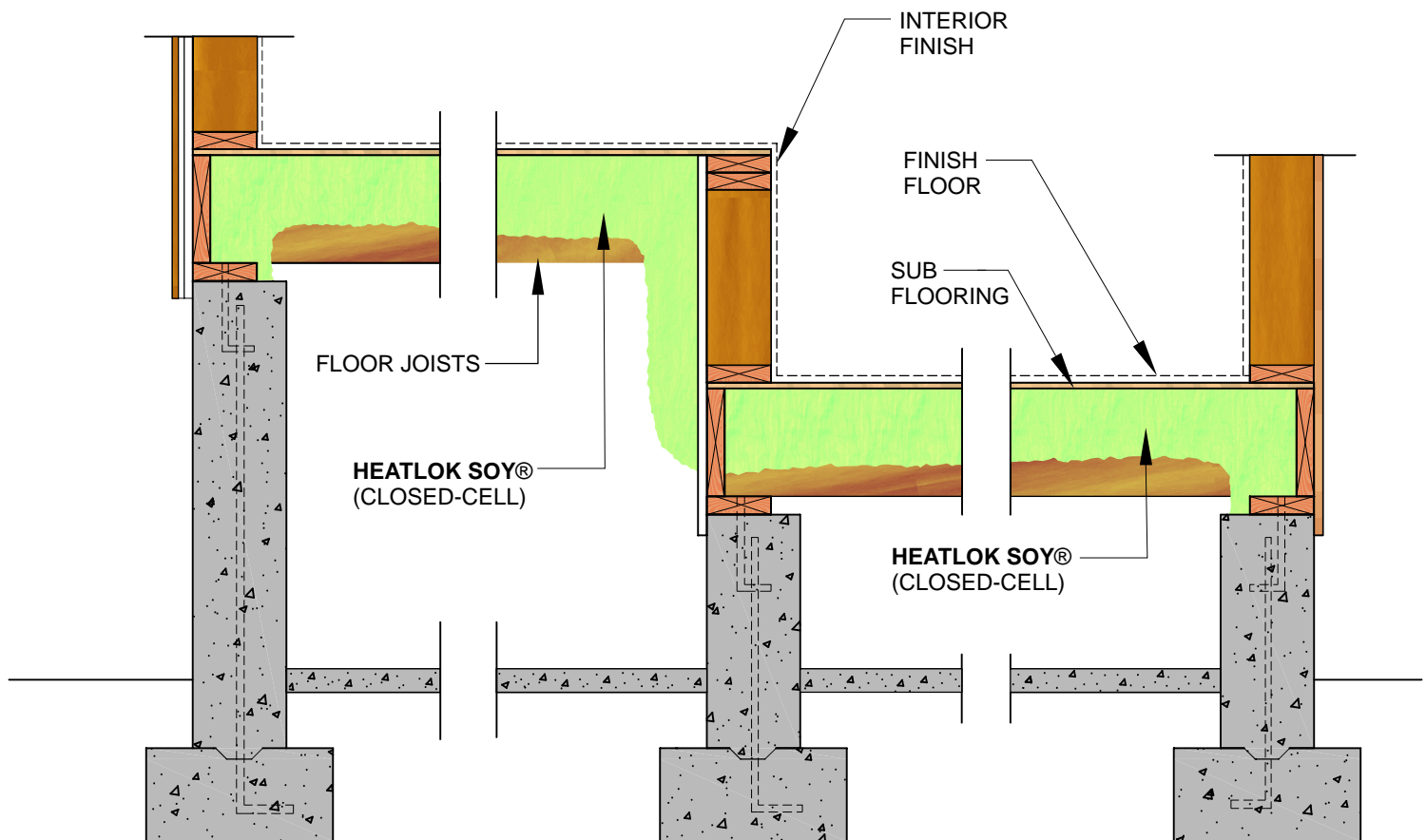
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ARCH-65d	SCALE: NOT TO SCALE	

HEATLOK SOY® 200

9 1/4" MAXIMUM WALL THICKNESS
11 1/4" MAXIMUM THICKNESS UNDER FLOOR
NO COATING REQUIRED
PER ESR 3210, DATED MARCH 01, 2011

