P.O. Box 1528 Mount Airy, NC 27030 800-346-8229 www.NCFI.com

InsulStar®

ARCHITECTURAL SPECIFICATIONS and INSTALLATION INSTRUCTIONS for RESIDENTIAL INSULATION

PART 1—GENERAL

1.01 SUMMARY

InsulStar® provides building envelopes with seamless insulation which substantially reduces air infiltration. InsulStar can be applied: (1) to the full or partial thickness of stud-wall cavities for a total insulation, air barrier and moisture vapor retarder package; or (2) in a ½- to 1-inch thickness in combination with conventional insulation. In either case, air infiltration is substantially reduced due to the sealing characteristics of the spray foam system and eliminates the need for house wrap.

1.02 QUALITY ASSURANCE

InsulStar must be installed by a qualified spray polyurethane foam applicator who is familiar with the operation and maintenance of his equipment and who is familiar with the properties of the NCFI Spray System which is being applied.

1.03 MATERIAL DELIVERY AND STORAGE

A. Materials shall be delivered in their original, tightly sealed containers.

B. Keep the temperature of the chemicals above 70 F for several days prior to use. Cold chemicals can cause pump cavitation and, therefore, incorrect metering. Storage temperatures should not exceed 90 F. Do not store in direct sunlight. Keep drums tightly closed when not in use and under dry gas pressure of 2-3 psi after they have been opened. See individual product data sheets for specific storage recommendations and shelf life information (refer to Section 2.01).

1.04 SEQUENCE AND SCHEDULING

The spray polyurethane insulation used in the InsulStar system is applied after the perimeter wall is in place, windows and doors installed, and rough-in plumbing and electrical inspections are complete.

1.05 VAPOR RETARDER: Install vapor retarder as required by local code.

InsulStar closed-cell spray polyurethane insulation system provides a degree of vapor retardance. In many circumstances, the use of this closed-cell insulation eliminates the need for an additional vapor retarder. The system used, the thickness to which it is applied, the adjoining building components, the exterior weather conditions, and the interior temperature and humidity all affect need for a vapor retarder. Consult NCFI for specific recommendations.

1.06 SAFETY

A. HANDLING OF LIQUID COMPONENTS: Use caution in removing bungs from 55gallon drums. Loosen ¾-inch bung and let gas escape before completely removing. Avoid breathing of vapors. In case of chemical contact with eyes, flush with water for at least 15 minutes and get medical attention. For further information refer to “MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal,” published by the Alliance for the Polyurethanes Industry, 1300 Wilson Boulevard, Arlington, VA 22209.

B. 15-MINUTE THERMAL BARRIER: Federal, state, and local building codes vary. All have requirements that spray-applied polyurethane foam insulation be separated from occupied spaces with an approved 15-minute fire rated thermal barrier. One typically approved material is ½-inch gypsum wallboard (sheetrock) applied over the spray polyurethane foam insulation.

Exceptions to the thermal barrier requirement include certain headers, sill plates, attics and crawl spaces. Check the applicable building code and with local officials for specific requirements.

C. Review NCFI Product Stewardship Manual for ventilation and Personal Protective Equipment requirements and ensure unauthorized workers are not in the area during the spray foam application.

PART 2—PRODUCTS

2.01 POLYURETHANE CLOSED-CELL INSULATION

The polyurethane insulation used shall be NCFI Chemical System 11-016.

See individual product data sheet for typical physical properties and application information.

2.02 SUPPLEMENTAL INSULATION: Use fiber based insulations having the following typical properties:

Density 0.6 - 1.0 lb/ft^3

"

R Value 3 - 4 $hr / Btu \cdot ft^2 \cdot F$

2.03 ACCESSORIES

A. Joint Filler Foam: Hilti CF 124 Filler Foam or equivalent.

B. Caulk: Sikaflex 1a: Single component polyurethane or equivalent

PART 3—EXECUTION

3.01 SURFACE PREPARATION

All surfaces to be sprayed with NCFI polyurethane foam must be dry, clean, and secure. Remove sawdust and other debris from areas to be sprayed by blowing with compressed air or vacuuming with a shop vacuum. Check surfaces with NCFI MDP strips to verify dryness. All metal to which foam is to be applied must be free of oil, grease, rust, etc. Primers should be used where necessary.

Mask off all areas not to receive spray foam with masking tape and plastic sheeting. Apply release agent to stud facing to facilitate removal of foam.

3.02 FOAM APPLICATION

Apply spray foam using a “picture framing” technique: apply a cant of foam between the exterior sheathing and the inner stud surface. Then spray apply the required thickness of foam against the sheathing. For a nominal thickness of ½ inch, apply in one pass. For filling the stud wall cavity, apply the foam in two or more passes.

