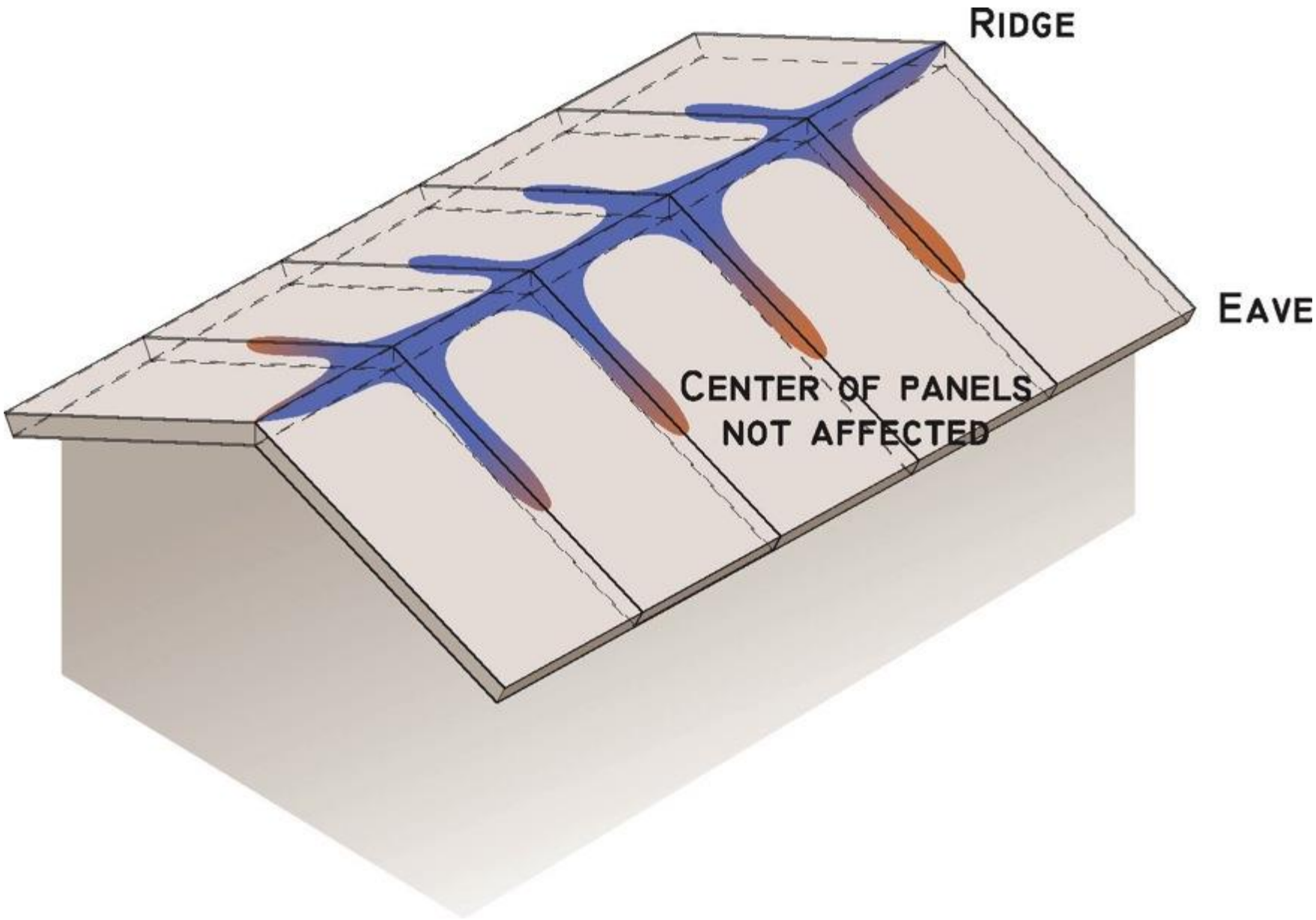
Joseph Lstiburek, Ph.D., P.Eng, ASHRAE Fellow

Building Science

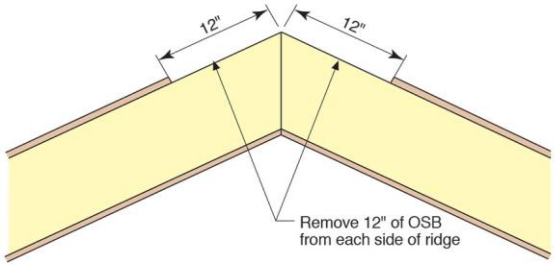
Roofs

presented by www.buildingscience.com

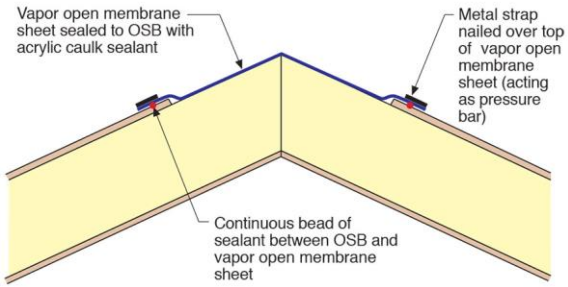

8/22/01 09:32


RIDGE
EAVE
CENTER OF PANELS
NOT AFFECTED

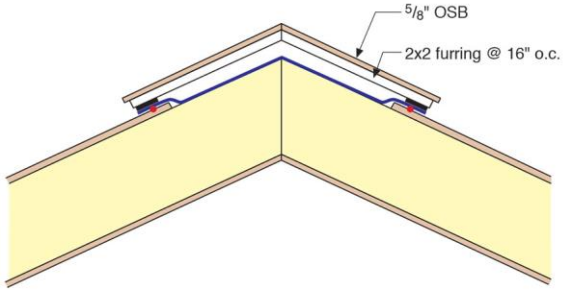
Step 1
- Remove strip of OSB from each side of ridge



Step 2
- Create air seal with strip of vapor open membrane (tape seams)
- Vapor open membrane sheet sealed to OSB with acrylic caulk sealant
- Hold vapor open membrane sheet in place with metal strapping