VENTED CRAWL SPACE



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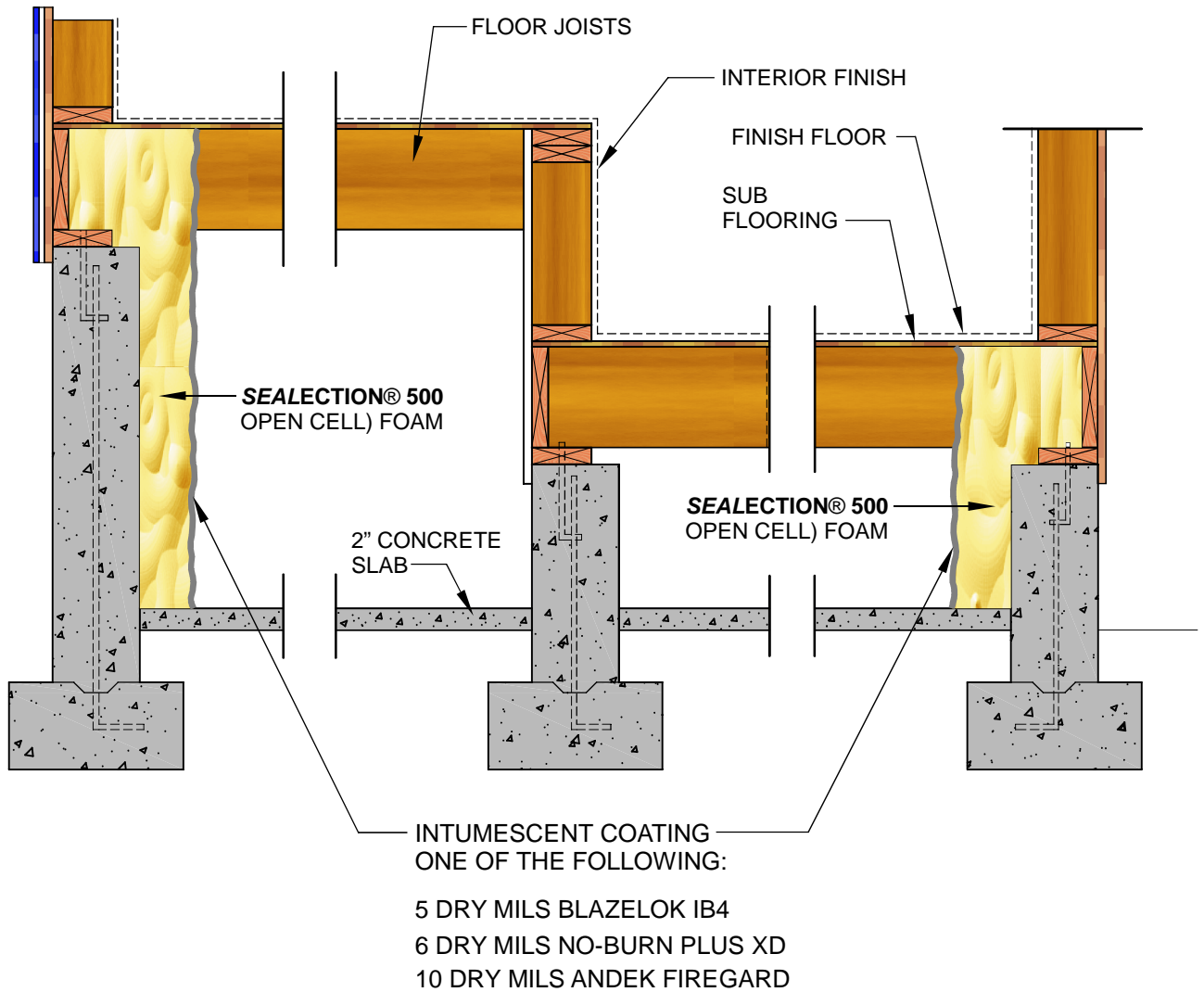
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SEALECTION® 500