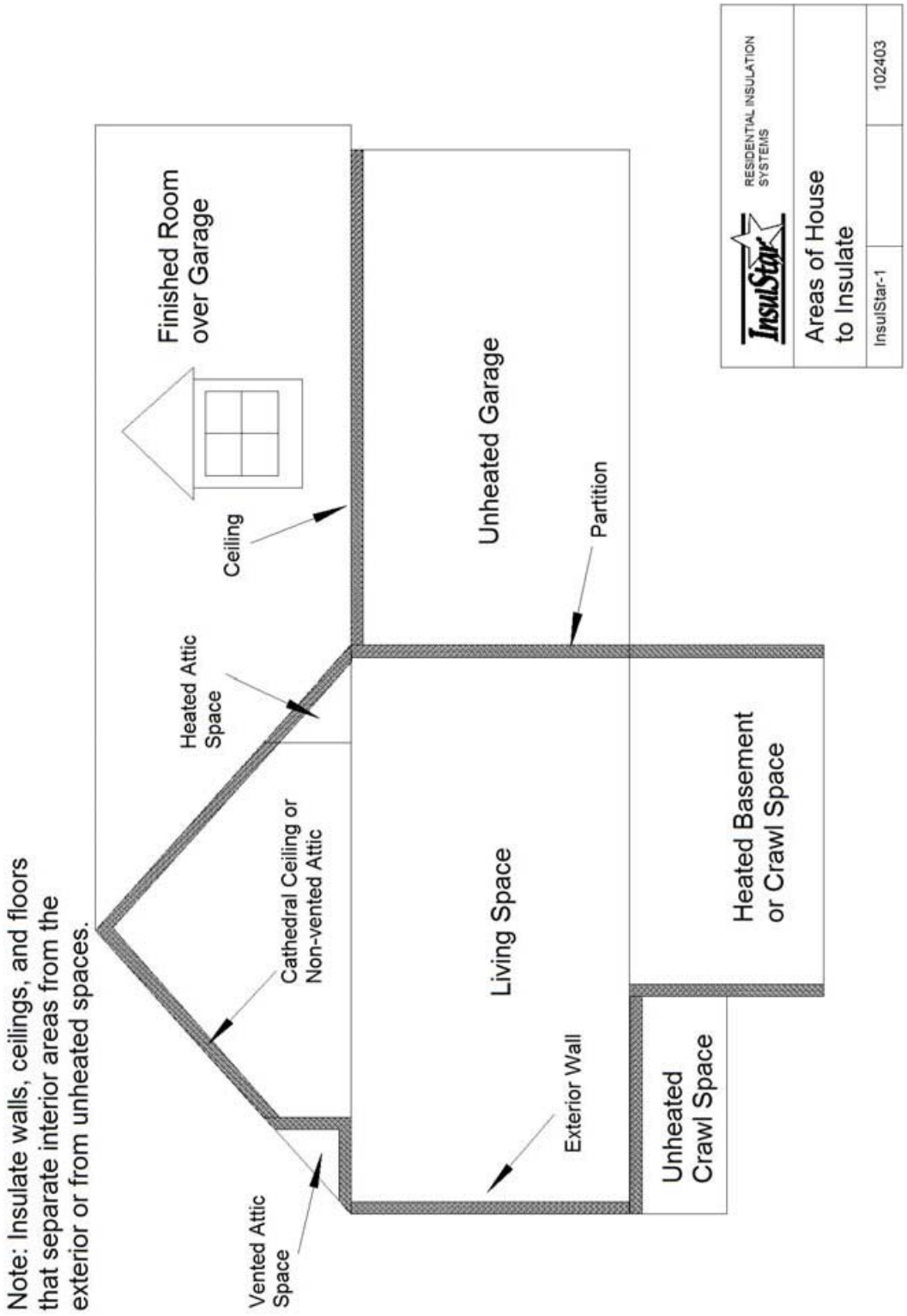
3.03 ACCESSORY APPLICATION

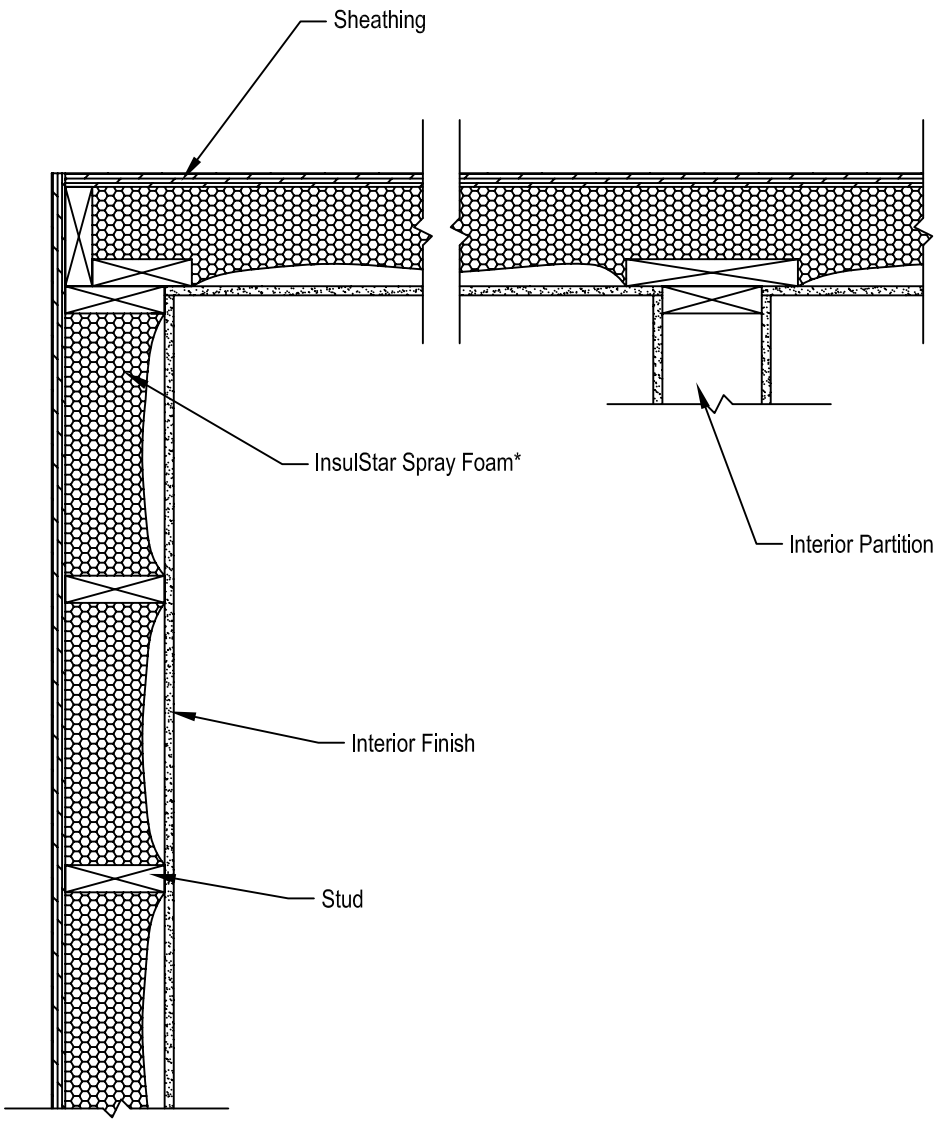
A. Supplemental Insulation (Optional): If the stud wall cavity is not completely filled with spray polyurethane foam, supplemental insulation may be installed to achieve desired R–values.

B. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. **Caution: Joint filler foam can tighten window frames and door jambs to the point that they will not open or close properly. Care must be used in these areas to avoid distortion of these members.**

3.04 CLEAN UP

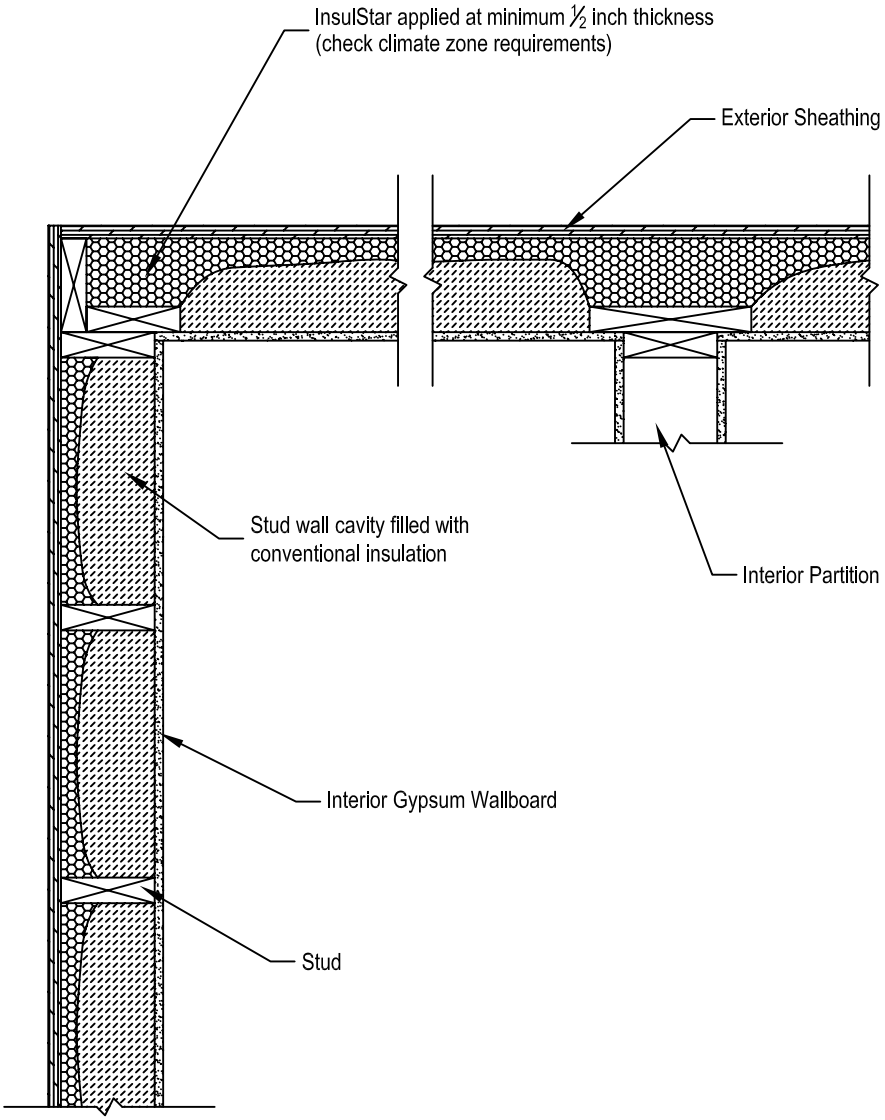
Clean off all overspray and overfill from the interior stud facings. For fully filled stud cavities, shave off the foam face to provide a surface flush with the stud for drywall installation. Remove all masking materials.


Note: Insulate walls, ceilings, and floors that separate interior areas from the exterior or from unheated spaces.
Finished Room over Garage
Ceiling
Unheated Garage
Partition
Heated Attic Space
Cathedral Ceiling or Non-vented Attic
Living Space
Heated Basement or Crawl Space
Exterior Wall
Unheated Crawl Space
Vented Attic Space
RESIDENTIAL INSULATION SYSTEMS
InsulStar
Areas of House to Insulate
InsulStar-1
102403