Step 3
- Construct wood ridge vent with 2x2 furring



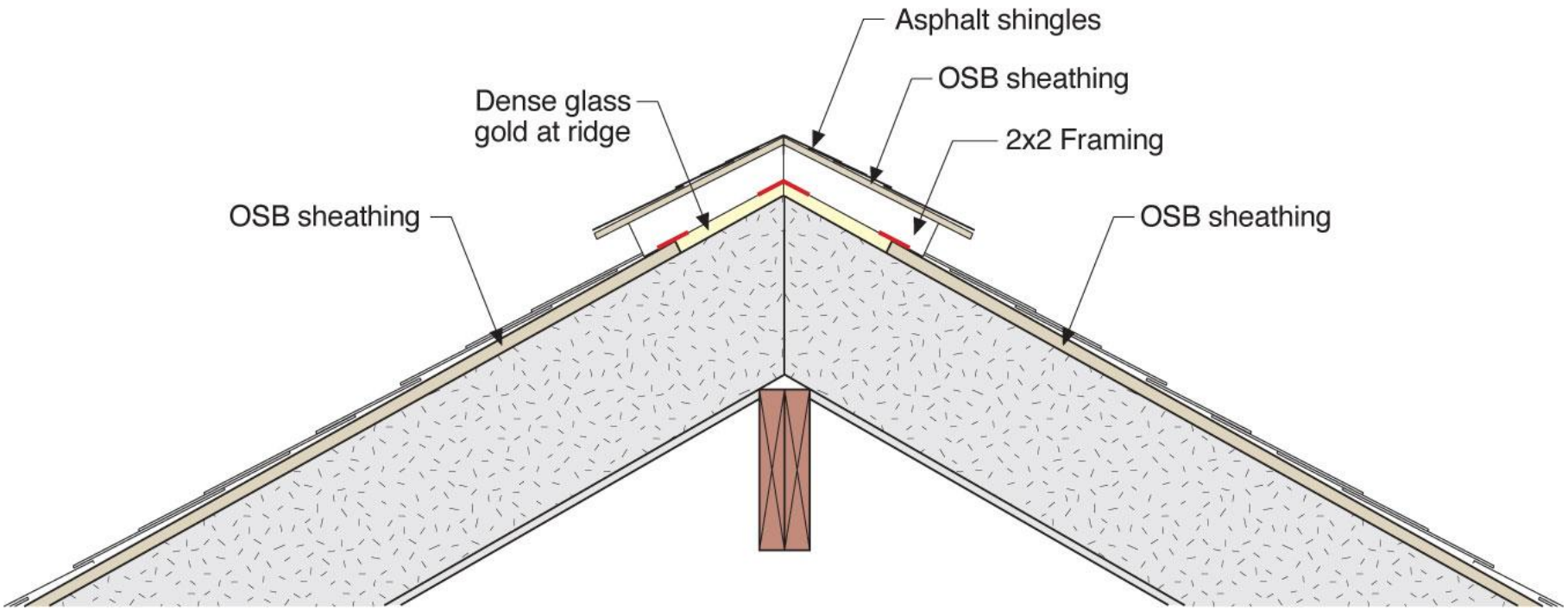

GRACE
Ice & Water Shield
Tyvek
Attic Wrap

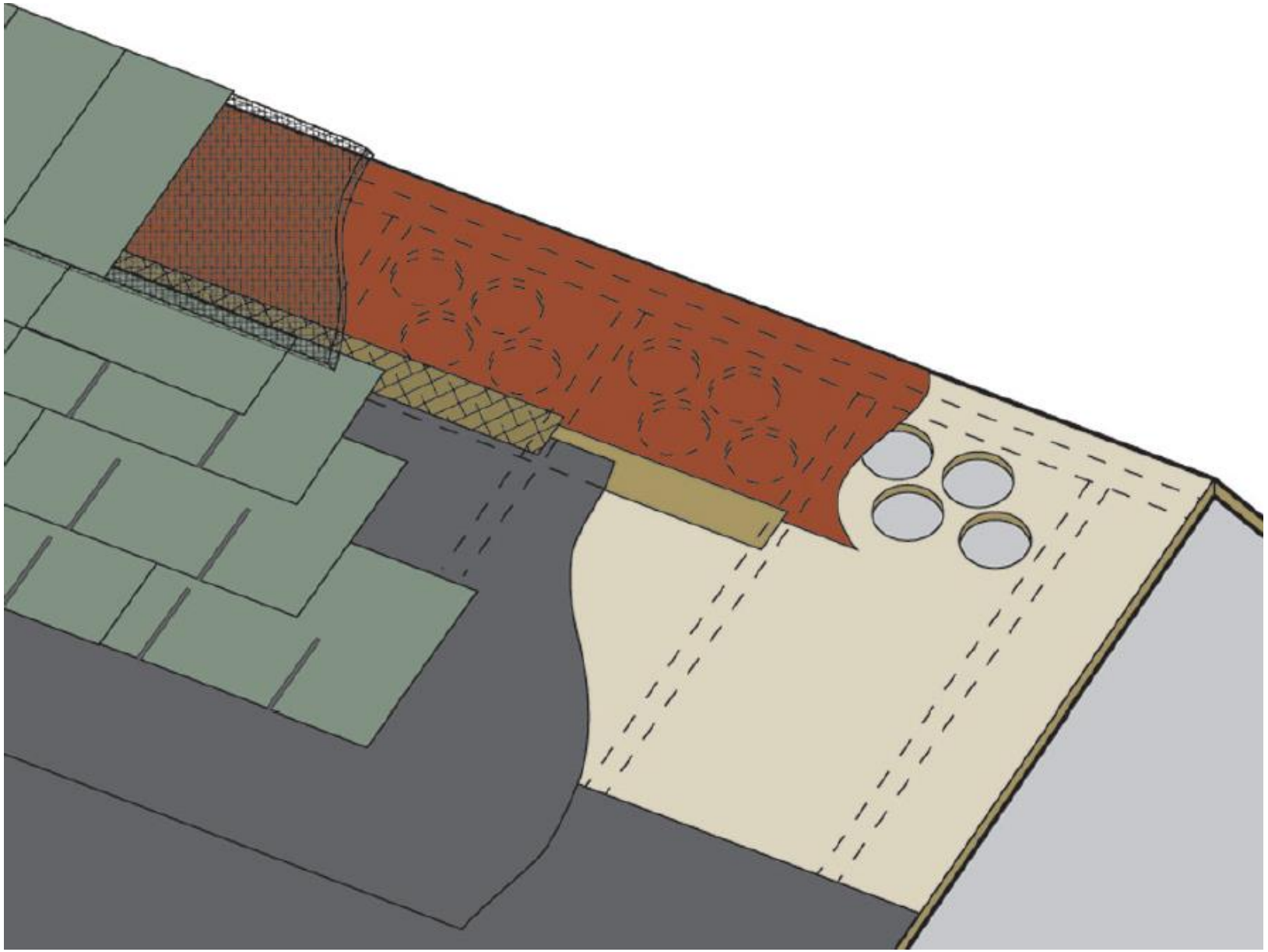

Tyvek
AtticWrap

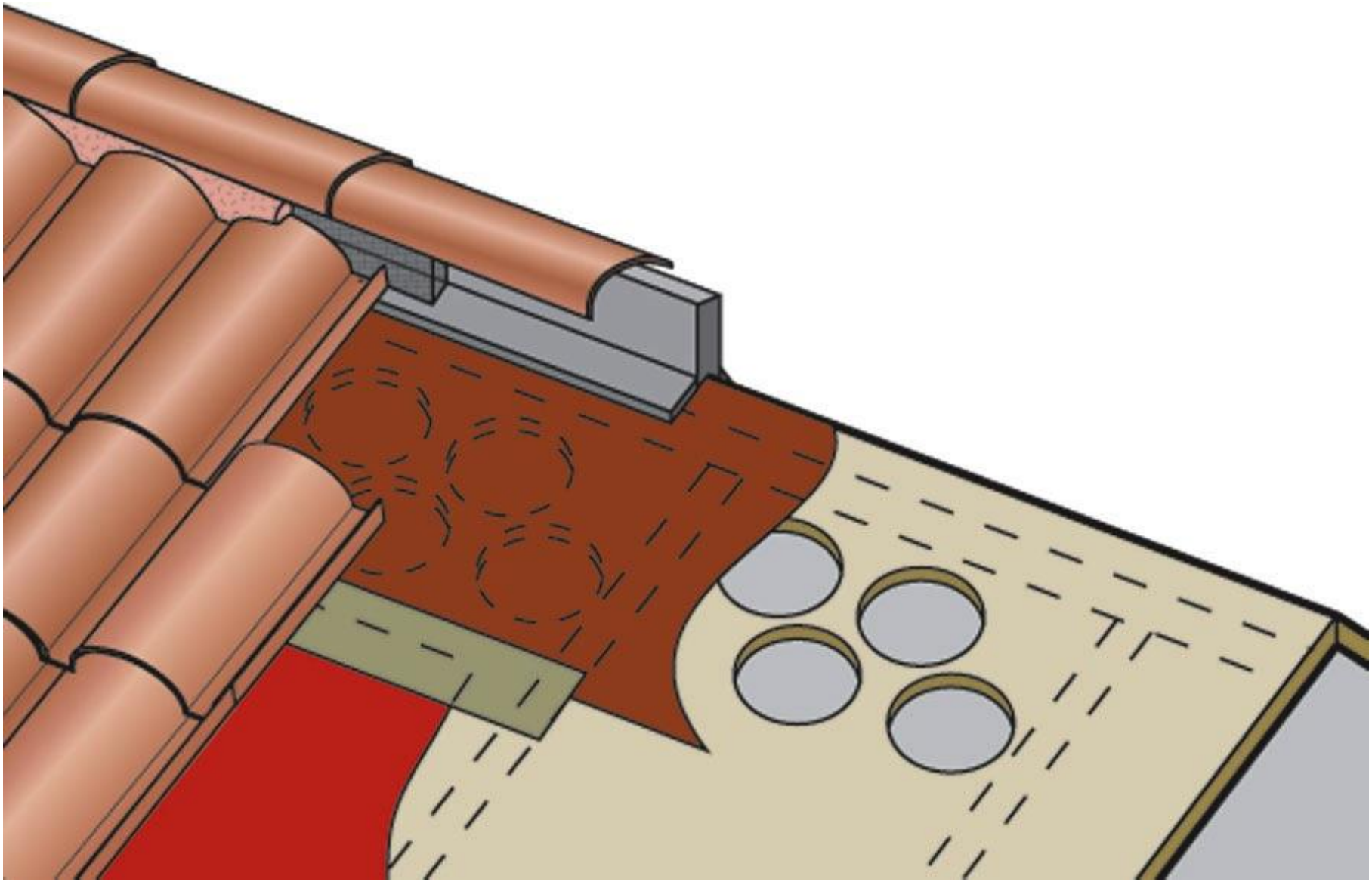

GAF
VEK

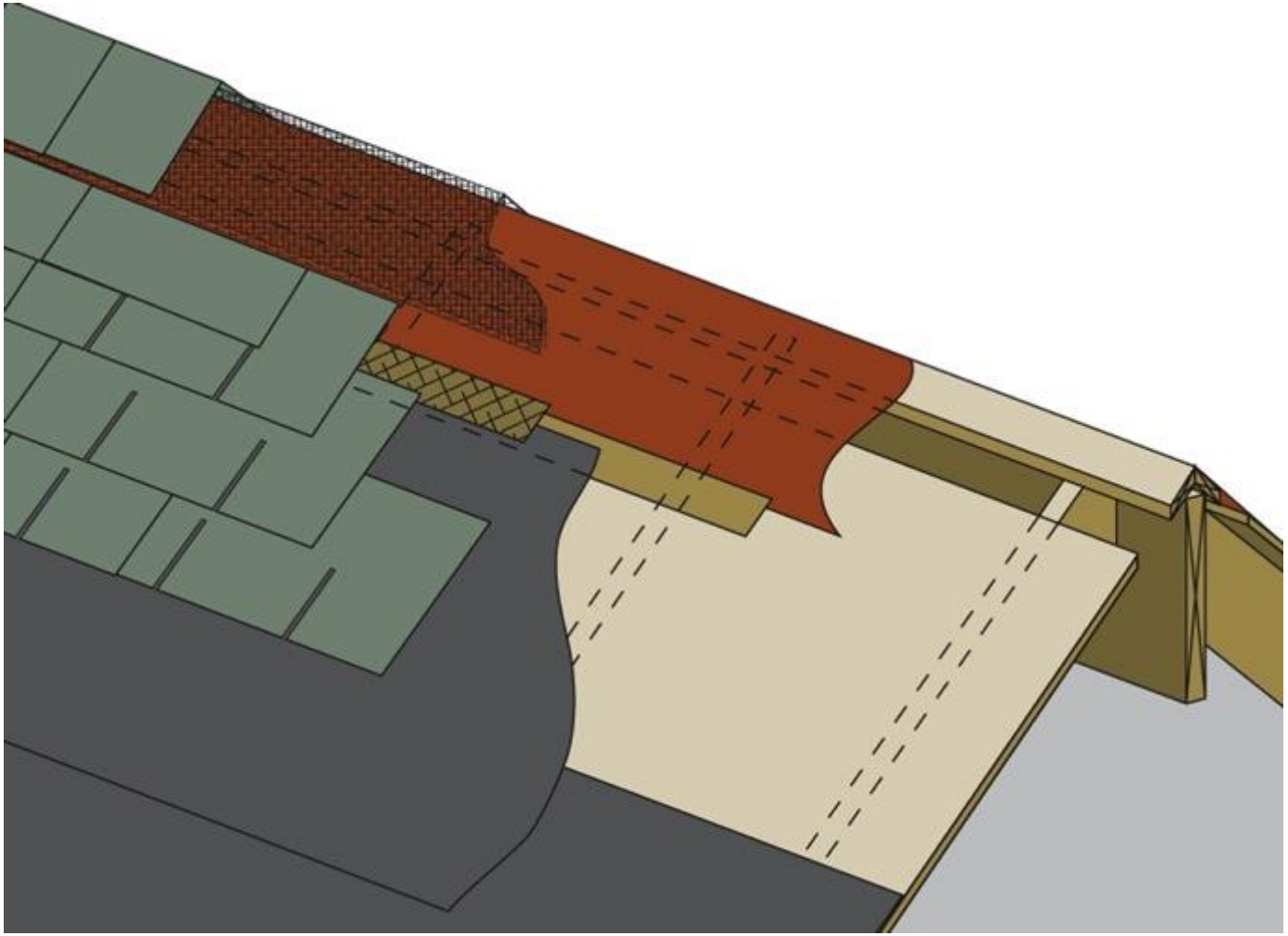

GRACE
Ice & Water Shield®

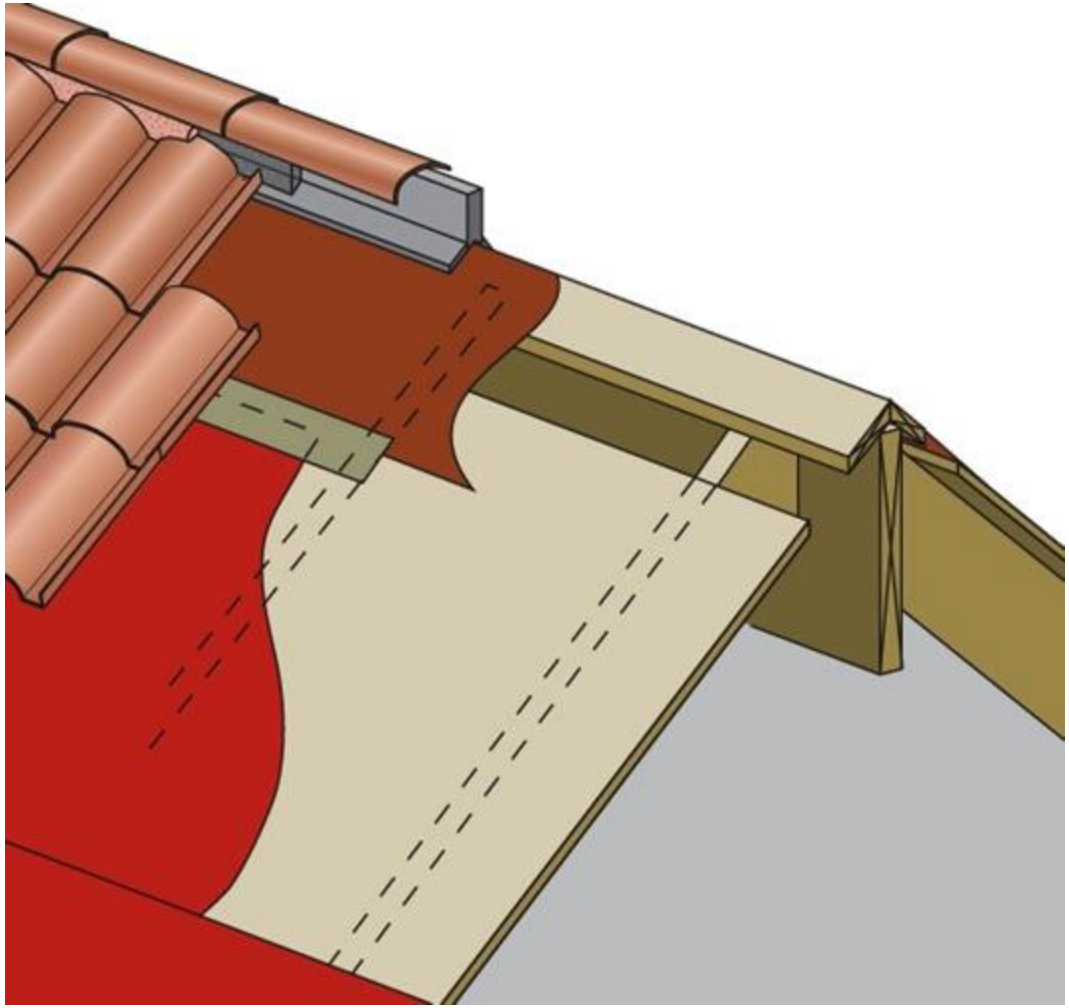

JUL 9 2006


Asphalt shingles
OSB sheathing
Dense glass
gold at ridge
2x2 Framing
OSB sheathing
OSB sheathing