9 1/2" MAXIMUM THICKNESS

PER ESR 1172, DATED FEBRUARY 01, 2011

UNVENTED CRAWL SPACE



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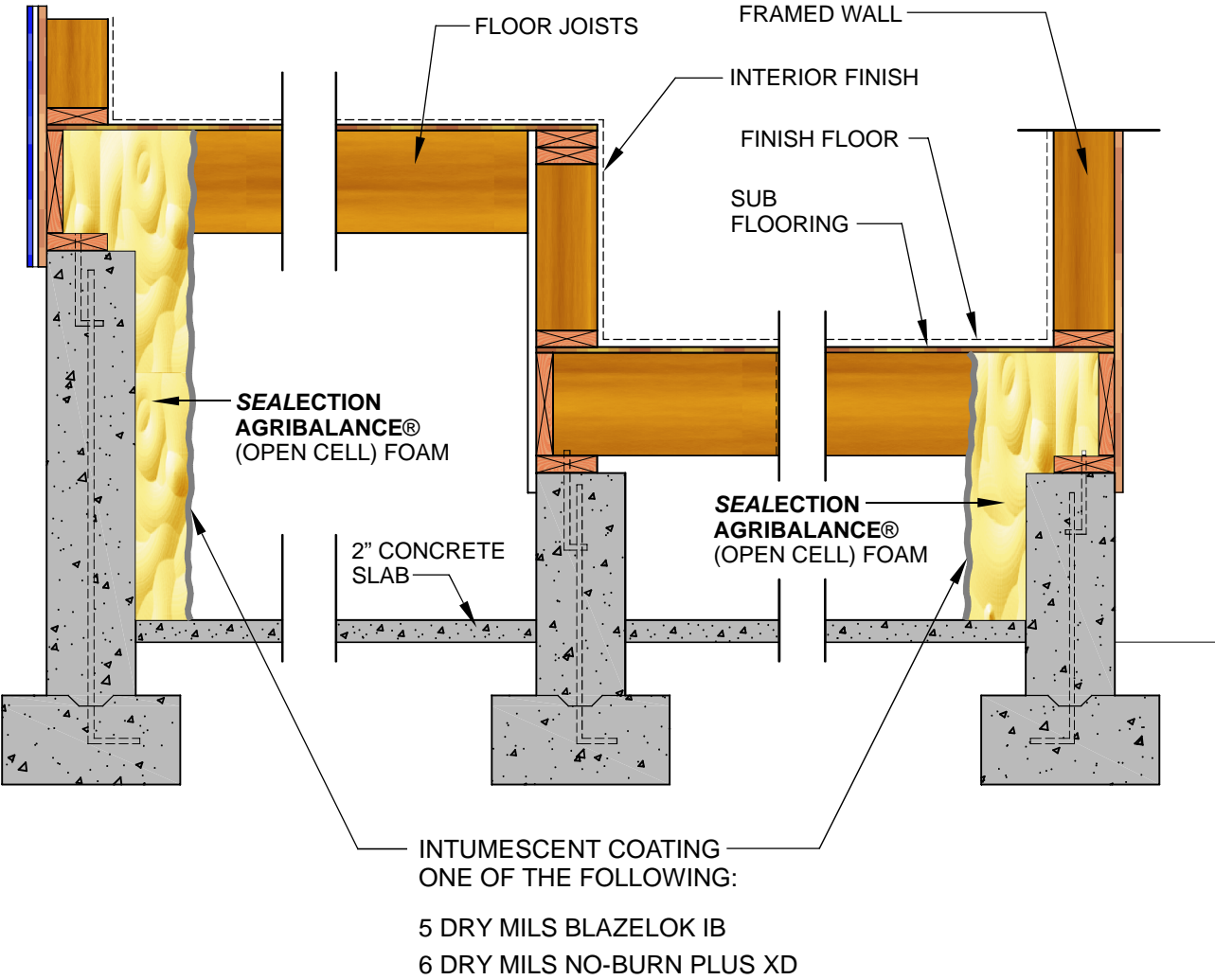
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SEALECTION AGRIBALANCE®

9 1/2" MAXIMUM THICKNESS
PER ESR 2600, DATED FEBRUARY 01, 2011

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SEALECTION AGRIBALANCE® AND HEATLOK SOY® 200