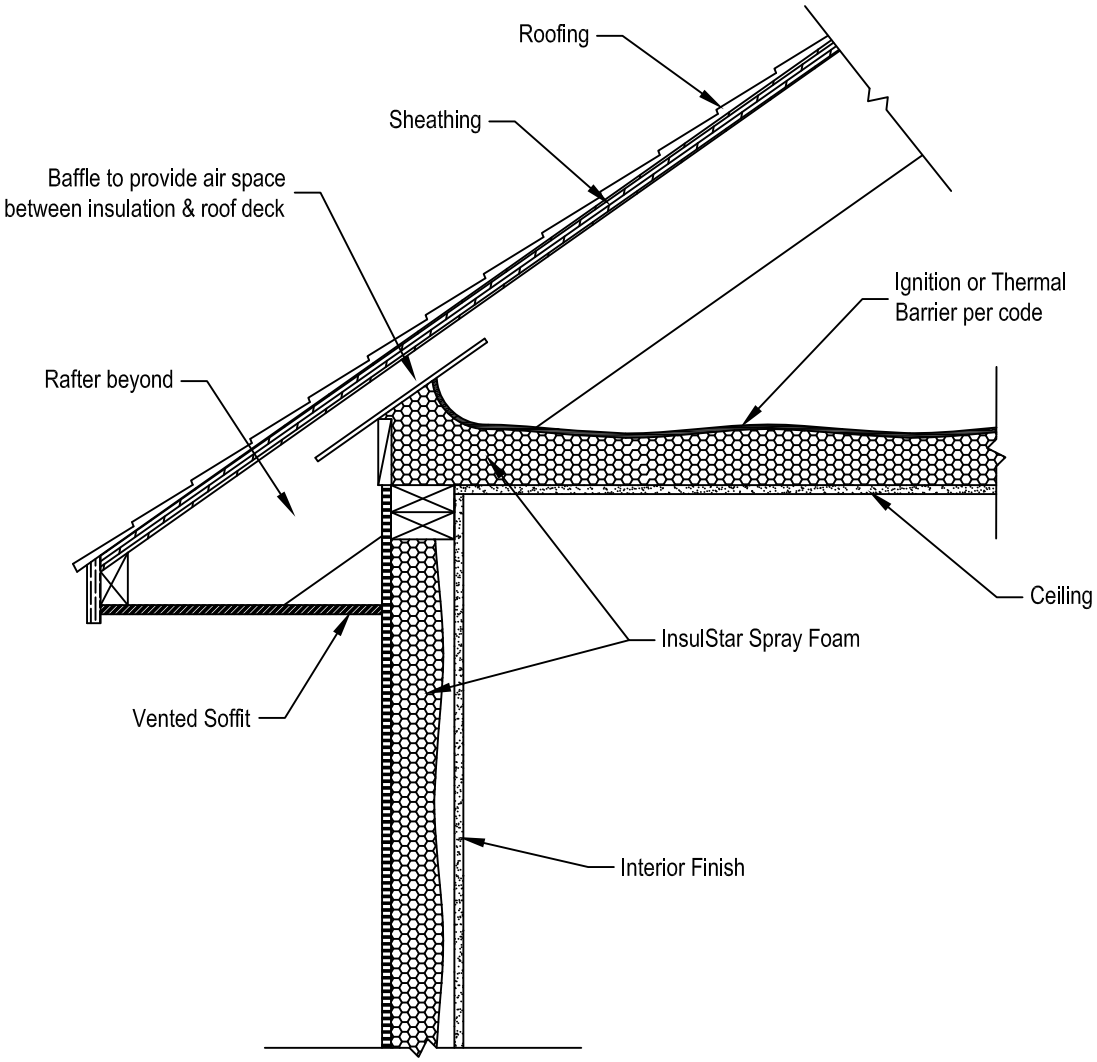


*Spray Foam thickness determined by design R-value

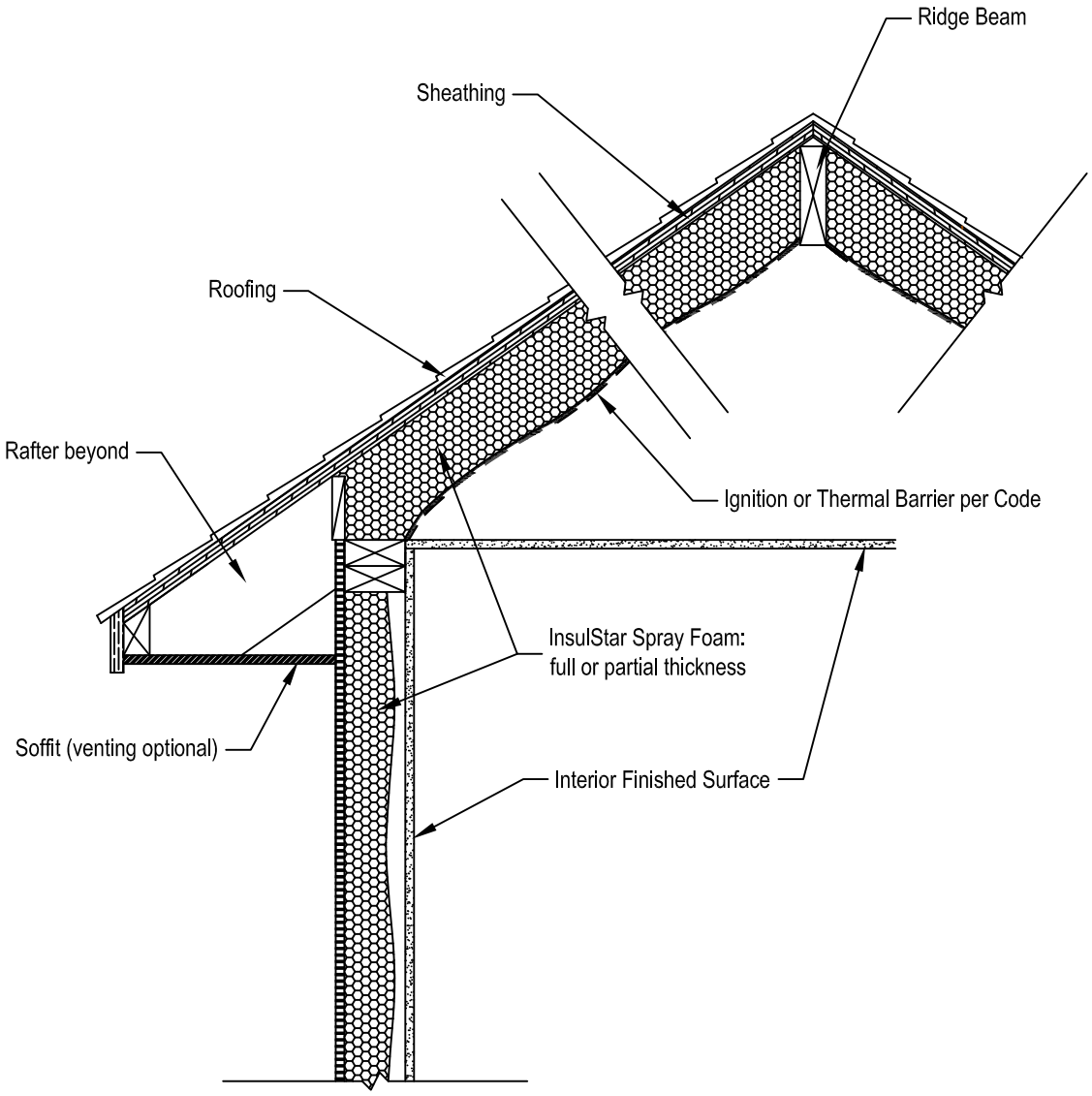
INSULSTAR HIGH PERFORMANCE INSULATION	Stud Wall Insulation	Dwg. # 4
Wall Application	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	11-26-12 B.M.R.



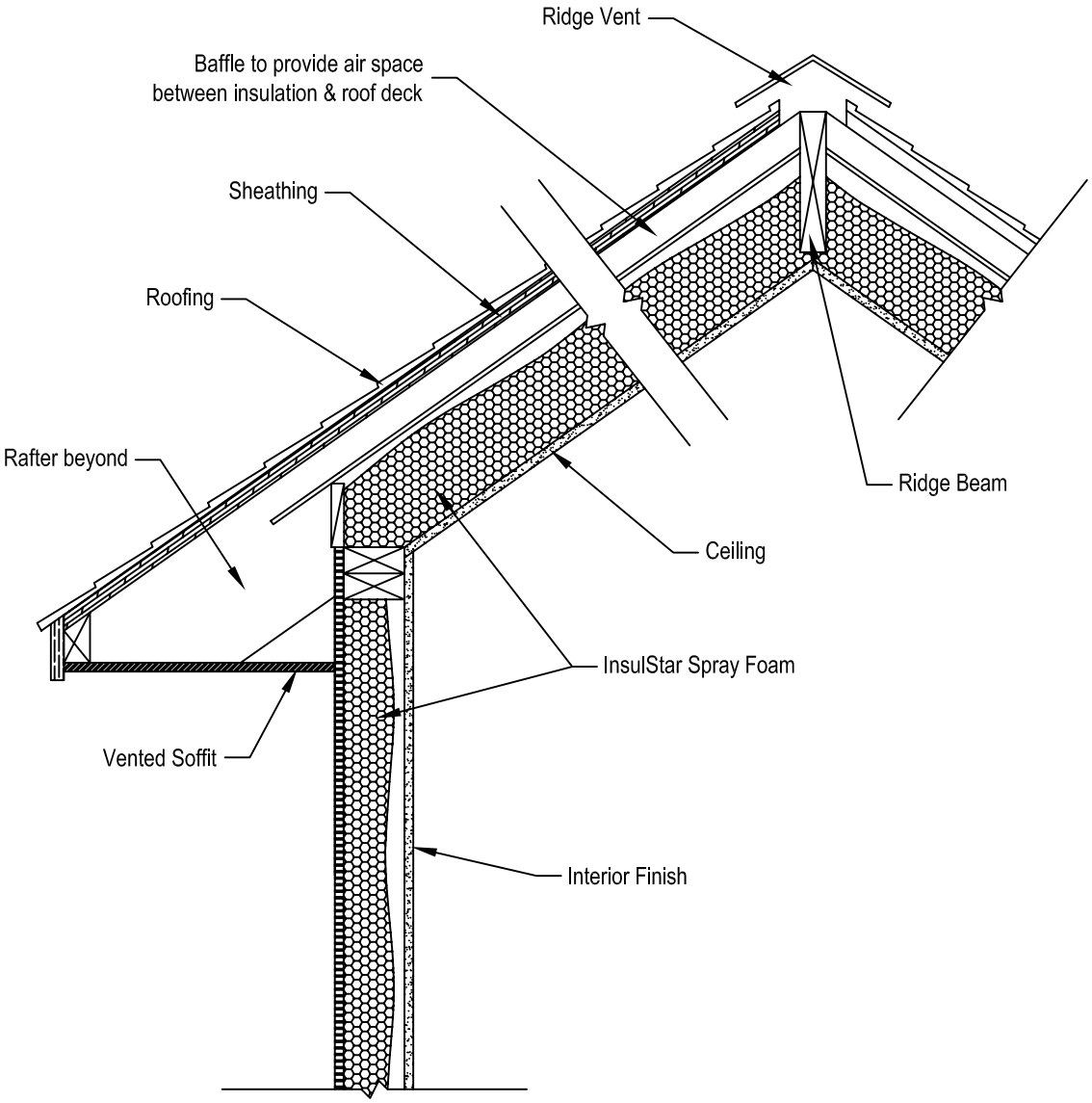
INSULSTAR HIGH PERFORMANCE INSULATION Wall Application	Stud Wall with Supplemental Insulation	Dwg. # 5
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	12-11-12 B.M.R.