2013


3M
All Weather Flashing Tape 8067
Styrofoam
dow


DELTA
DELTA
DELTA


PROPINK
High Performance
Attic System
OWENS CORNING
R-30

Sweating Ducts

Sweating Ducts

Light Colored Roofs

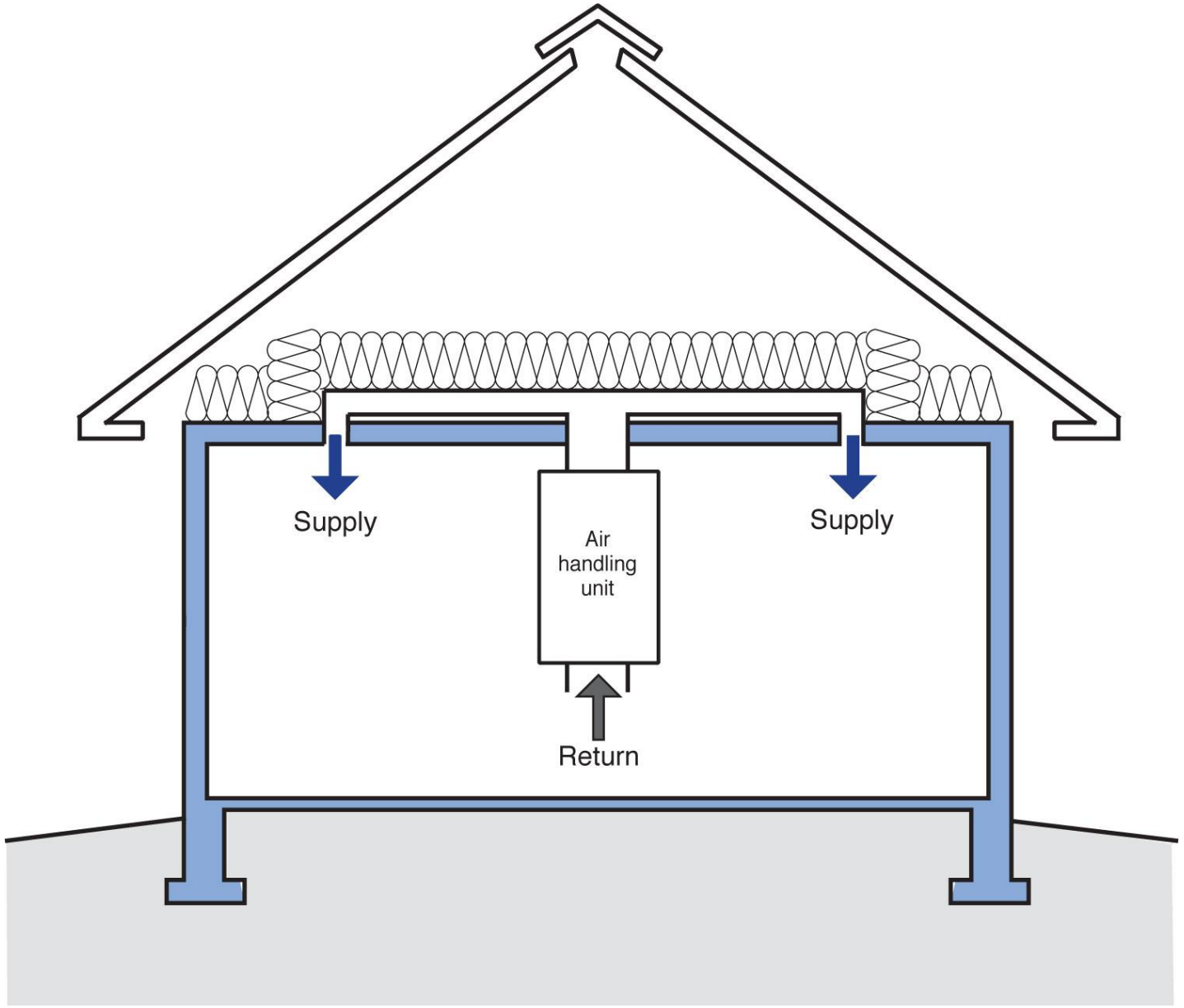
Cool Roofs

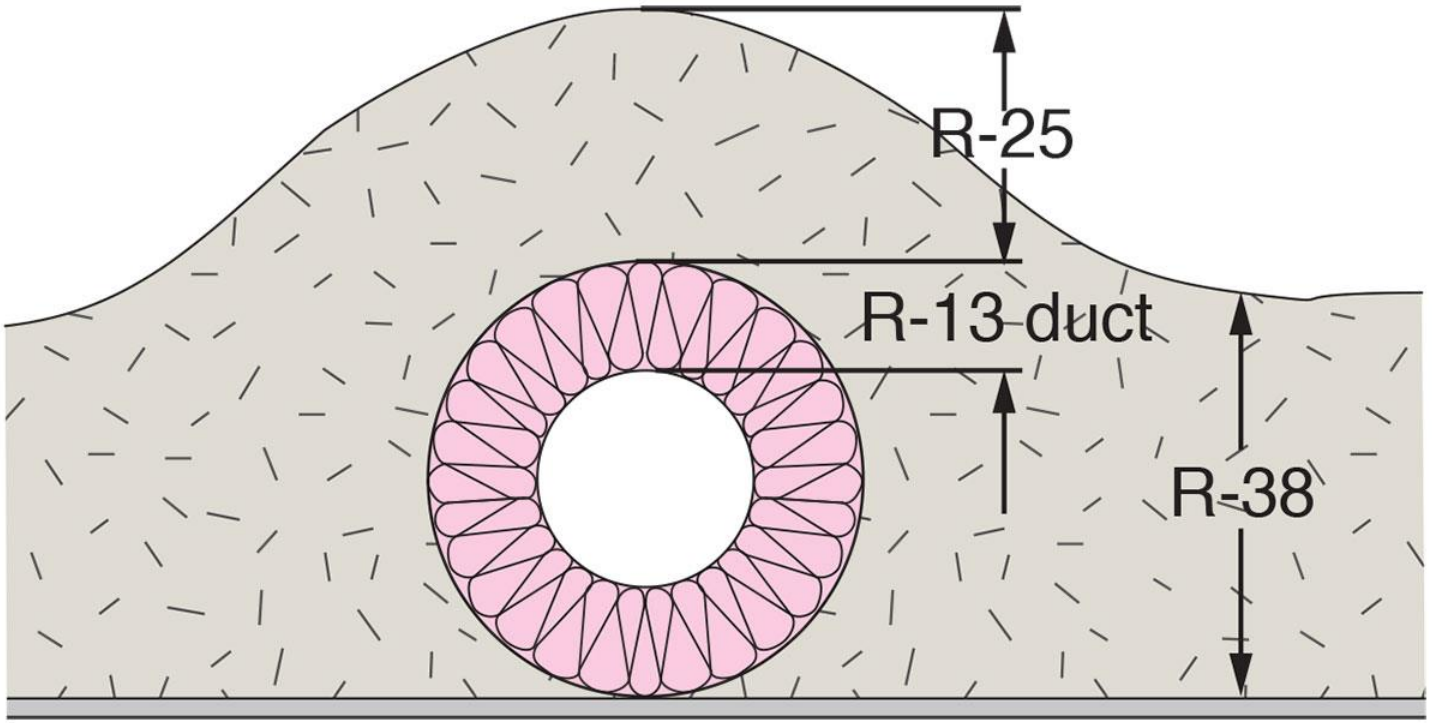
Radiant Barriers

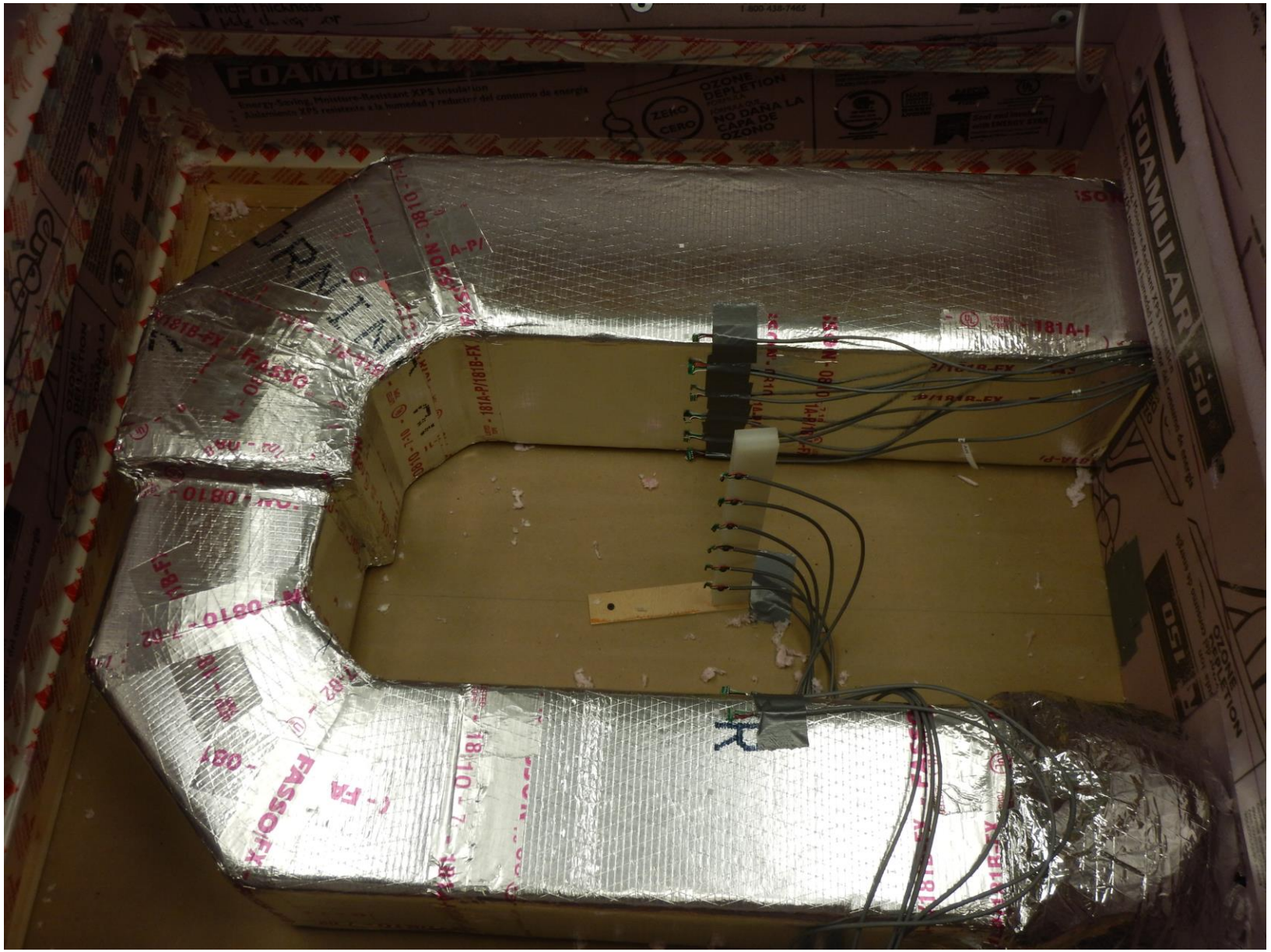
ACCA Manual J, S and D

Ductwork Attic Dehumidification System

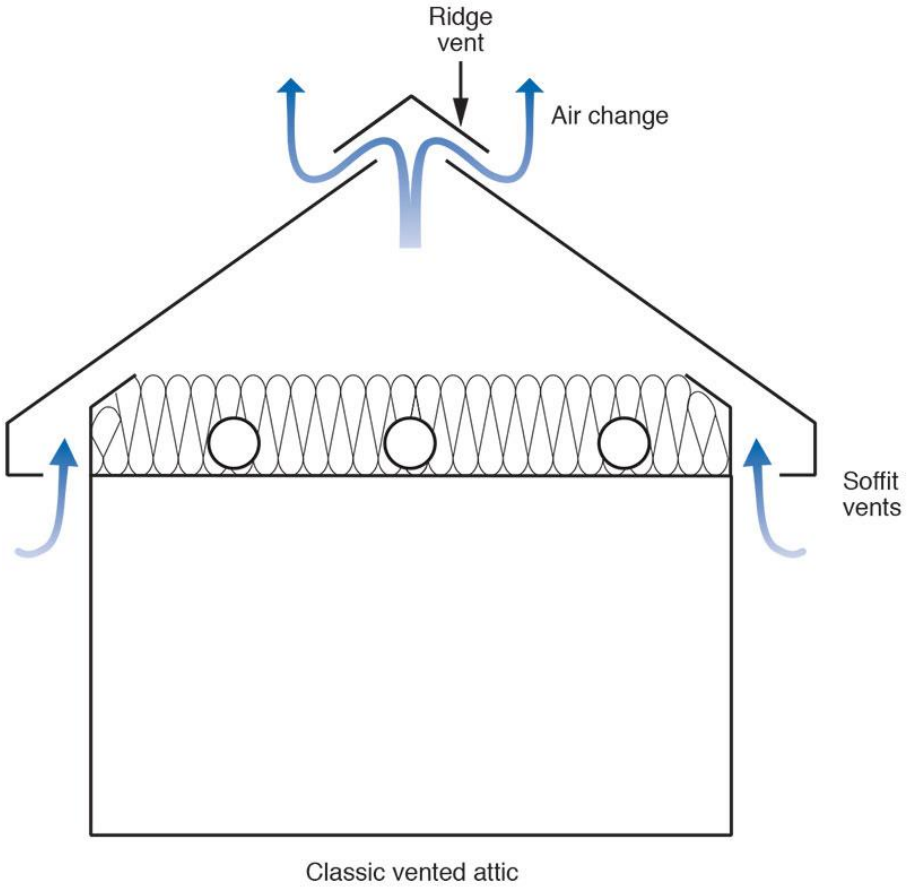
Burying Ducts


Supply
Air handling unit
Supply
Return

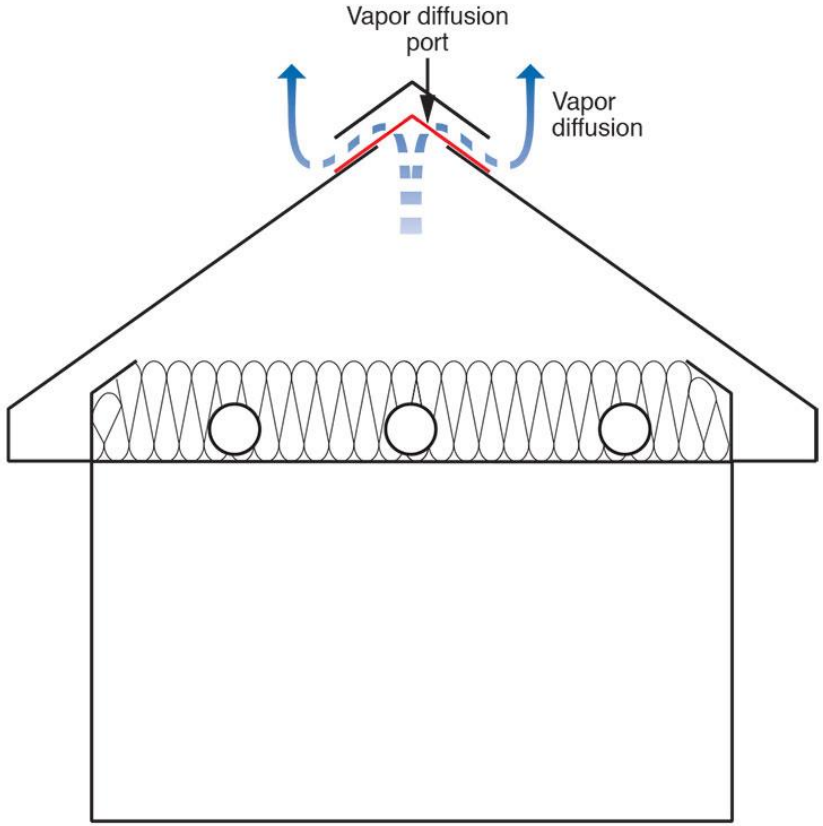

R-25
R-13 duct
R-38


FOAMULAR
ZERO ZERO
OZONE DEPLETION
NO DAÑA LA CAPA DE OZONO


R-5.0
1 inch thick
CERO
CAPA DE OZONO
OWENS CORNING
FOAMULAR 150

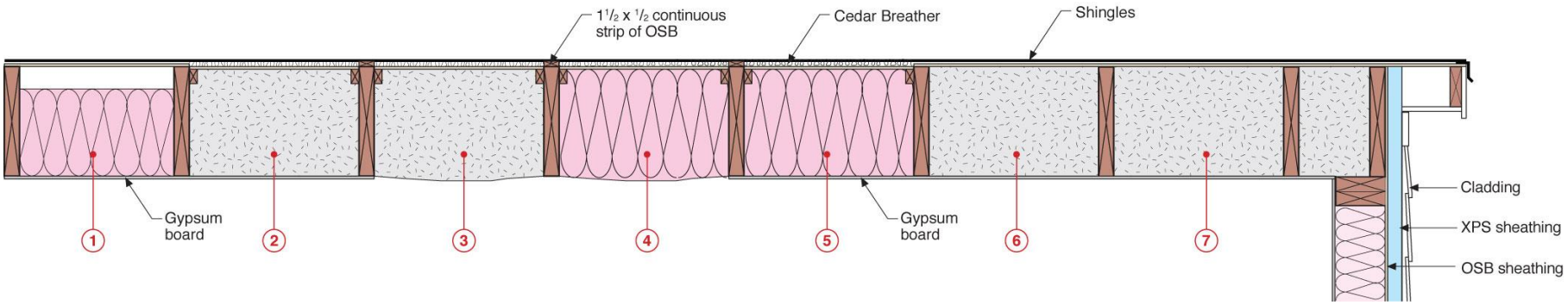


Classic vented attic



Unvented attic with vapor diffusion port

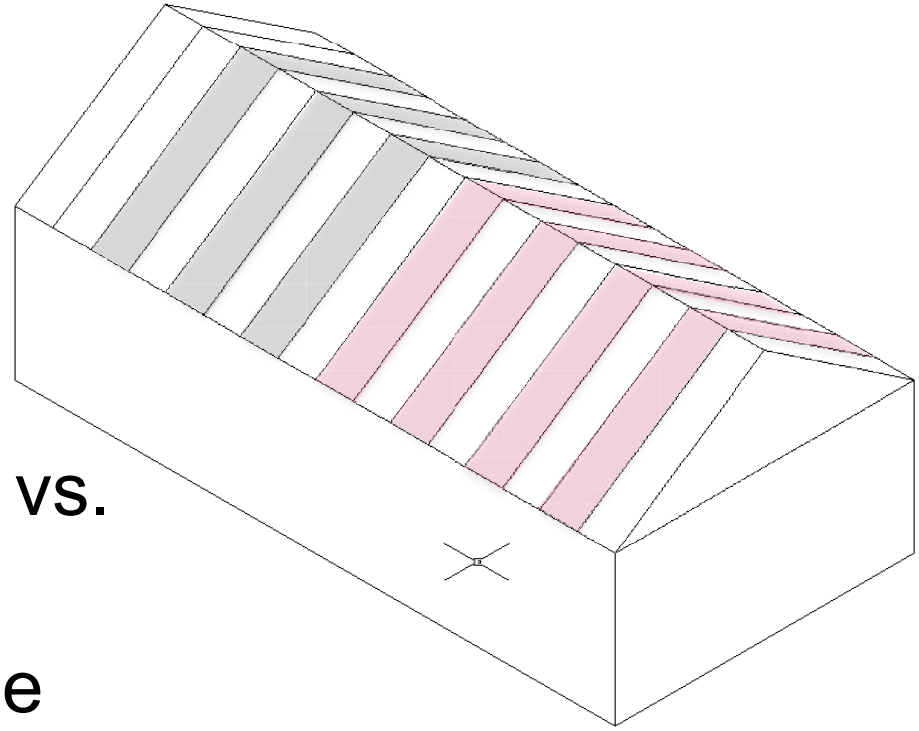
Cold Climates


1½ x ½ continuous strip of OSB
Cedar Breather
Shingles
Gypsum board
Gypsum board
Cladding
XPS sheathing
OSB sheathing
1
2
3
4
5
6
7


FlexWrap NF
Weatherma
DOW


AVAILABLE


PROPINK
R-30
OWENS CORNING



- Diffusion vent at ridge vs. no diffusion vent
- Fiberglass vs. cellulose
- Vapor retarder: variable perm vs. fixed perm
- “Control” comparison R806.4 spray foam + fibrous