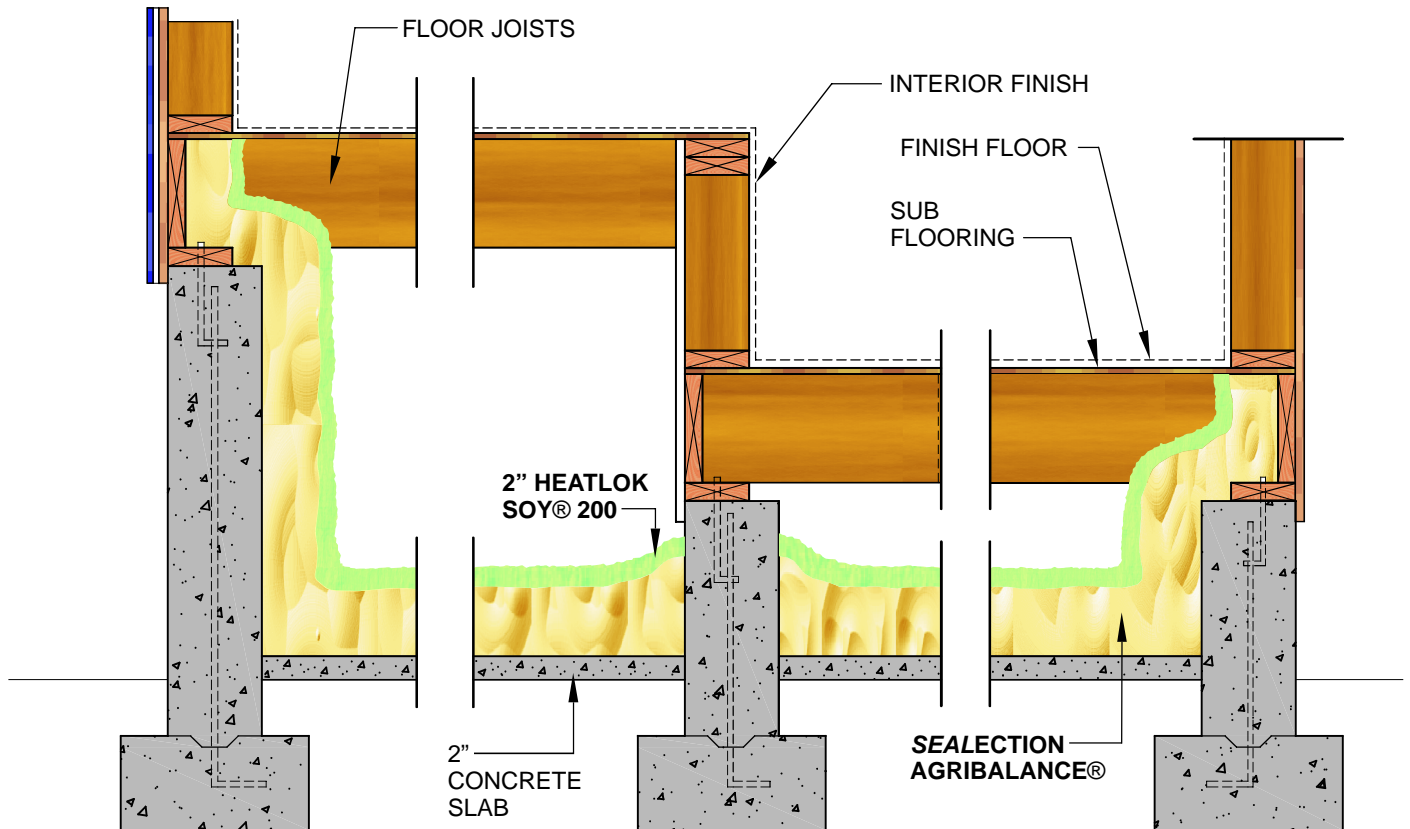
5 1/2" MAXIMUM WALL THICKNESS OF AGRIBALANCE