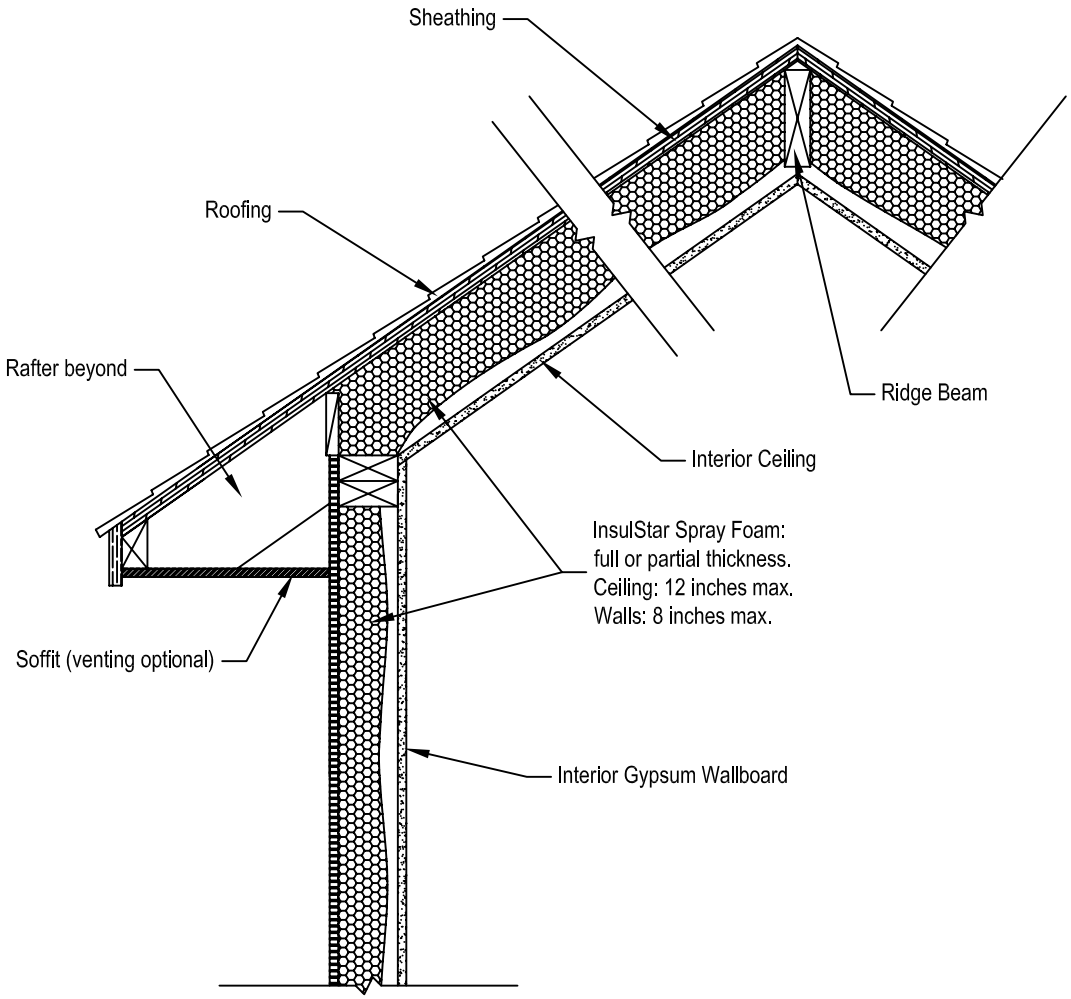
INSULSTAR HIGH PERFORMANCE INSULATION	Vented Soffit with Attic Floor Insulation	Dwg. # 3
Soffit Application	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	11-26-12 B.M.R.



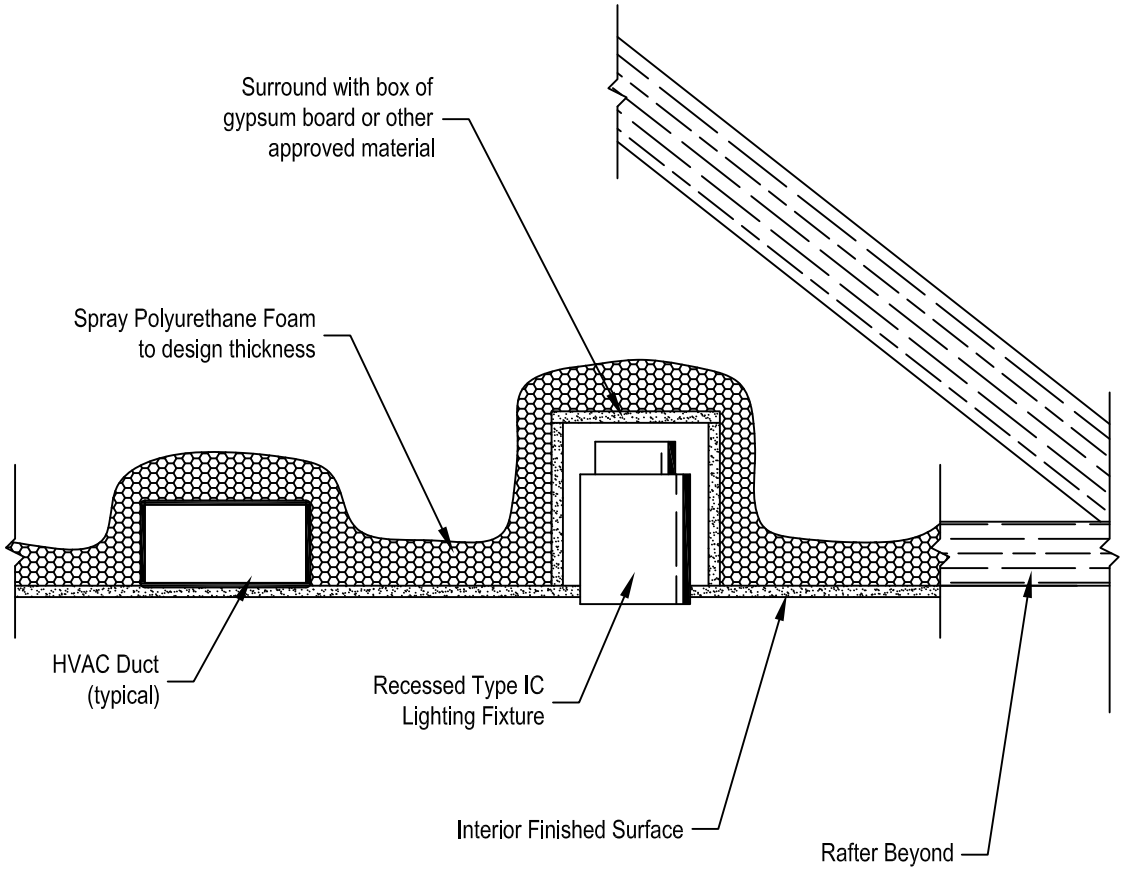
INSULSTAR HIGH PERFORMANCE INSULATION Attic Insulation	Unvented Attic Application	Dwg. # 7
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	1-12-13 B.M.R.



INSULSTAR HIGH PERFORMANCE INSULATION	Vented Cathedral Ceiling	Dwg. # 2
Ceiling Application	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	11-26-12 B.M.R.