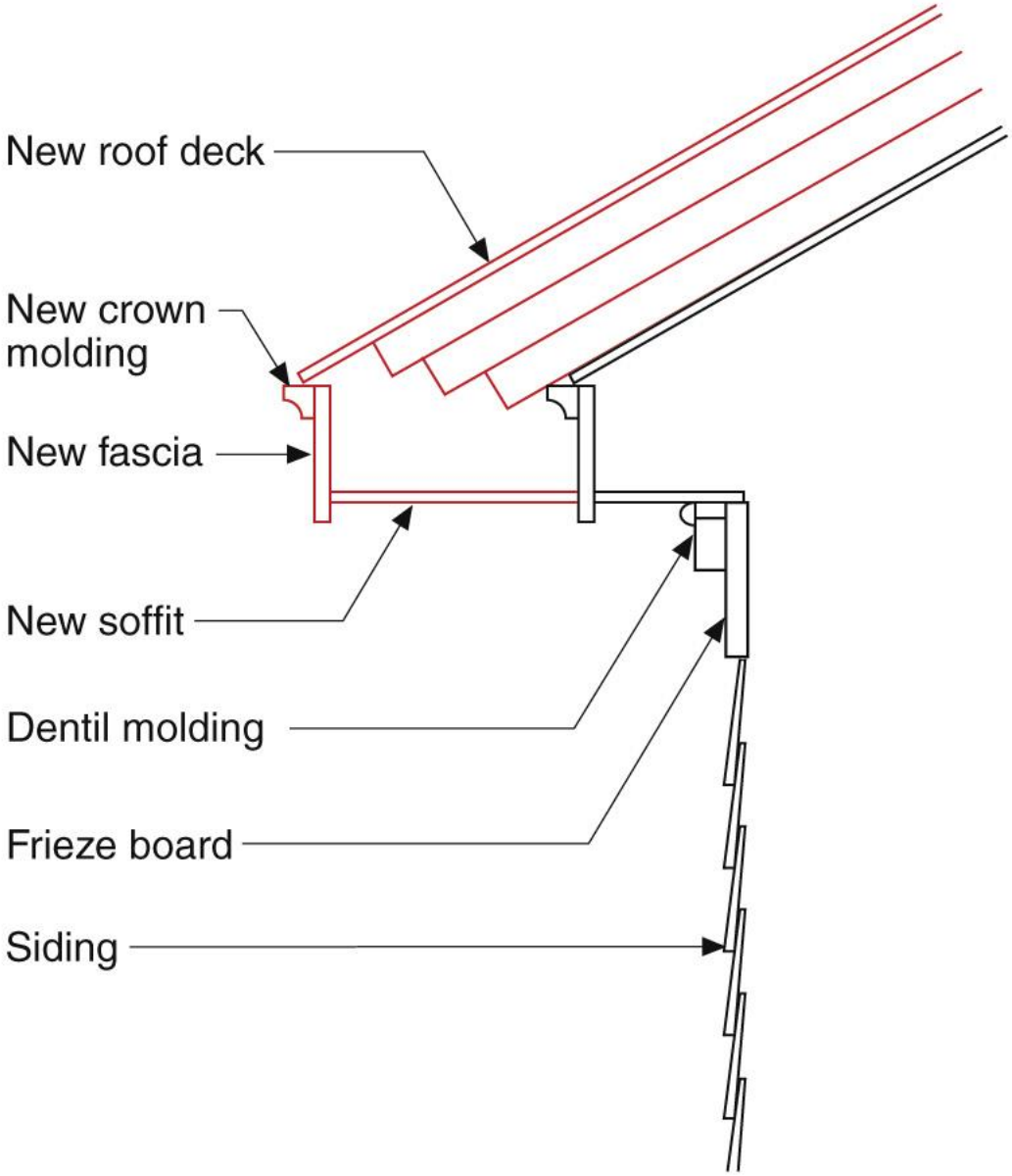

R-30
PROPINK
R-30
R-30
R-30

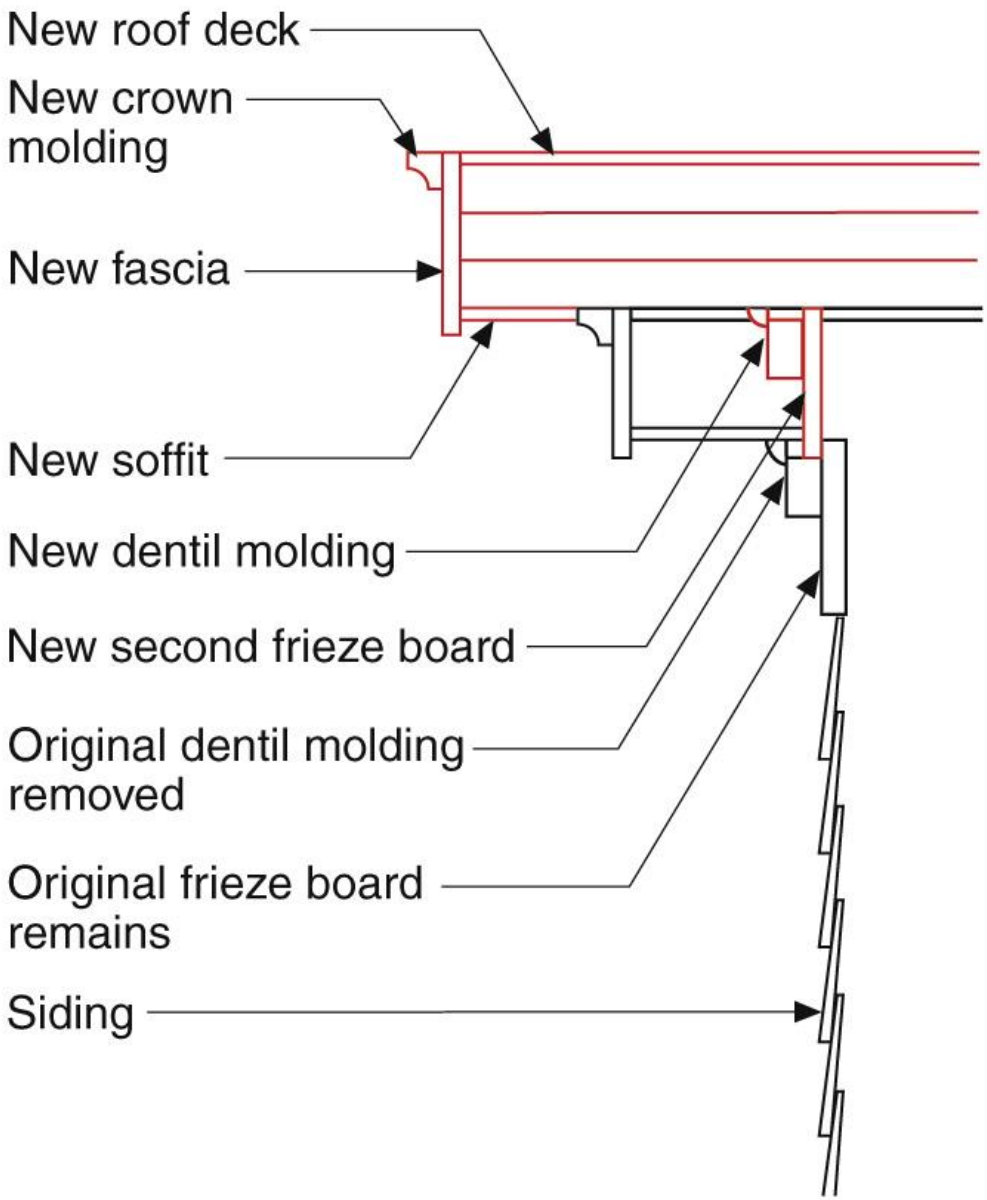
Code Change

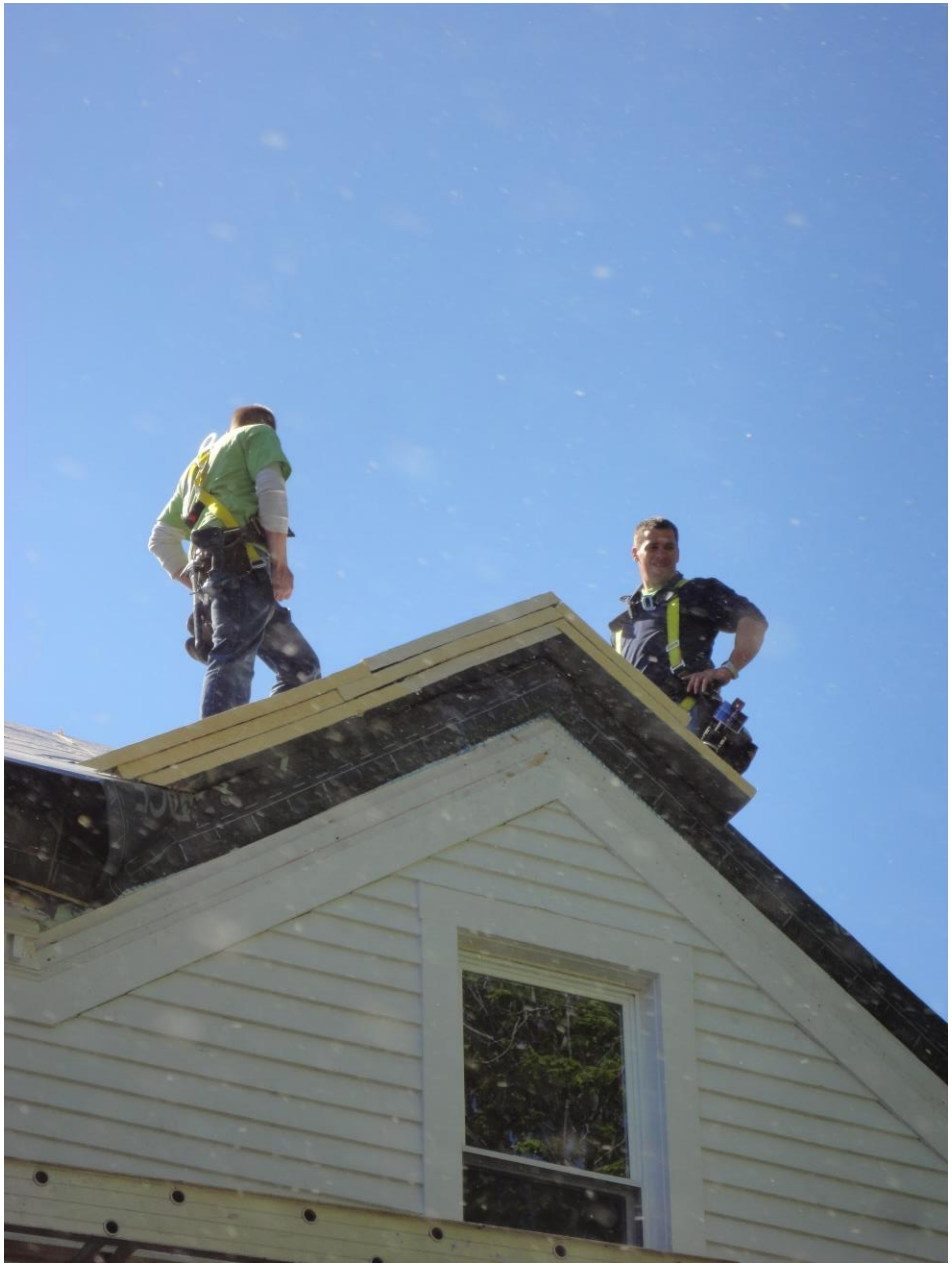
R806.5 Unvented attic and unvented attic enclosed rafter assemblies.

- vapor diffusion port
- port area 1:600 of the ceiling area
- vapor permeance greater than 20 perms
- roof slope greater than 3:12
- air supply 50 cfm/1000 ft2 ceiling area
- insulation installed directly under the roof deck
- Climate Zones 1, 2 and 3

Vapor Diffusion Port: A passageway for conveying water vapor from an unvented attic to the atmosphere.

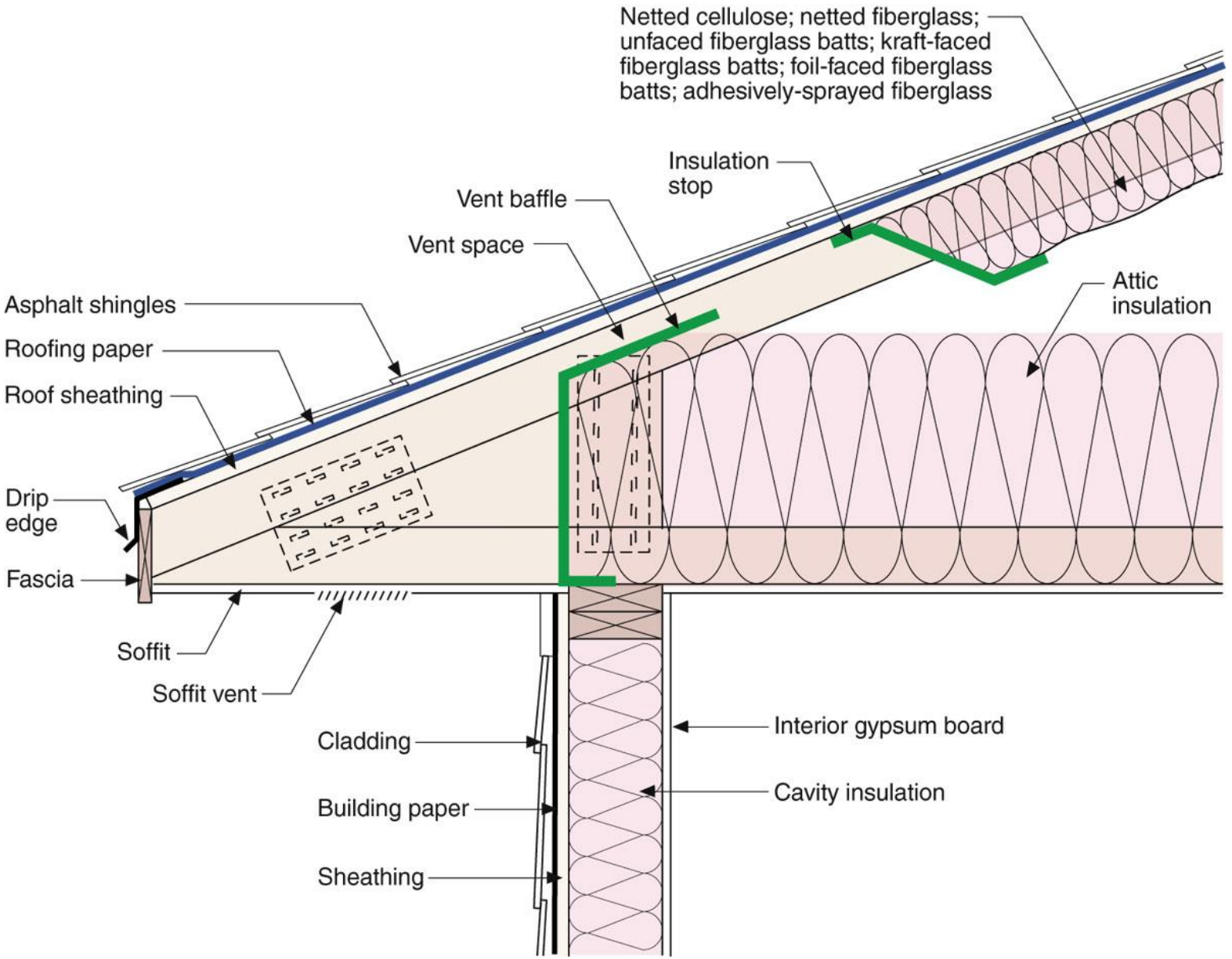

New roof deck
New crown molding
New fascia
New soffit
Dentil molding
Frieze board
Siding

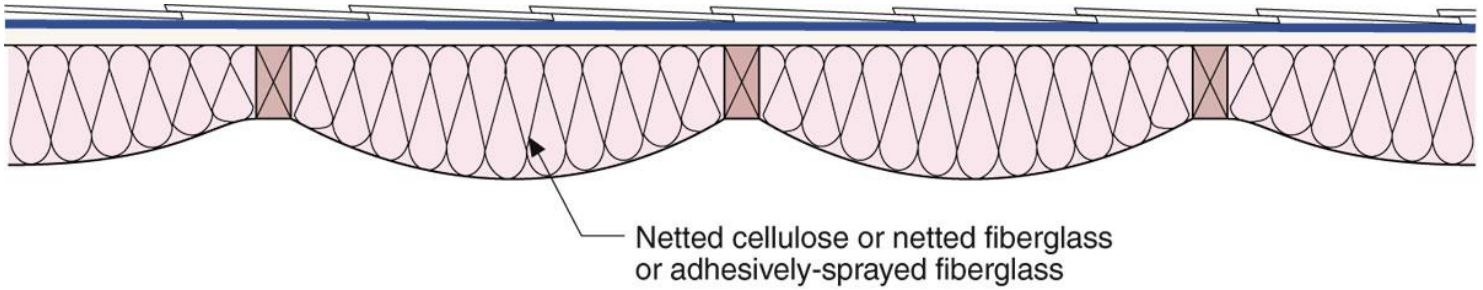

New roof deck
New crown molding
New fascia
New soffit
New dentil molding
New second frieze board
Original dentil molding removed
Original frieze board remains
Siding