9 1/2" MAXIMUM SLAB THICKNESS OF AGRIBALANCE

2" REQUIRED THICKNESS OF HEATLOK SOY 200 OVER ENTIRE SURFACE OF AGRIBALANCE

PER ESR 2600, DATED FEBRUARY 01, 2011

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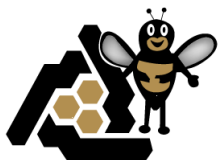
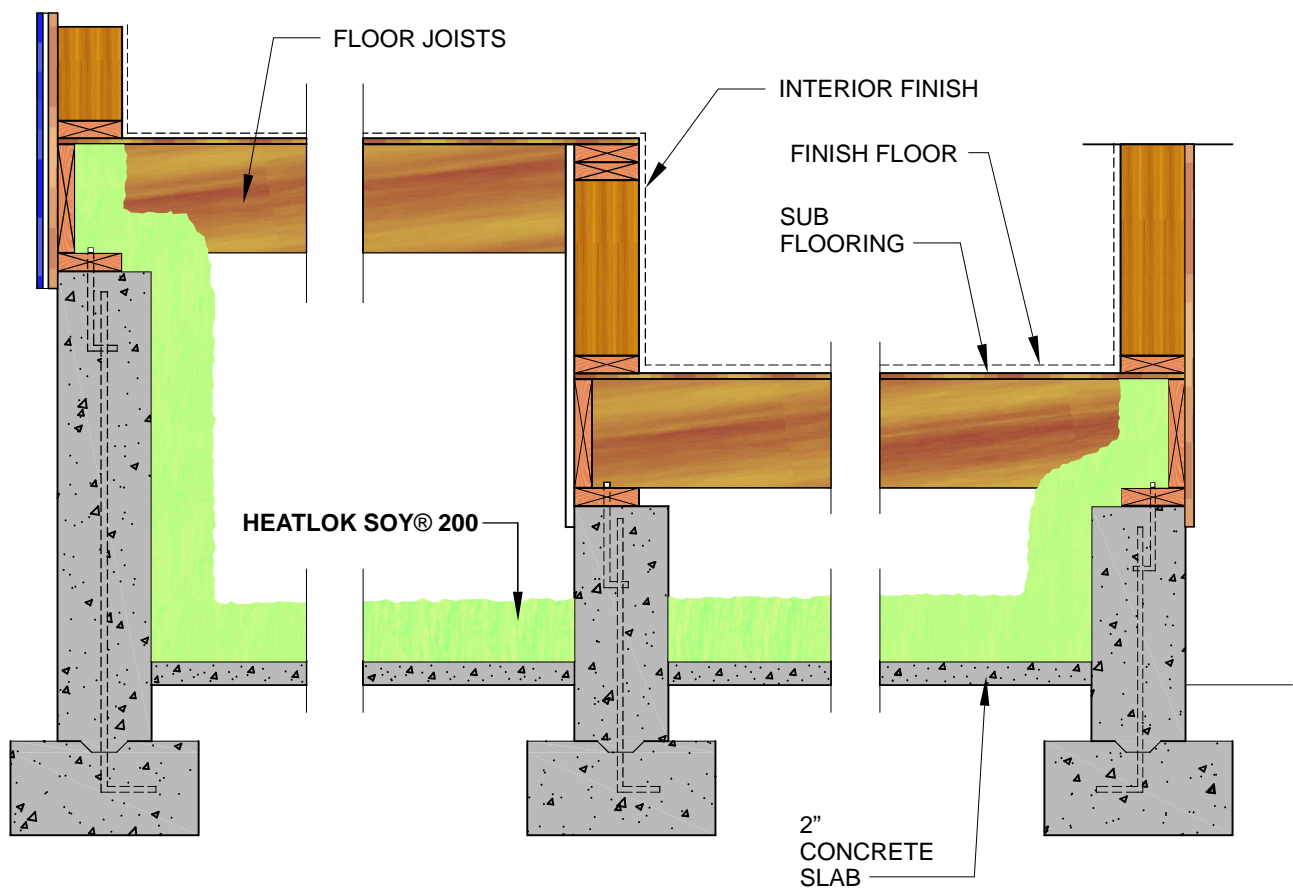
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HEATLOK SOY® 200

9 1/4" MAXIMUM WALL THICKNESS
NO COATING REQUIRED
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