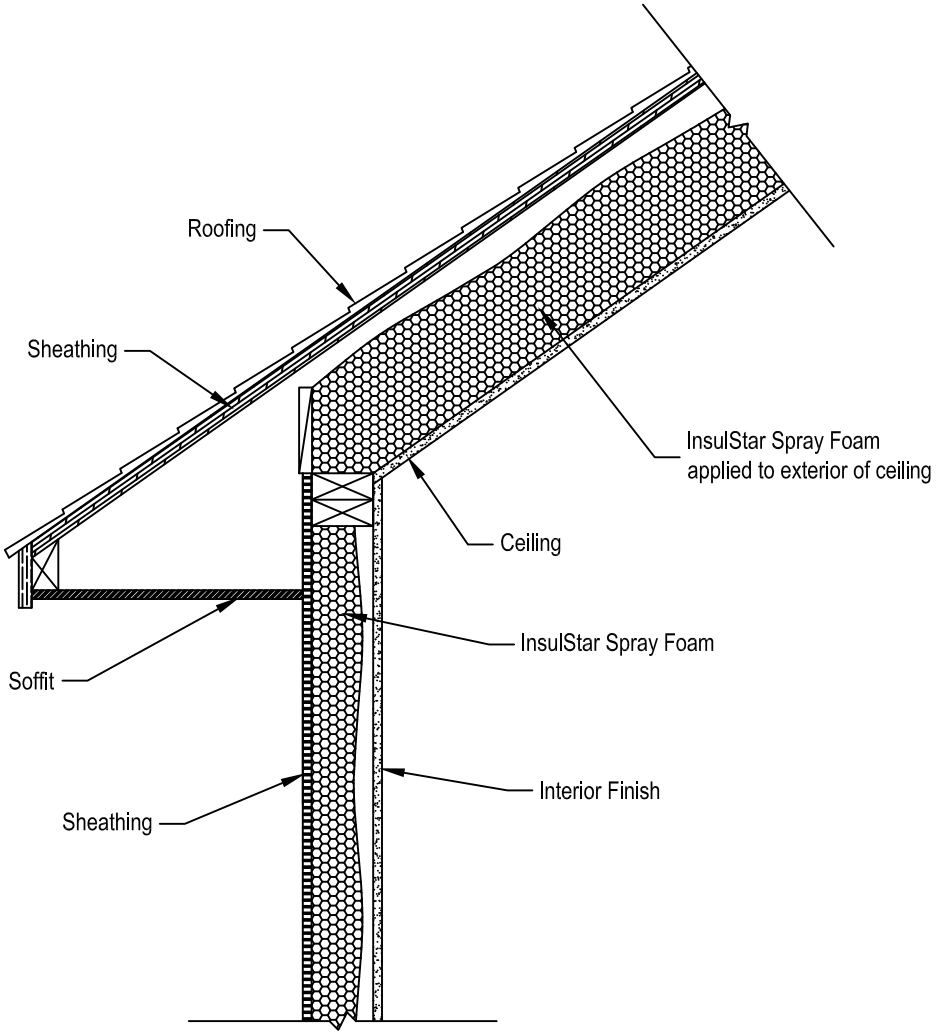
INSULSTAR HIGH PERFORMANCE INSULATION	Unvented Cathedral Ceiling	Dwg. # 8
Ceiling Application	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	12-28-12 B.M.R.



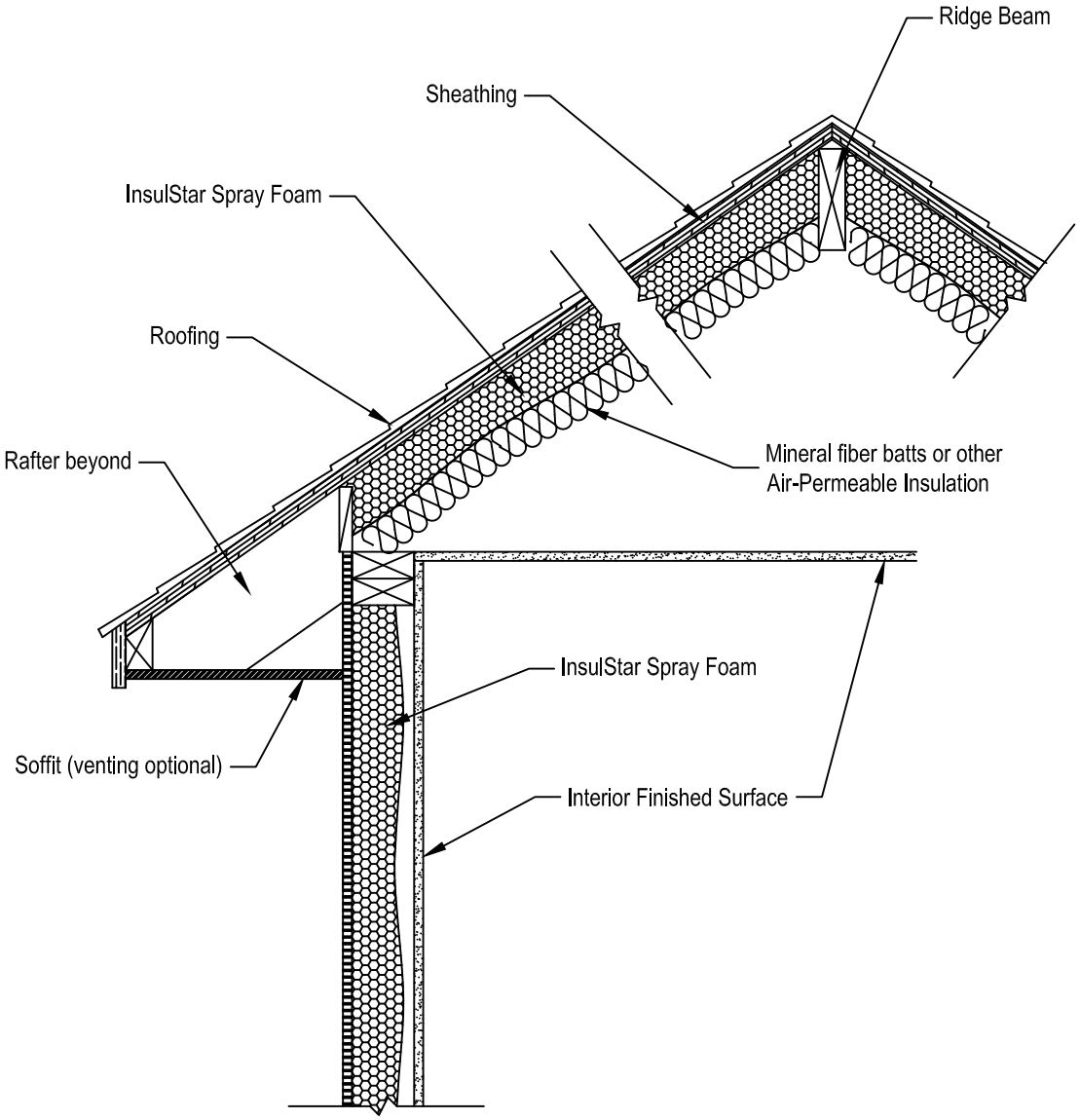
Recessed Lights and Fixtures

Avoid applying spray foam directly to recessed light fixtures or other fixtures that could generate heat. Typically, these fixtures are first "boxed in" with ½" gypsum board (a thermal barrier). The spray foam is terminated at the barrier box. See the typical detail at right.

INSULSTAR HIGH PERFORMANCE INSULATION	HVAC Duct & Recessed Lighting Fixture	Dwg. # 10
Attic Insulation	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	1-19-13 B.M.R.