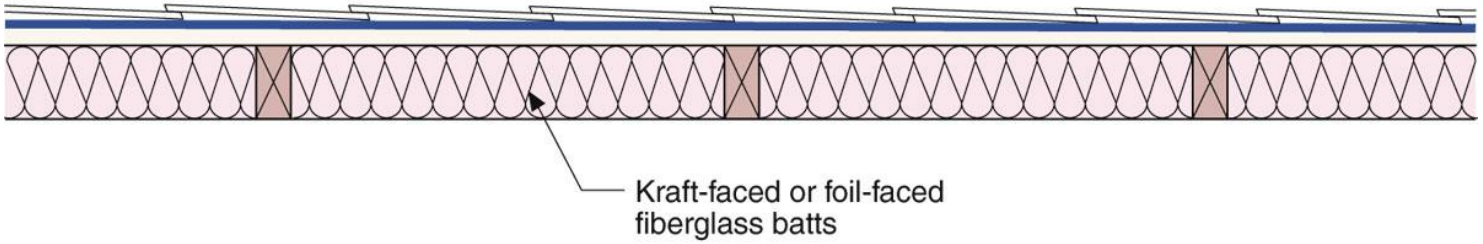


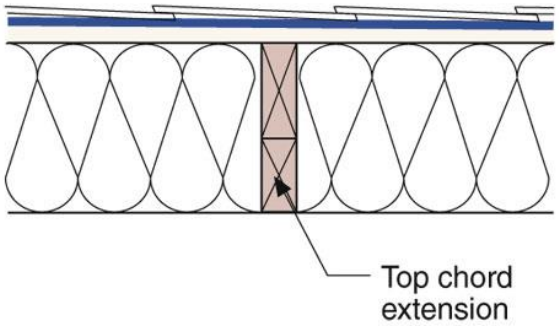

DOW
BRAND

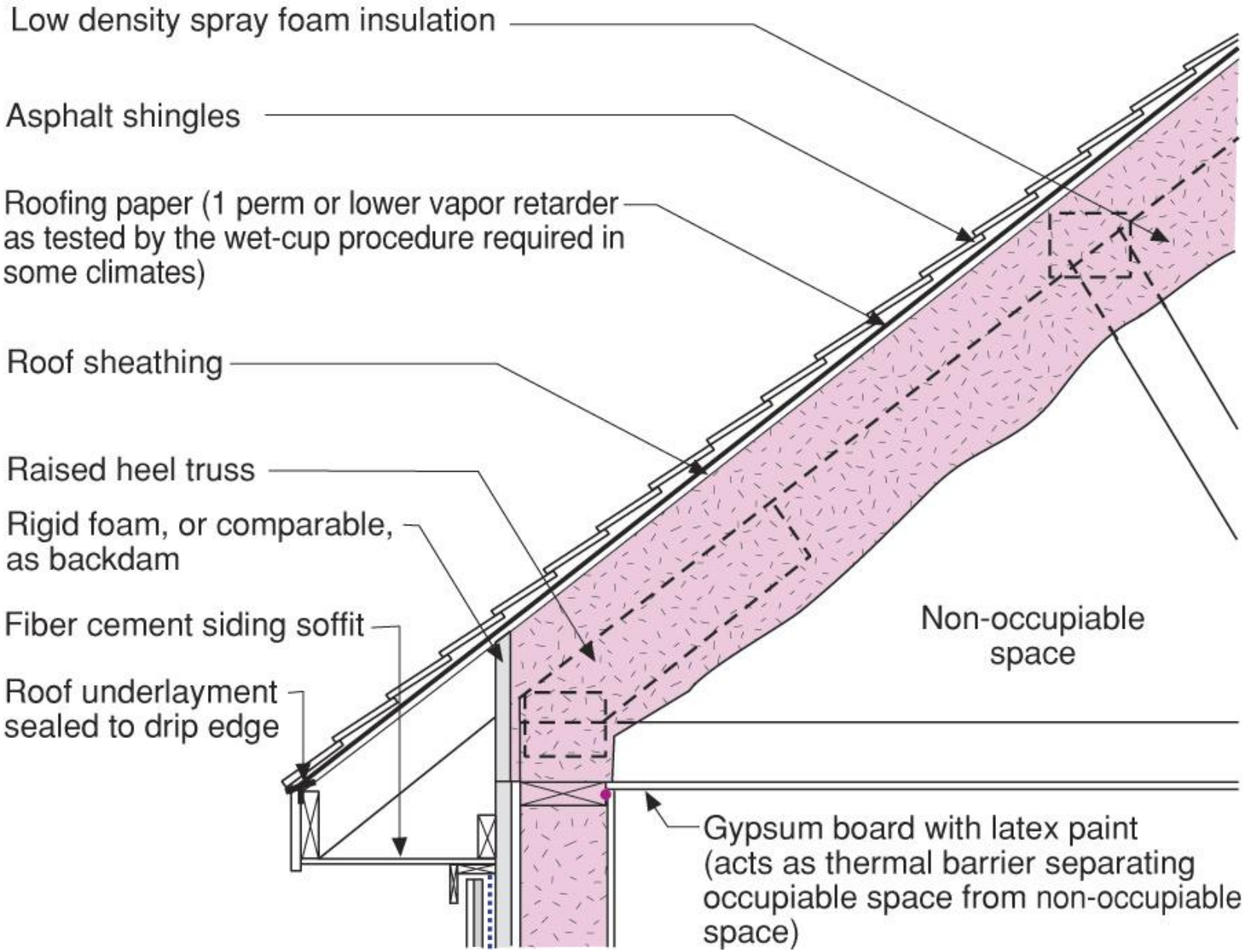
California

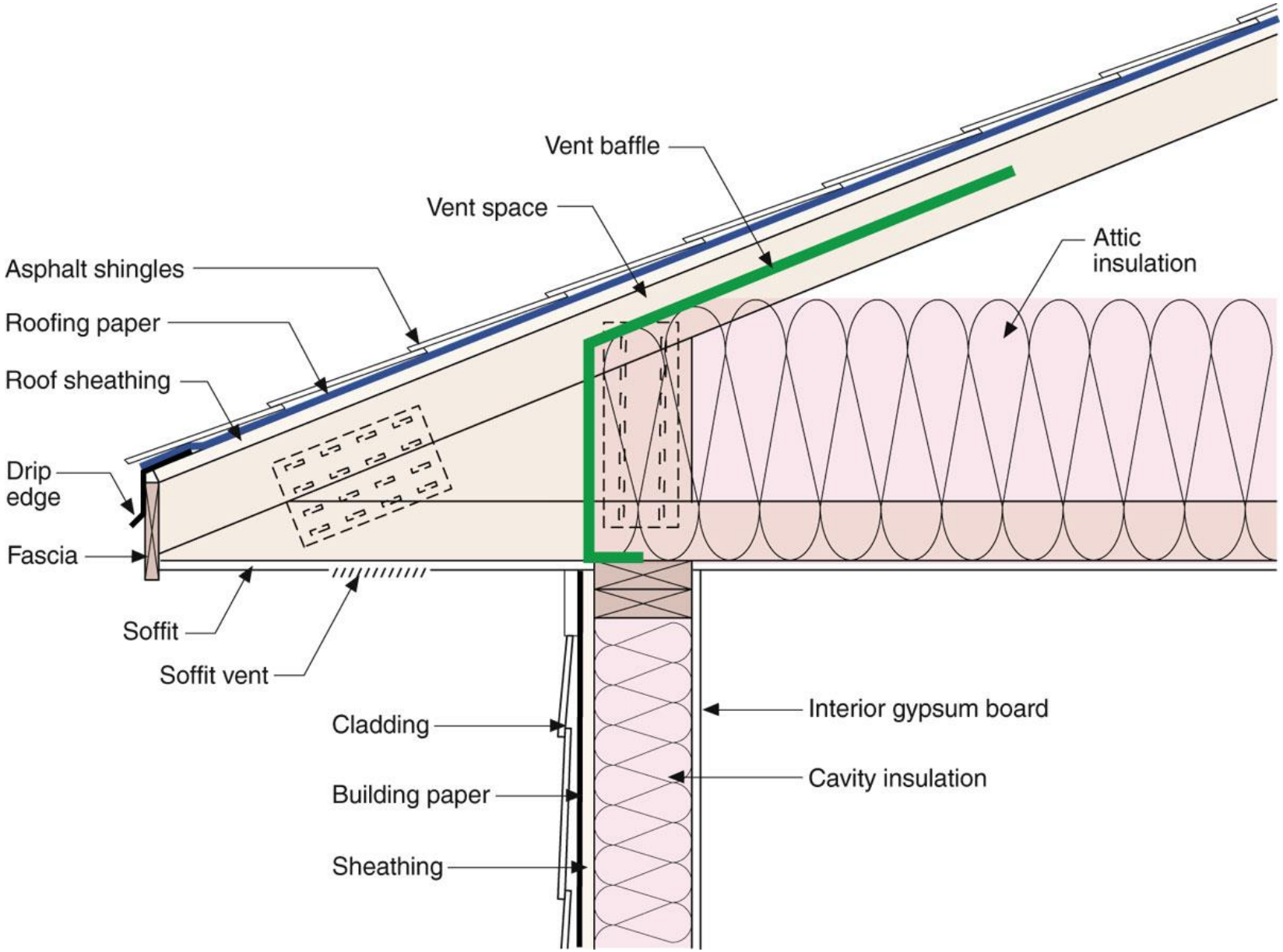

Netted cellulose; netted fiberglass; unfaced fiberglass batts; kraft-faced fiberglass batts; foil-faced fiberglass batts; adhesively-sprayed fiberglass
Insulation stop
Vent baffle
Vent space
Attic insulation
Asphalt shingles
Roofing paper
Roof sheathing
Drip edge
Fascia
Soffit
Soffit vent
Cladding
Building paper
Sheathing
Interior gypsum board
Cavity insulation


Netted cellulose or netted fiberglass
or adhesively-sprayed fiberglass


Kraft-faced or foil-faced
fiberglass batts


Top chord
extension


Low density spray foam insulation
Asphalt shingles
Roofing paper (1 perm or lower vapor retarder as tested by the wet-cup procedure required in some climates)
Roof sheathing
Raised heel truss
Rigid foam, or comparable, as backdam
Fiber cement siding soffit
Roof underlayment sealed to drip edge
Non-occupiable space
Gypsum board with latex paint (acts as thermal barrier separating occupiable space from non-occupiable space)


Vent baffle
Vent space
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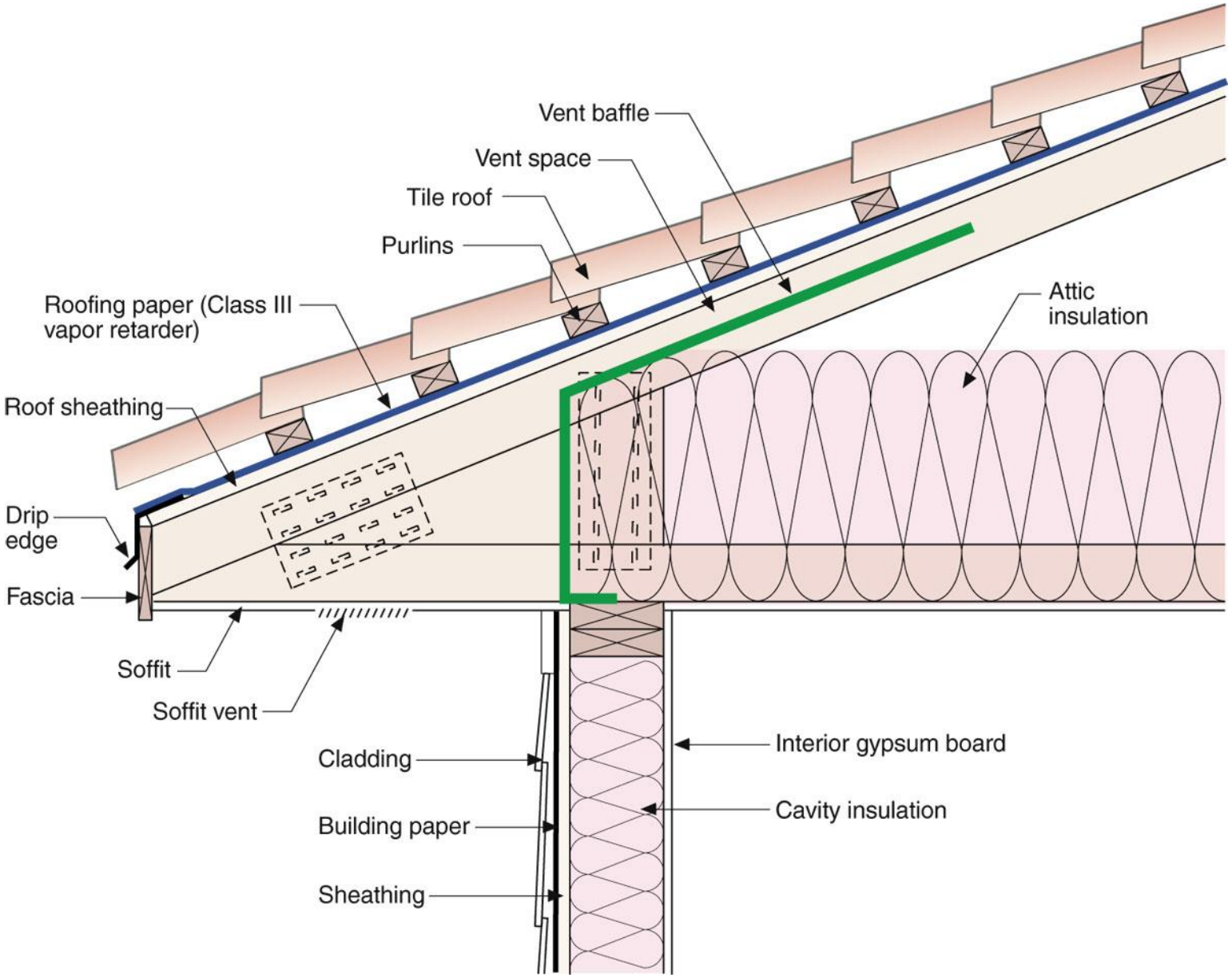
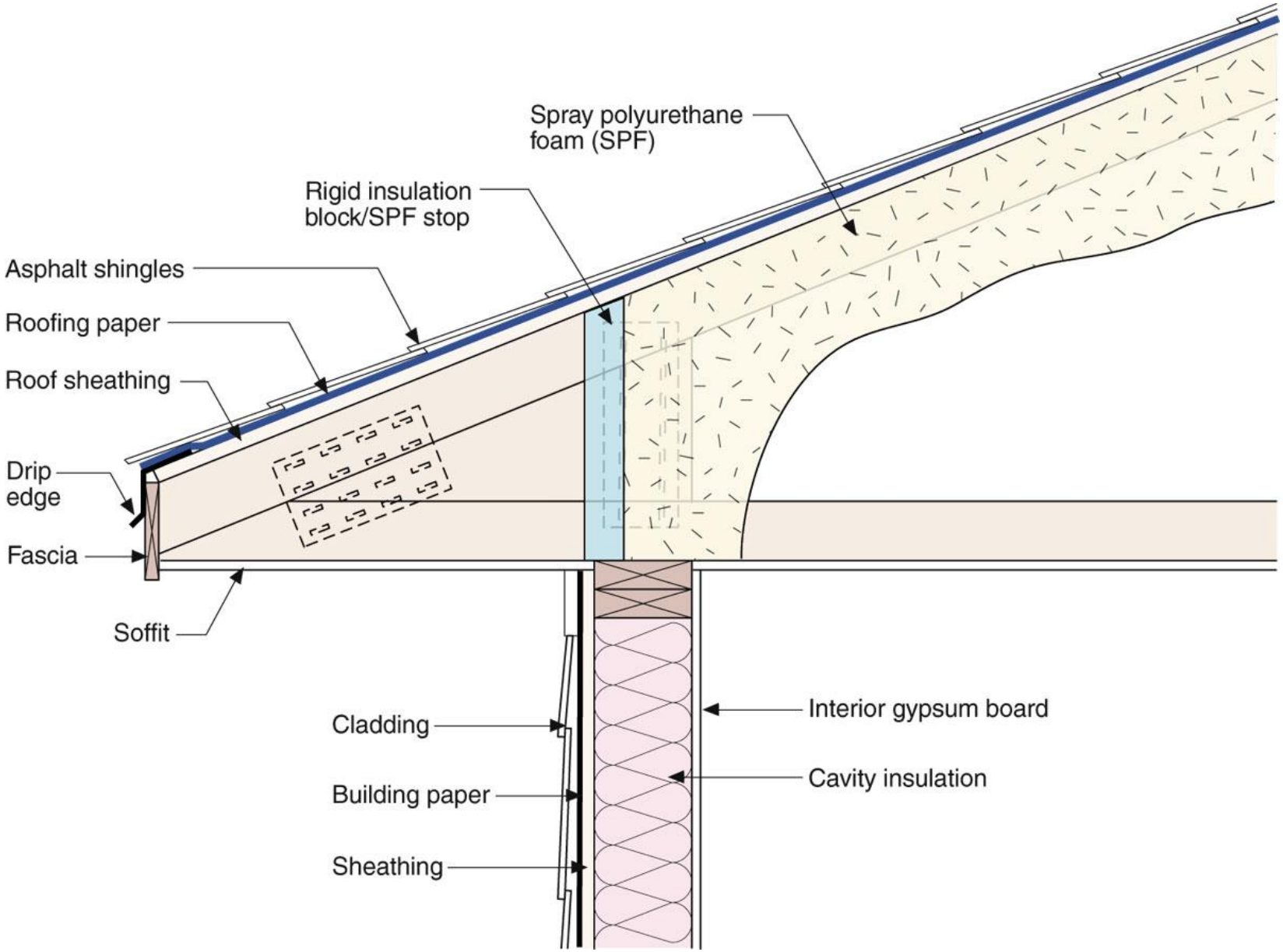
Attic insulation
Drip edge
Fascia
Soffit
Soffit vent
Cladding
Building paper
Sheathing
Interior gypsum board
Cavity insulation


Vent baffle
Vent space
Tile roof
Purlins
Roofing paper (Class III vapor retarder)
Attic insulation
Roof sheathing
Drip edge
Fascia
Soffit
Soffit vent
Cladding
Building paper
Sheathing
Interior gypsum board
Cavity insulation


Spray polyurethane foam (SPF)
Rigid insulation block/SPF stop
Asphalt shingles
Roofing paper
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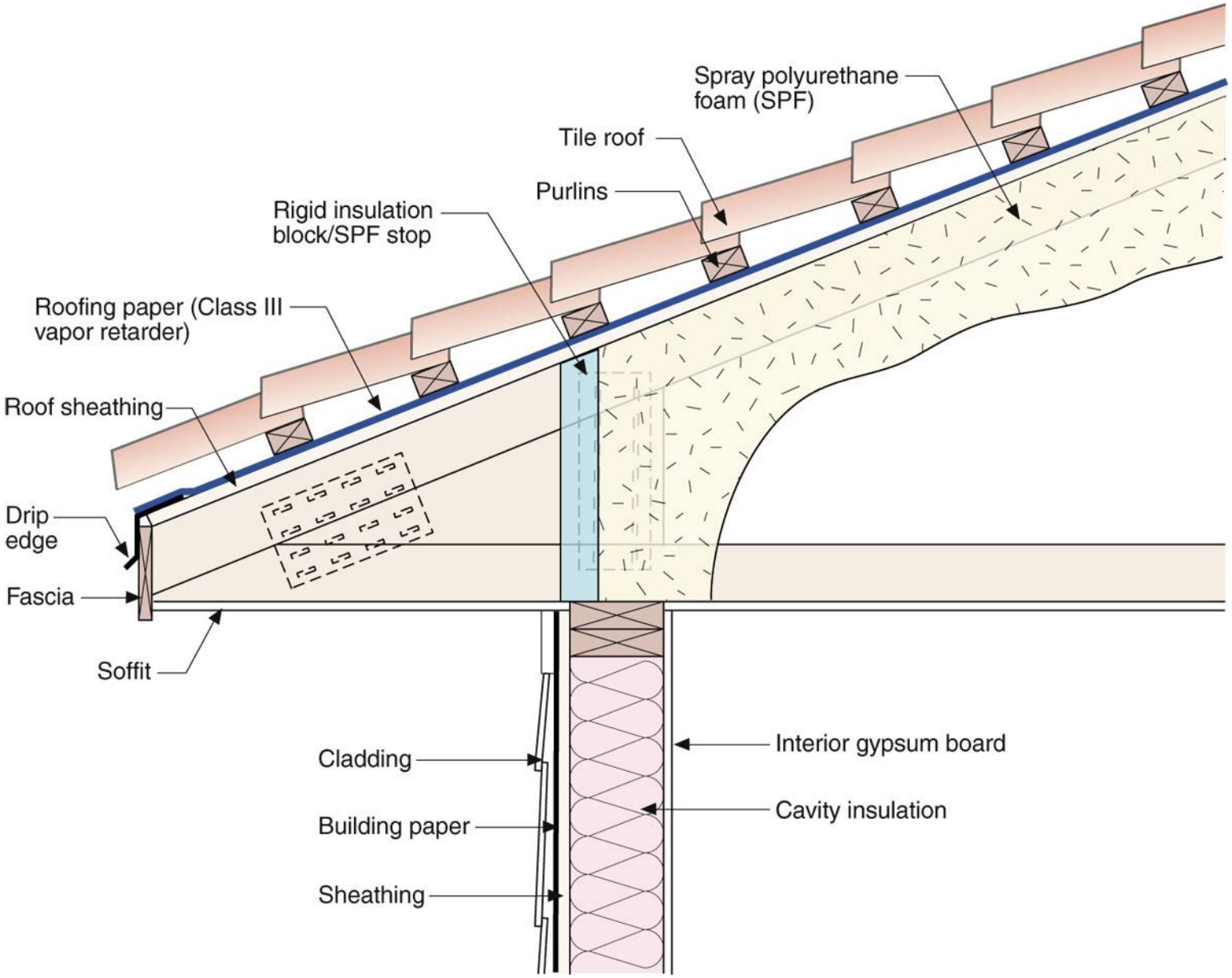
Interior gypsum board
Cavity insulation