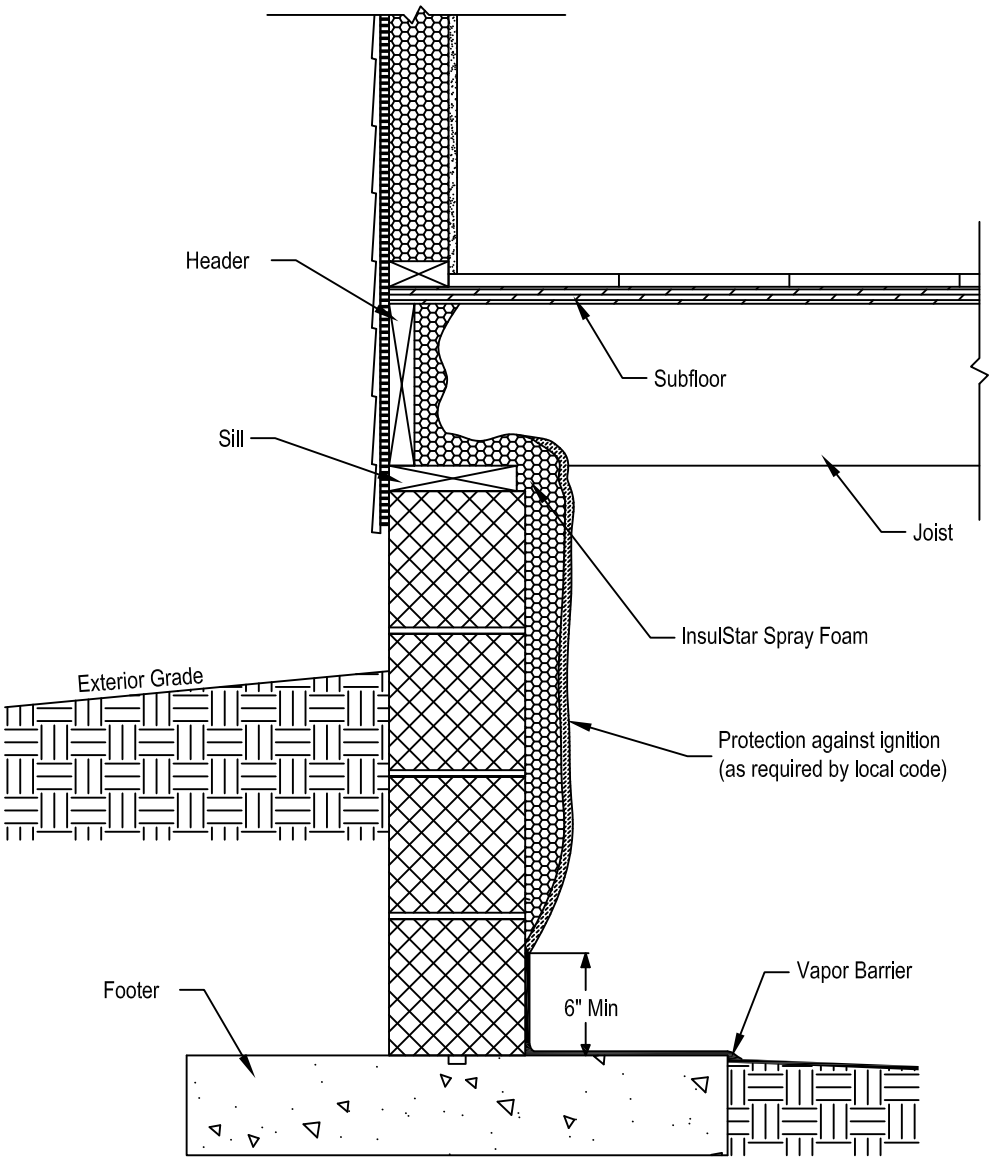


INSULSTAR HIGH PERFORMANCE INSULATION Ceiling Application	Exterior Ceiling Application	Dwg. # 9
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	12-4-12 B.M.R.



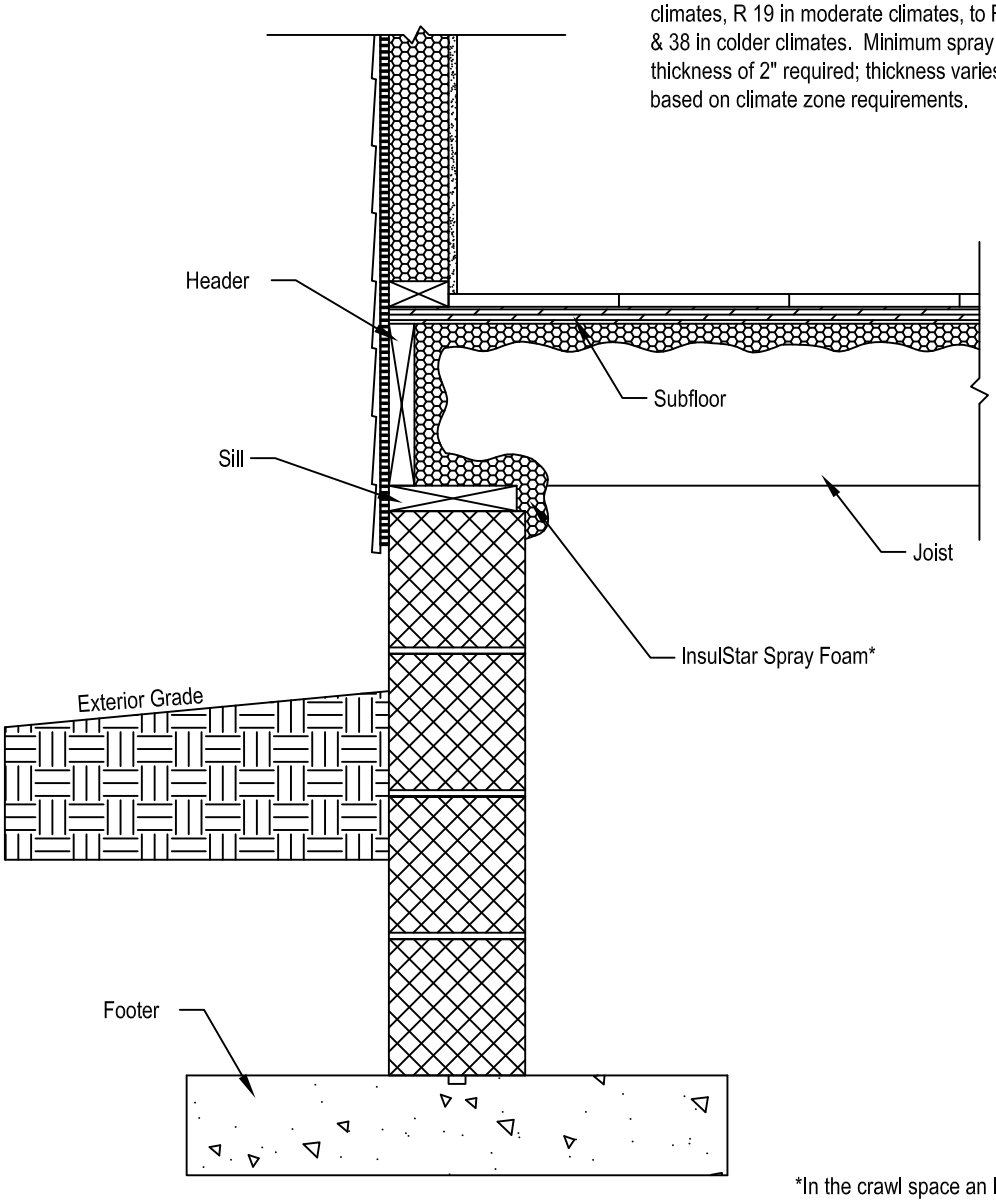
The minimum thickness of the InsulStar in the roof assembly should equal the R value required for condensation control for the climate zone based on the table in Chapter 8 of the current edition of the IRC.

INSULSTAR HIGH PERFORMANCE INSULATION	Unvented Attic with Air-Impermeable & Air-Permeable Insulation	Dwg. # 15
Attic Insulation	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	2-4-13 B.M.R.



INSULSTAR HIGH PERFORMANCE INSULATION	Insulated Unvented Crawl Space Wall	Dwg. # 6
Crawl Space	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	12-22-12 B.M.R.

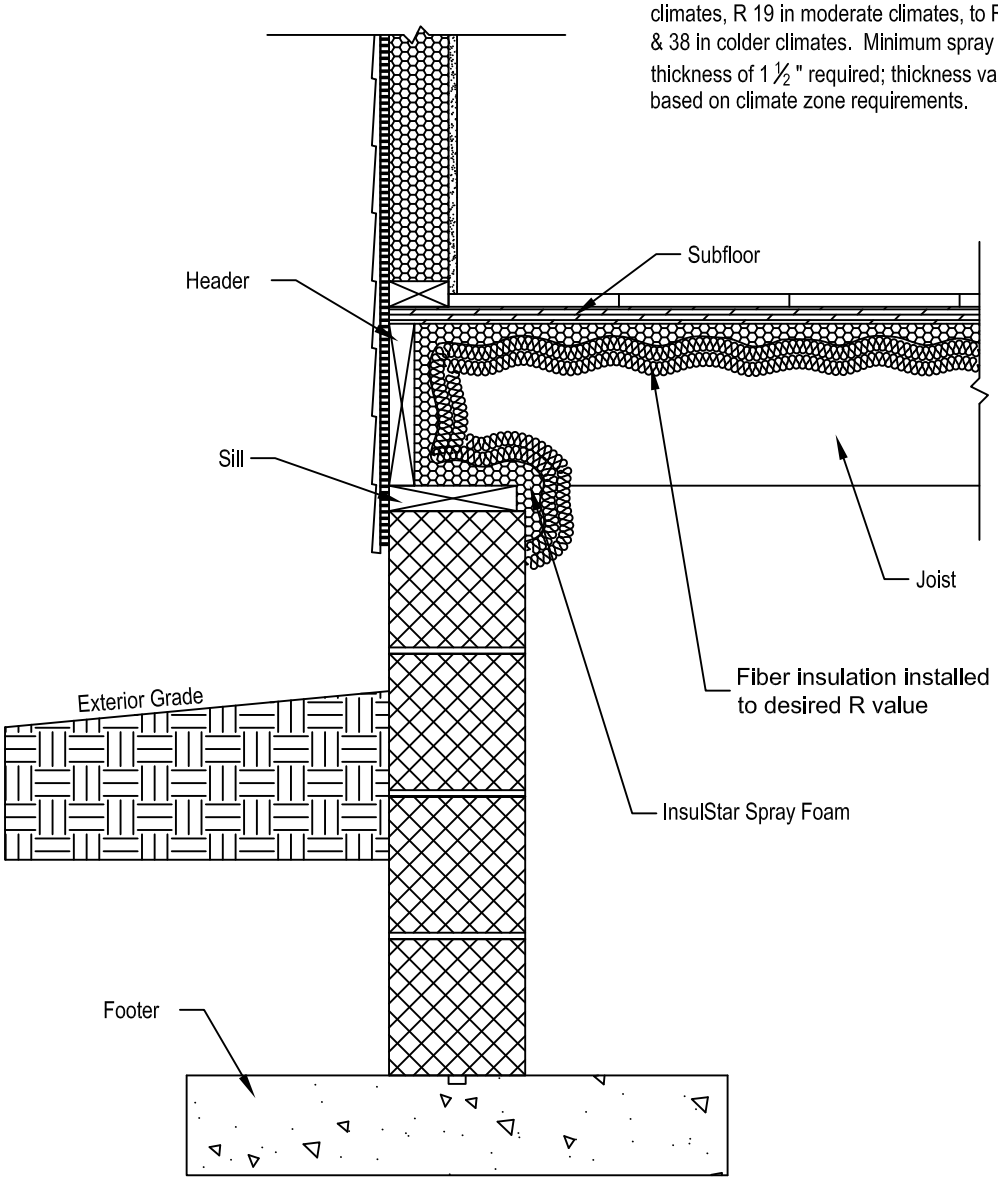
Floor joist R values range from R 13 in warm climates, R 19 in moderate climates, to R 30 & 38 in colder climates. Minimum spray foam thickness of 2" required; thickness varies based on climate zone requirements.