Spray polyurethane foam (SPF)
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Rigid insulation block/SPF stop
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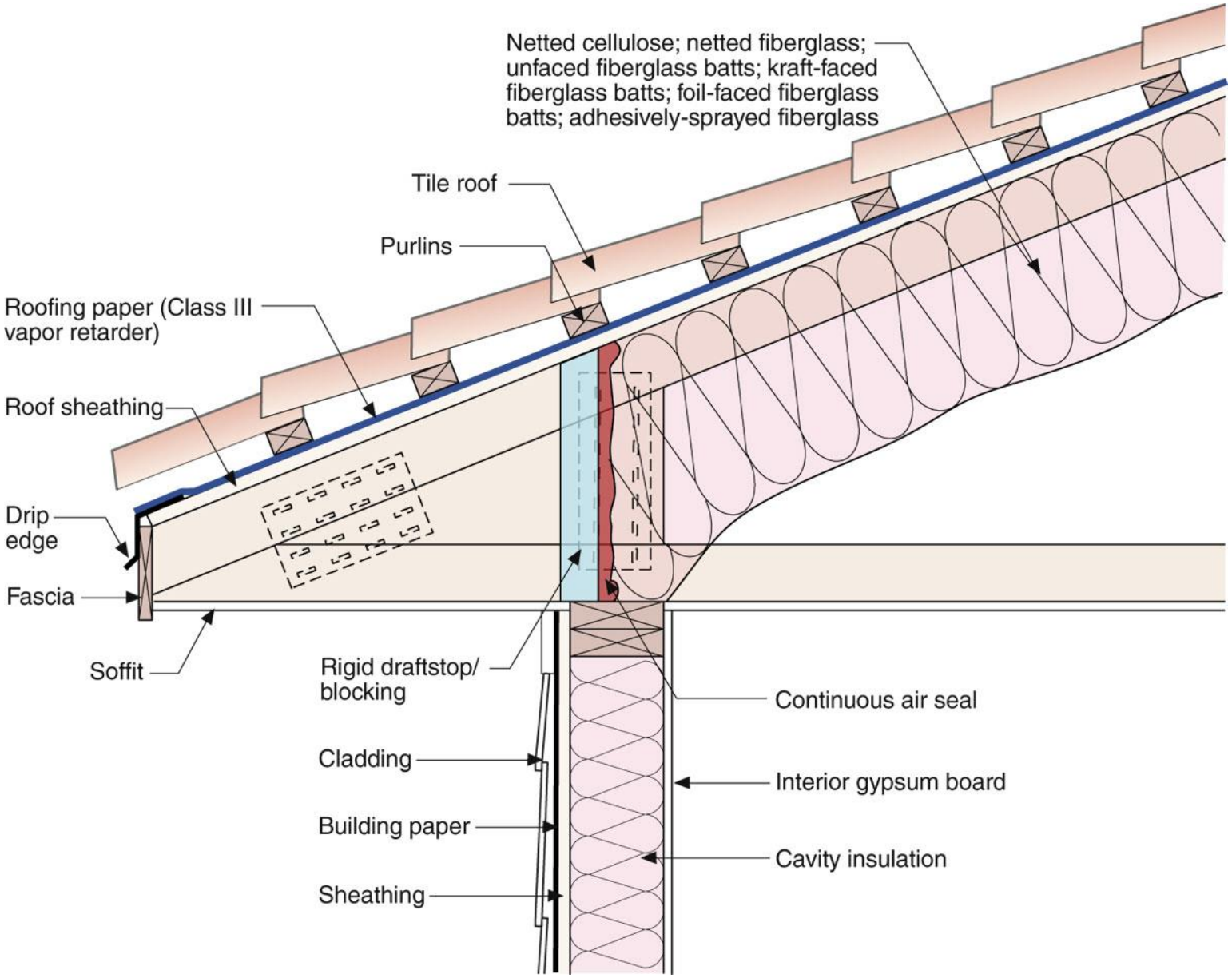
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Continuous air seal
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Cavity insulation
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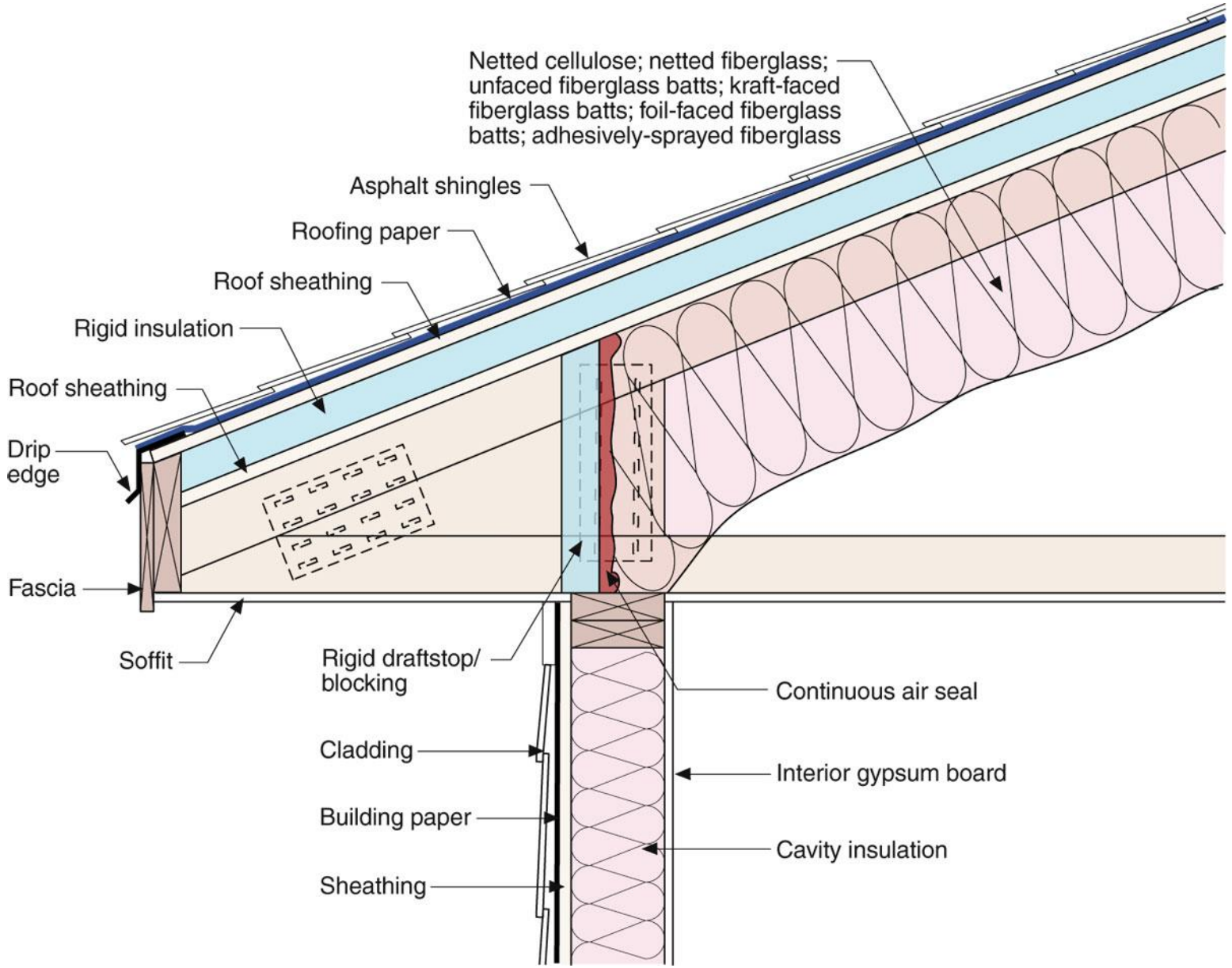
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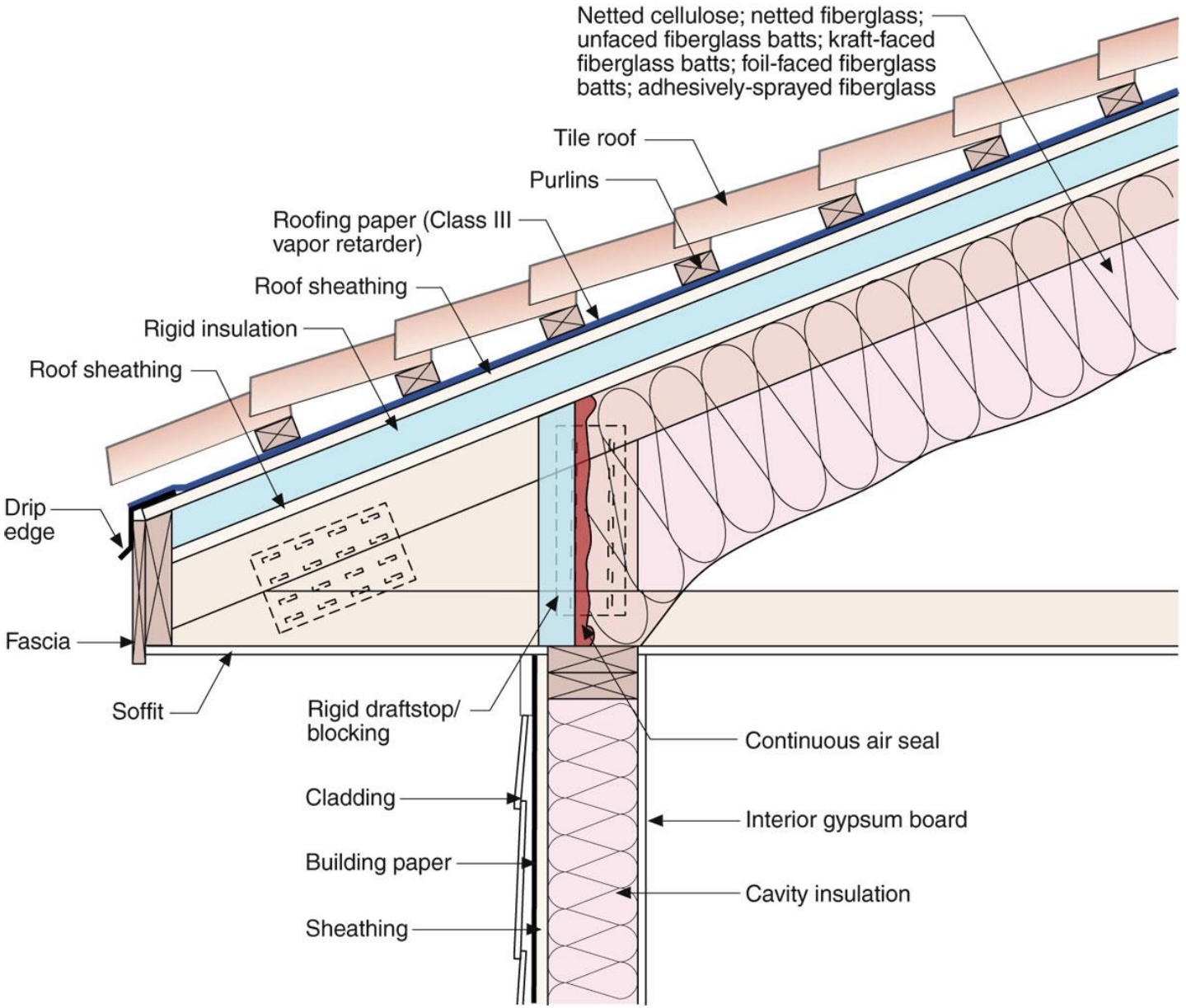
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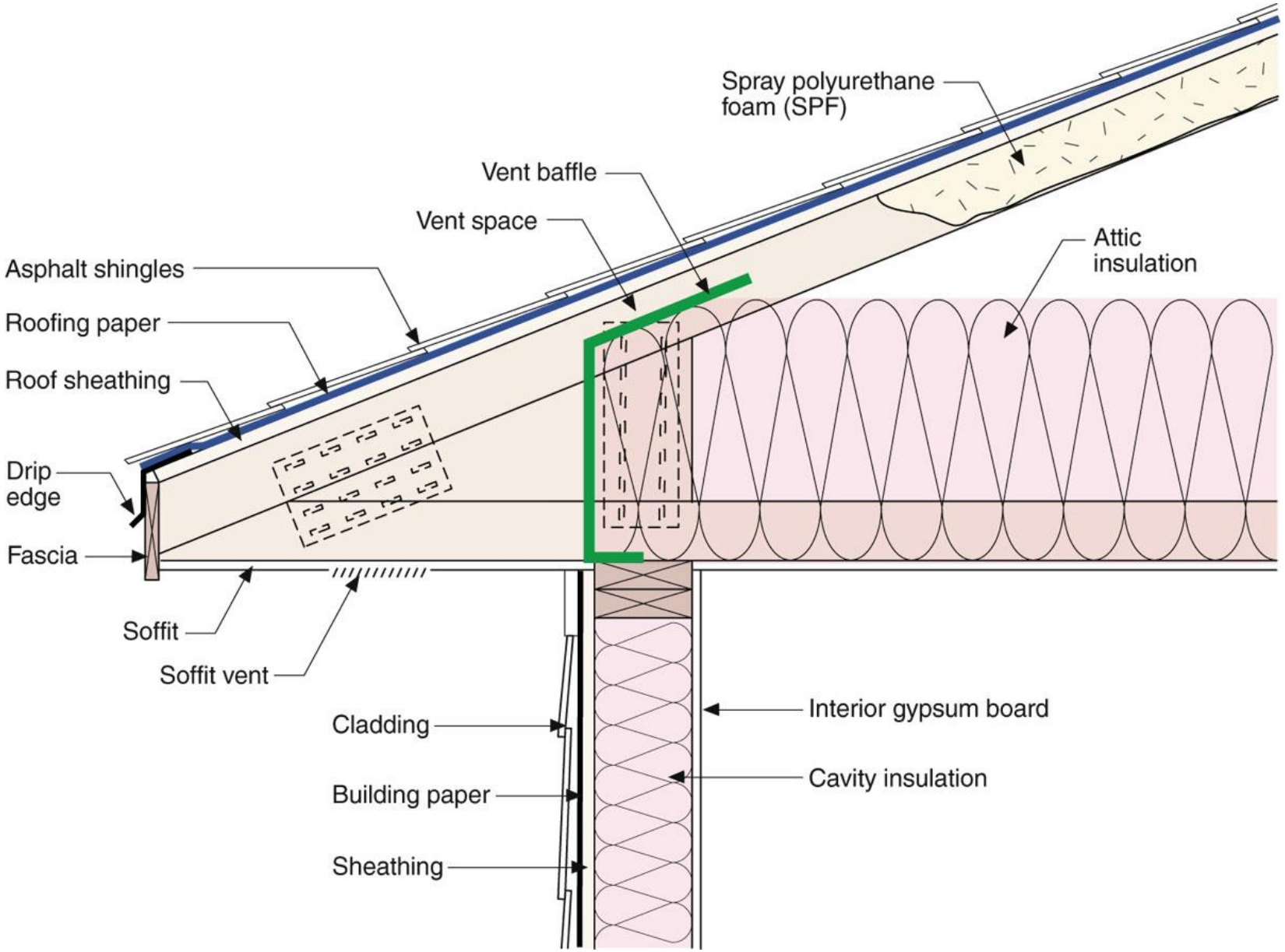
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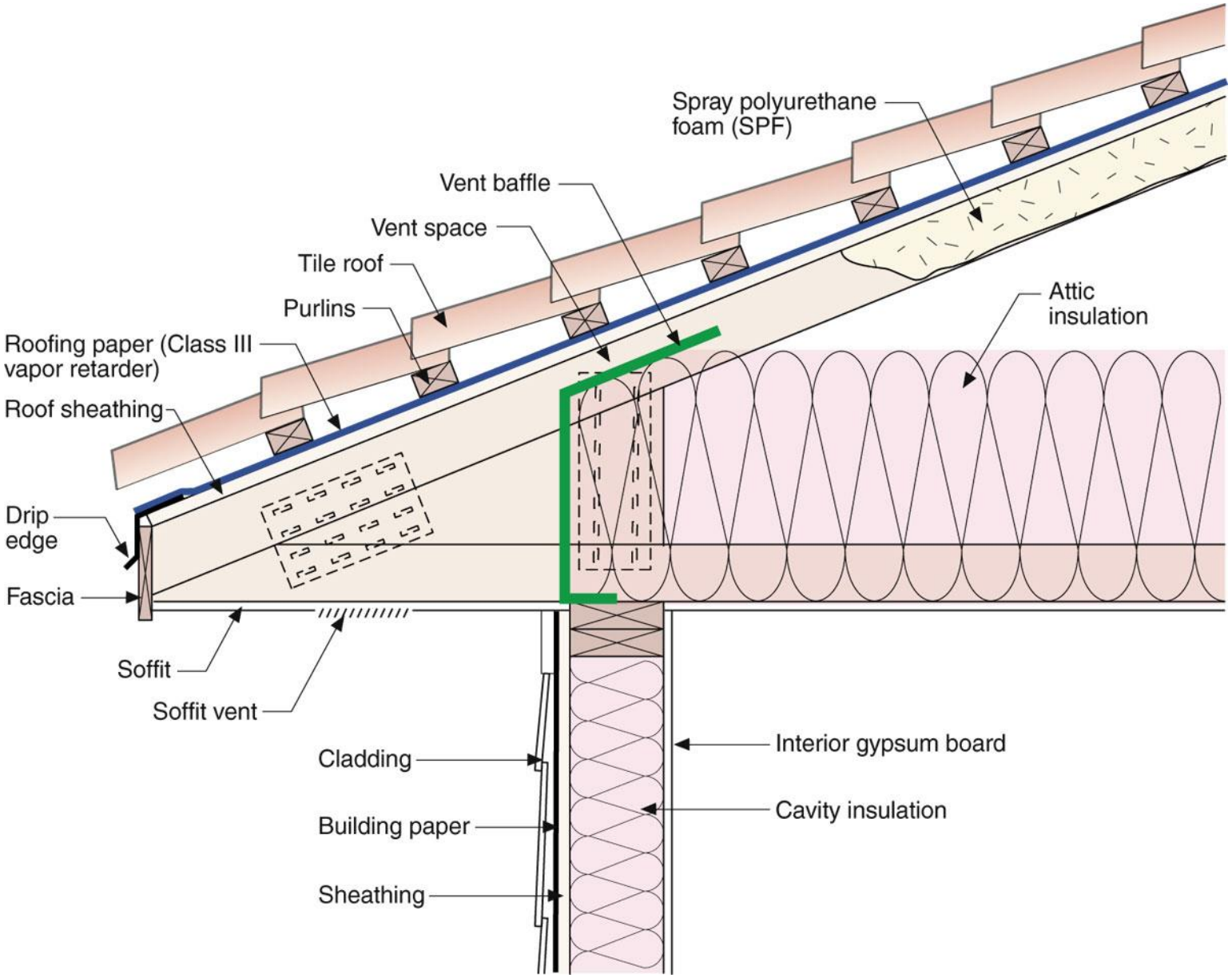
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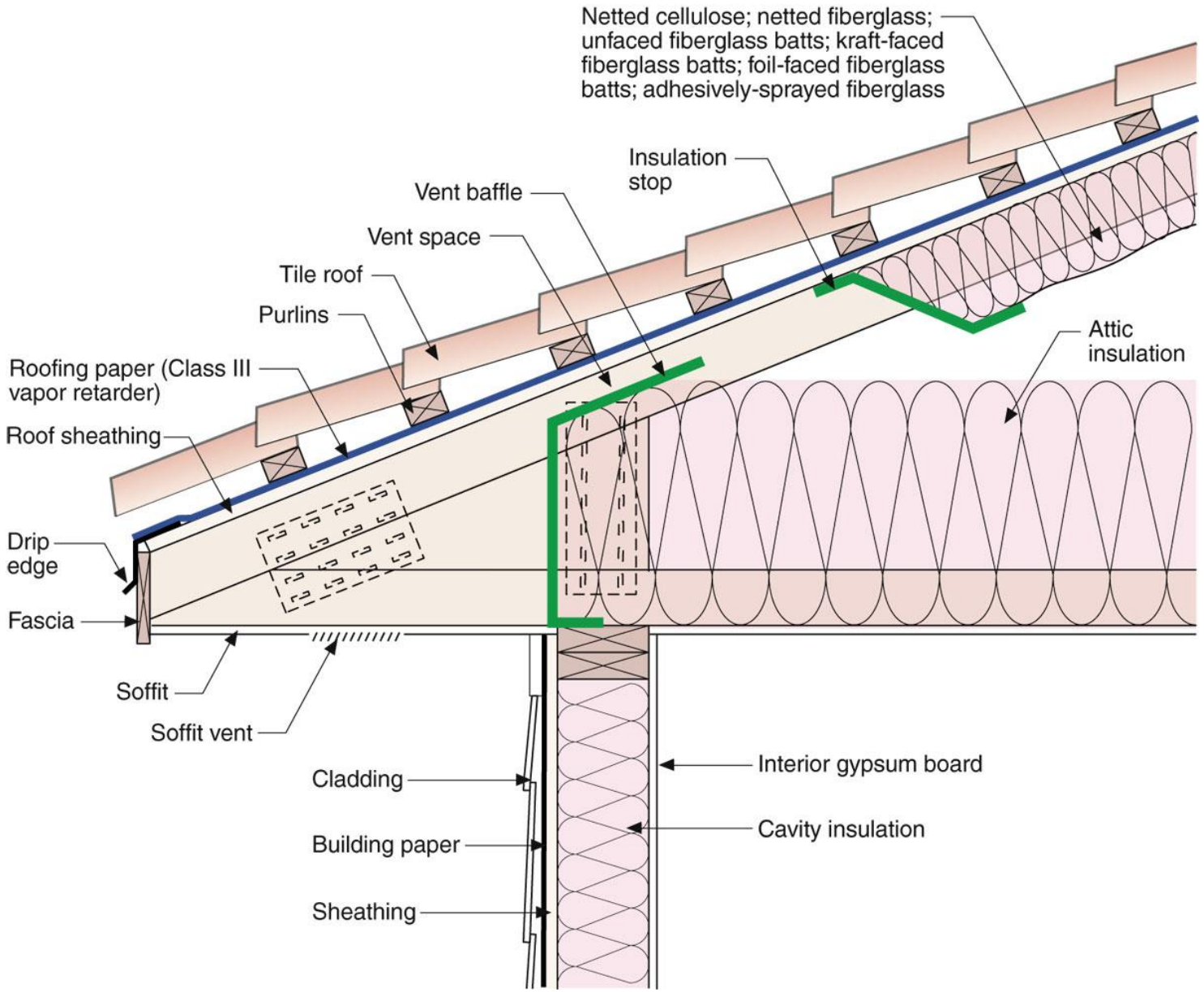
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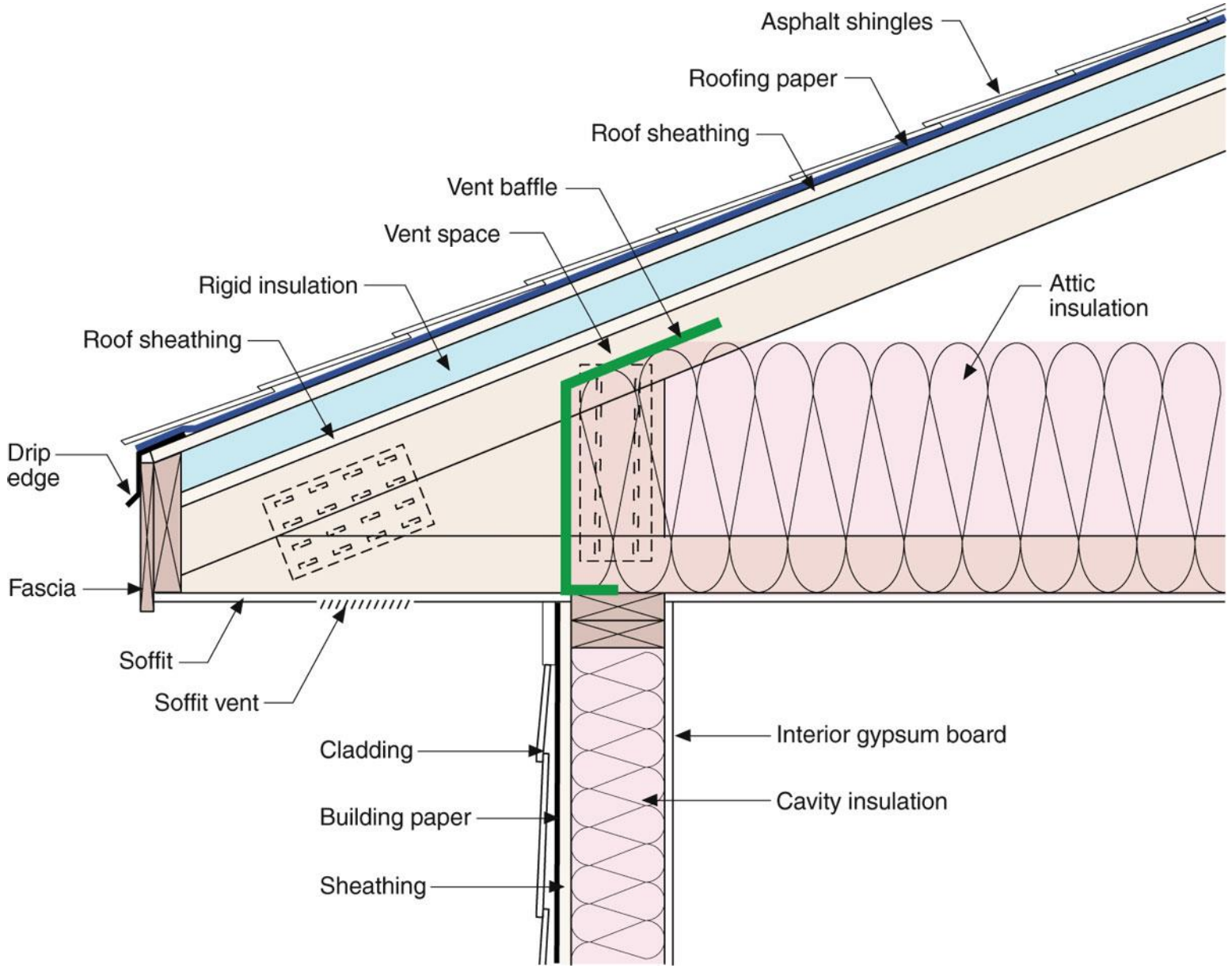
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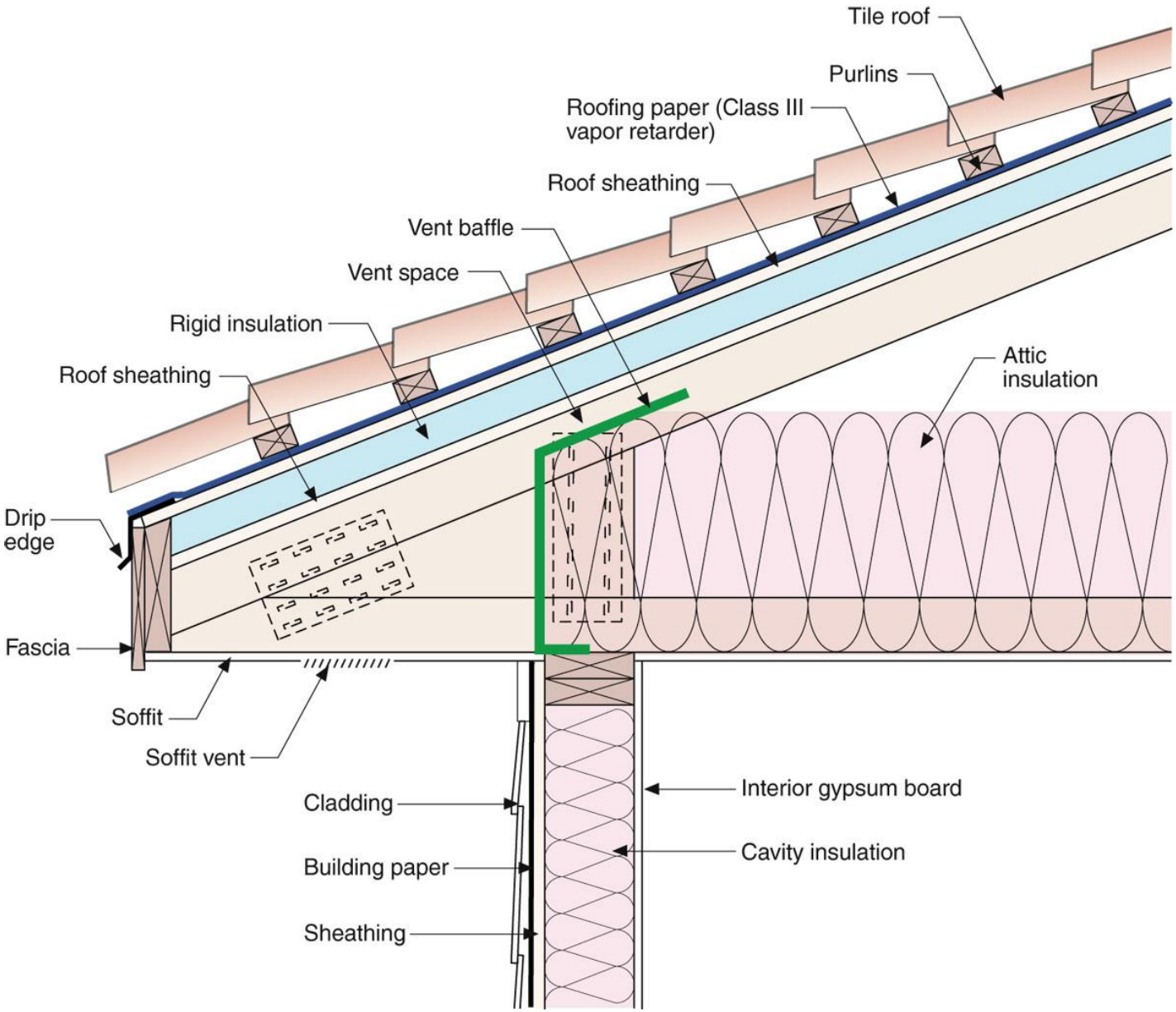