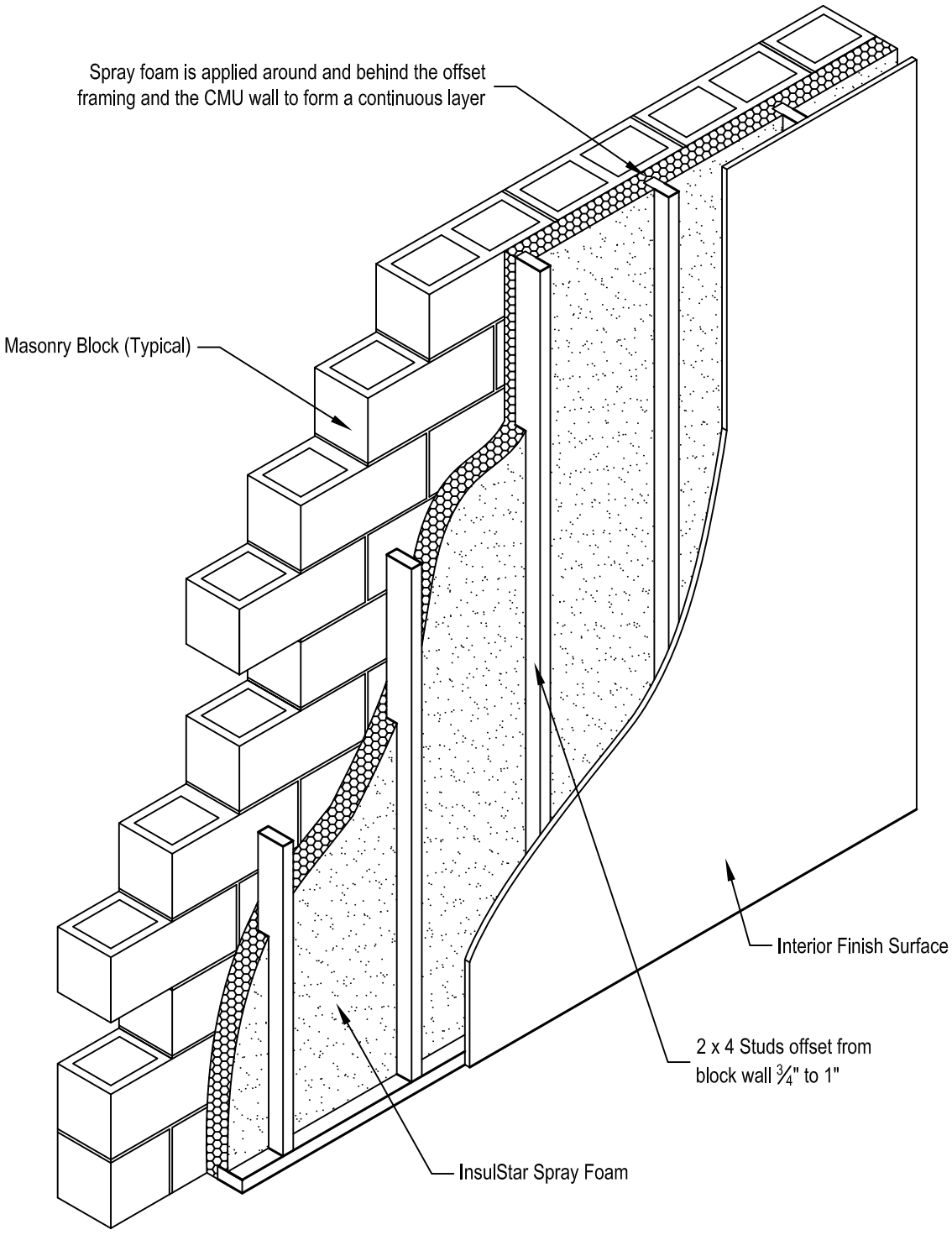
*In the crawl space an Ignition Barrier covering may be required over the foam surface. Contact NCFI for the current approvals.

InsulStar Vented Crawl Space	Vented Crawl Space	Dwg. # 18
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	6-25-12 B.M.R.

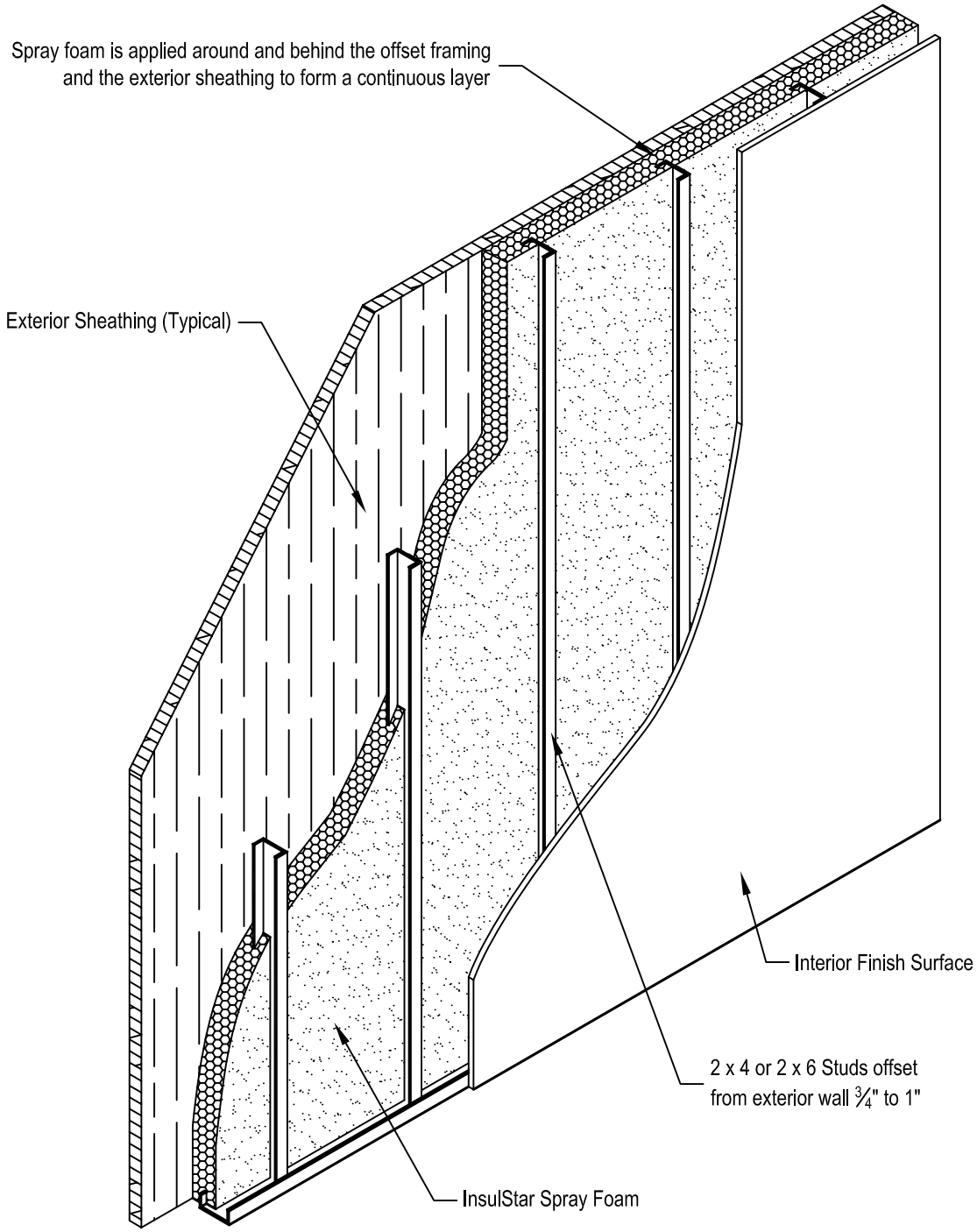
Floor joist R values range from R 13 in warm climates, R 19 in moderate climates, to R 30 & 38 in colder climates. Minimum spray foam thickness of 1 ½ " required; thickness varies based on climate zone requirements.



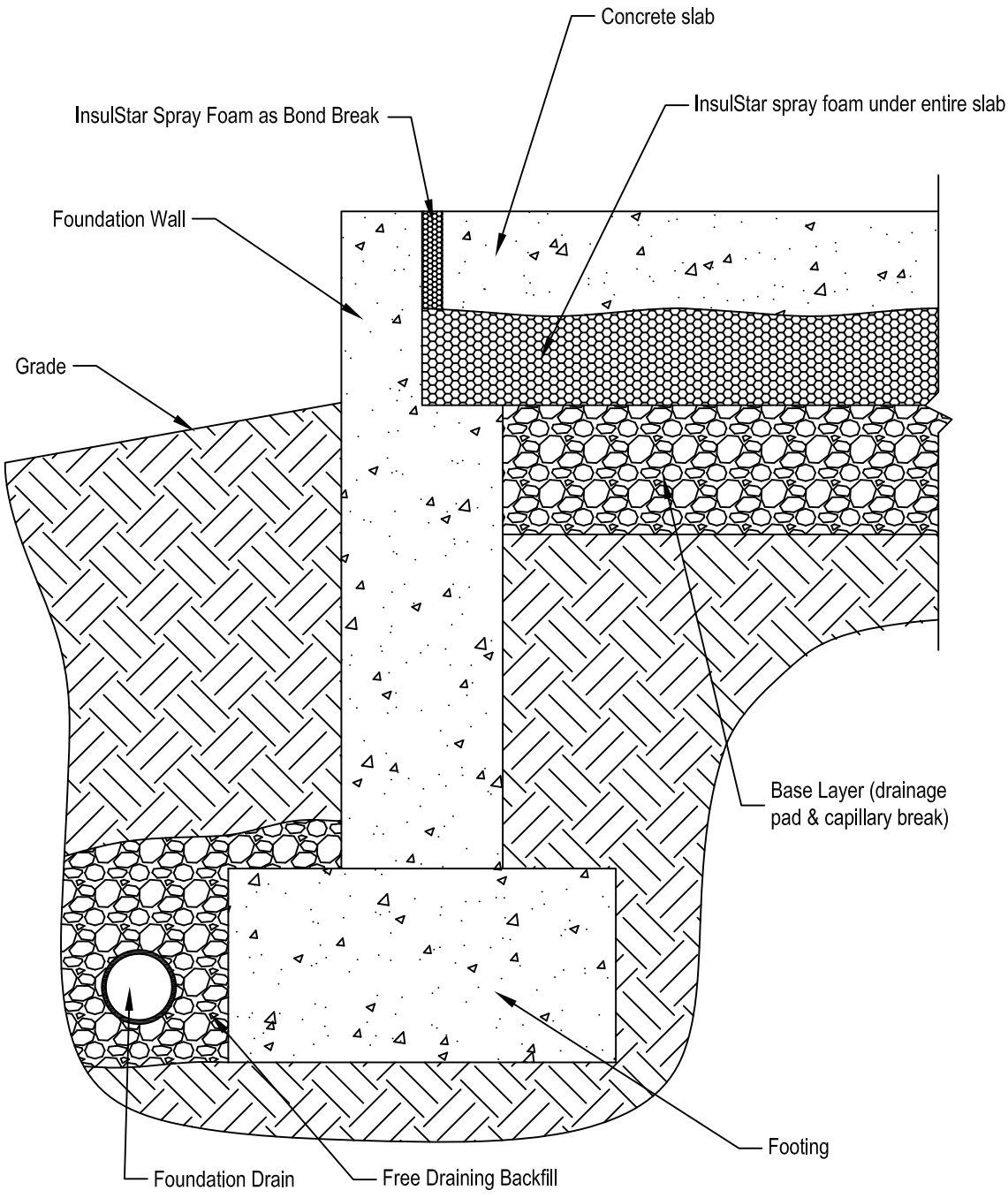
InsulStar Vented Crawl Space	Vented Crawl Space: Foam & Fiber Insulation Hybrid	Dwg. # 18A
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	6-28-12 B.M.R.



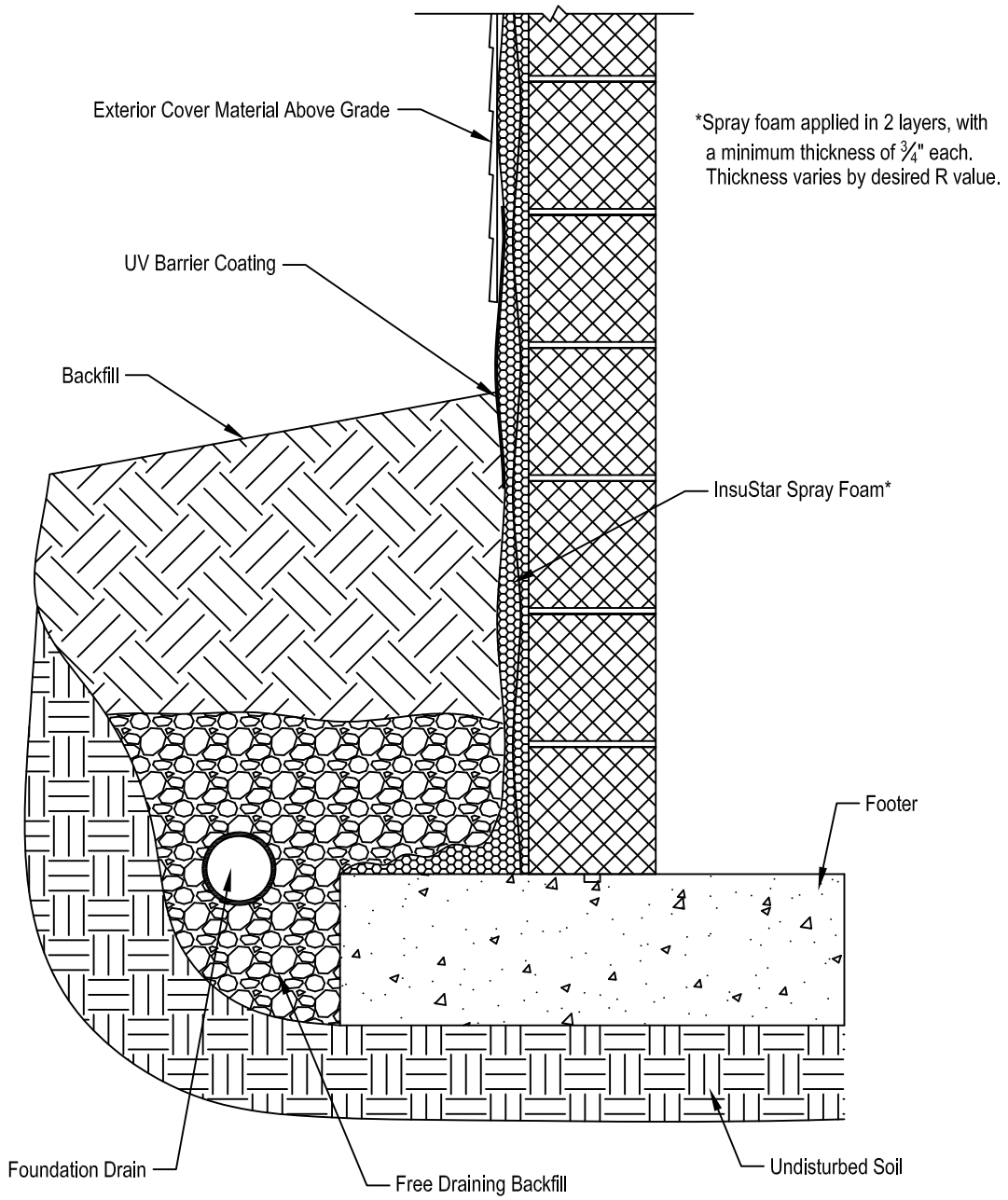
INSULSTAR HIGH PERFORMANCE INSULATION	Finished Basement Wall with Offset Studs	Dwg. # 11
Basement Insulation	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	1-26-13 B.M.R.



INSULSTAR HIGH PERFORMANCE INSULATION	Exterior Sheathing with Metal Studs (Typical)	Dwg. # 14
Wall Insulation	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	3-3-13 B.M.R.



INSULSTAR HIGH PERFORMANCE INSULATION	Concrete Slab On Grade	Dwg. # 12
Slab On Grade	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	1-21-13 B.M.R.



InsulStar Foundation Wall Exterior	Foundation Wall Exterior	Dwg. # 19
	These details are intended for use by design professionals and users of NCFI products and systems to assist in developing project specific details. They should be modified where necessary to accommodate specific project conditions. Final details and specifications must be approved by a licensed professional.	7-9-12 B.M.R.

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