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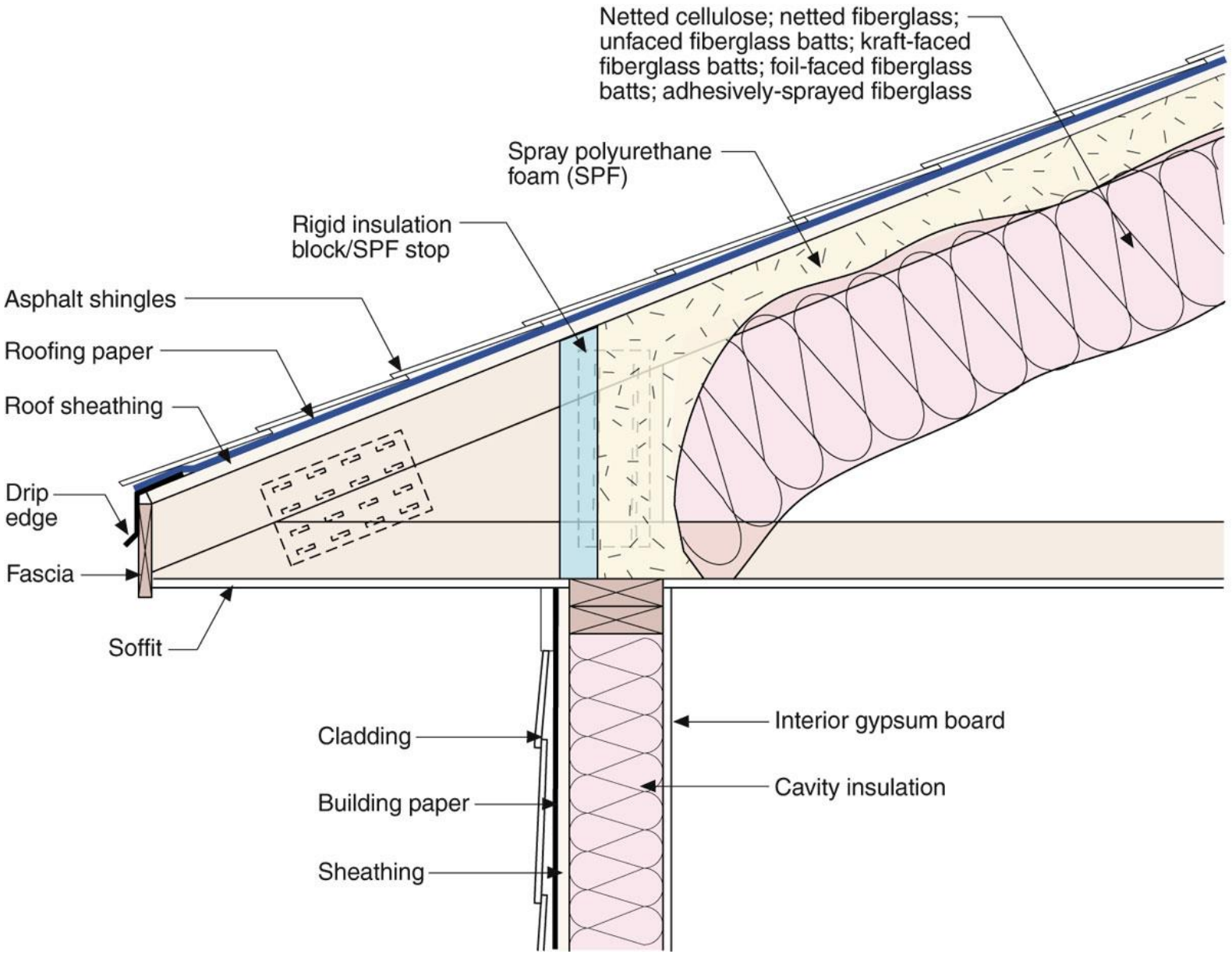
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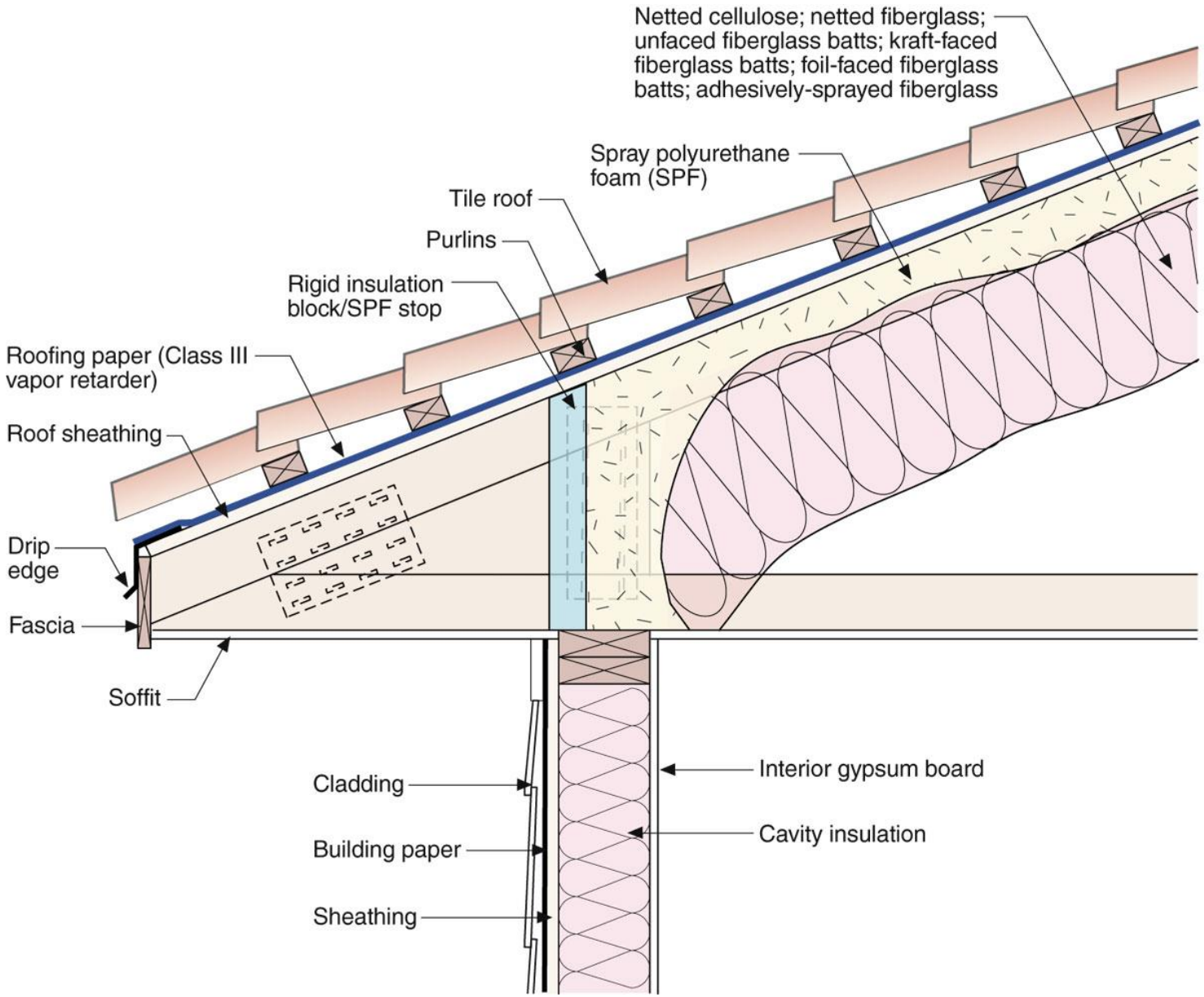
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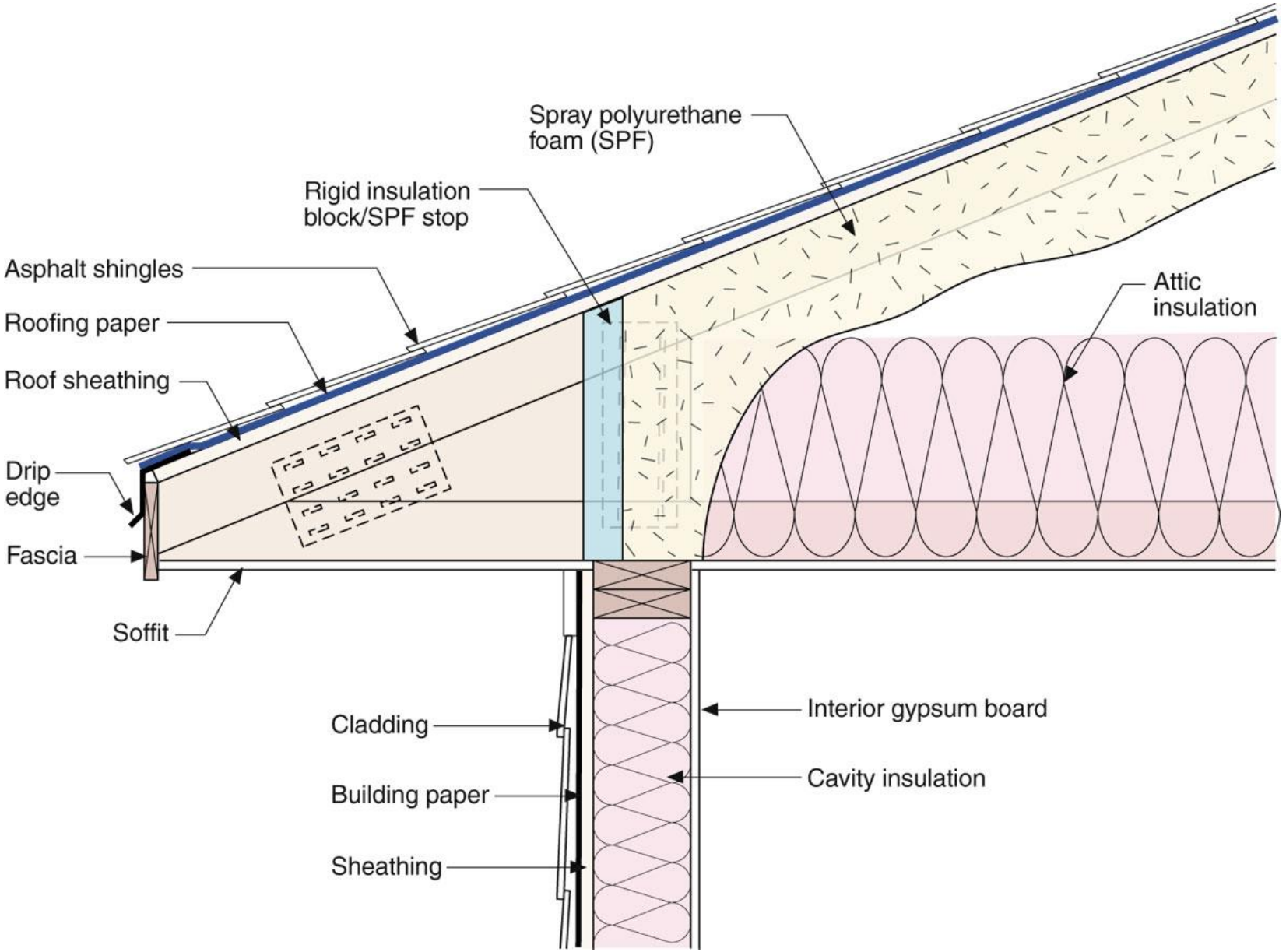
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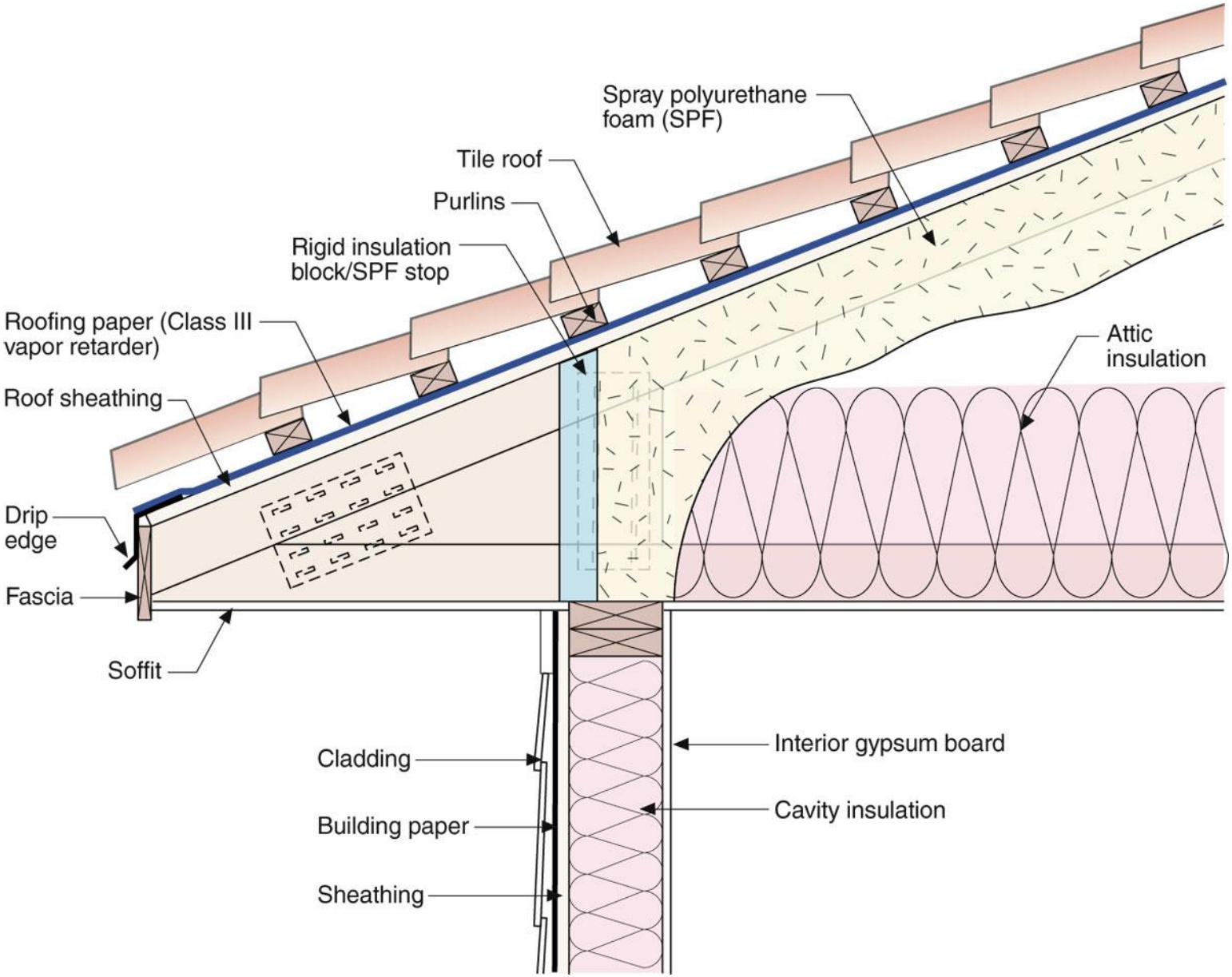
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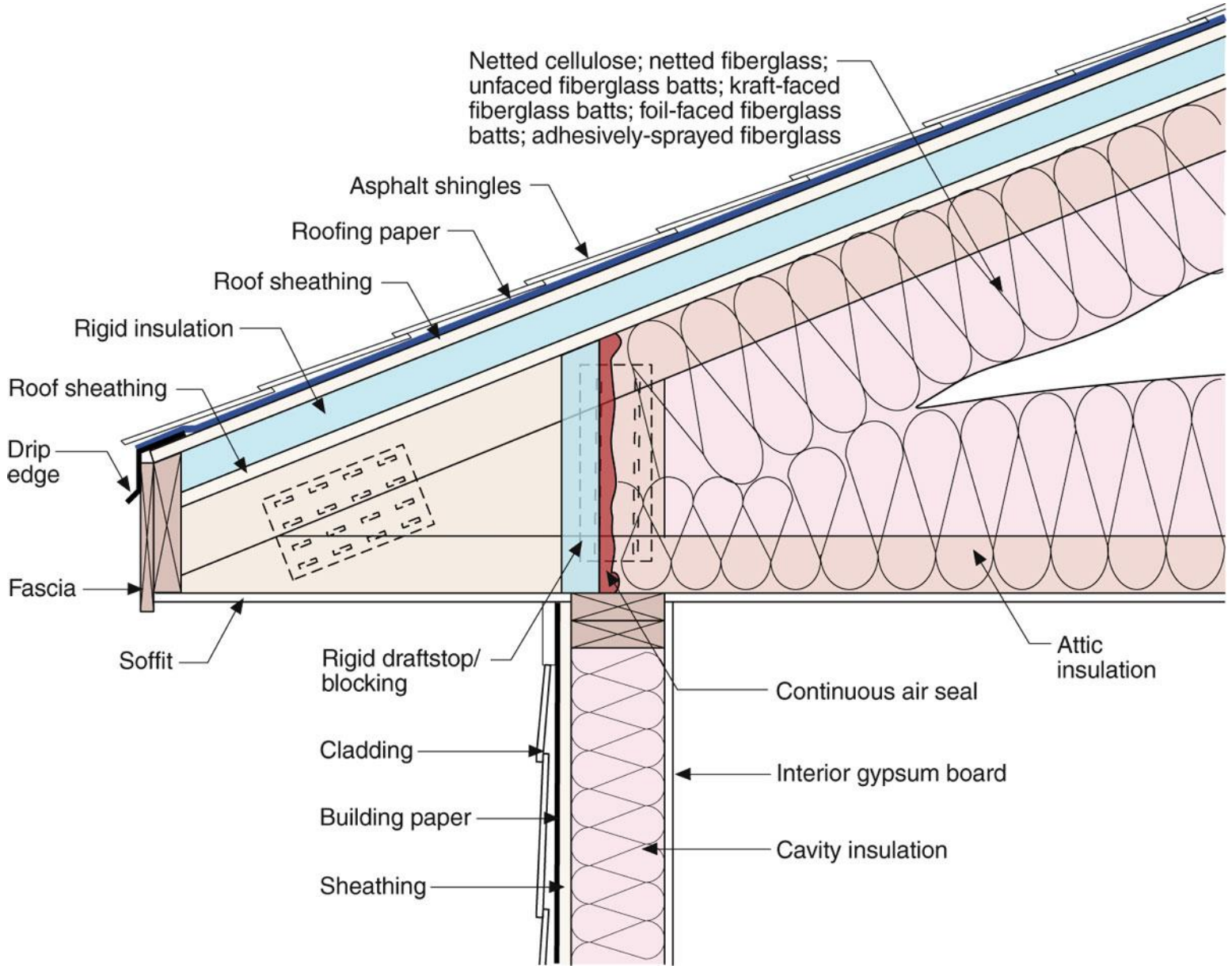
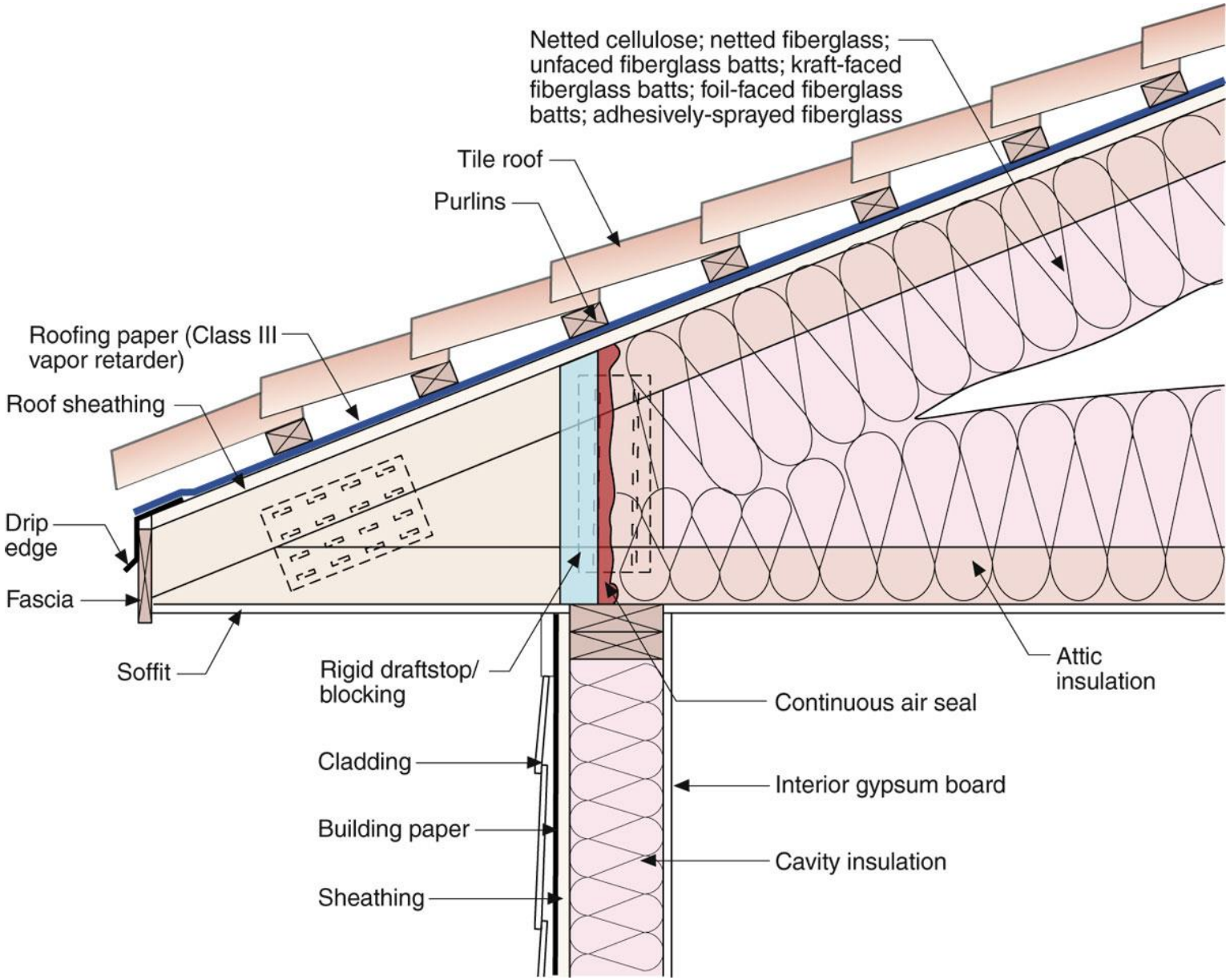
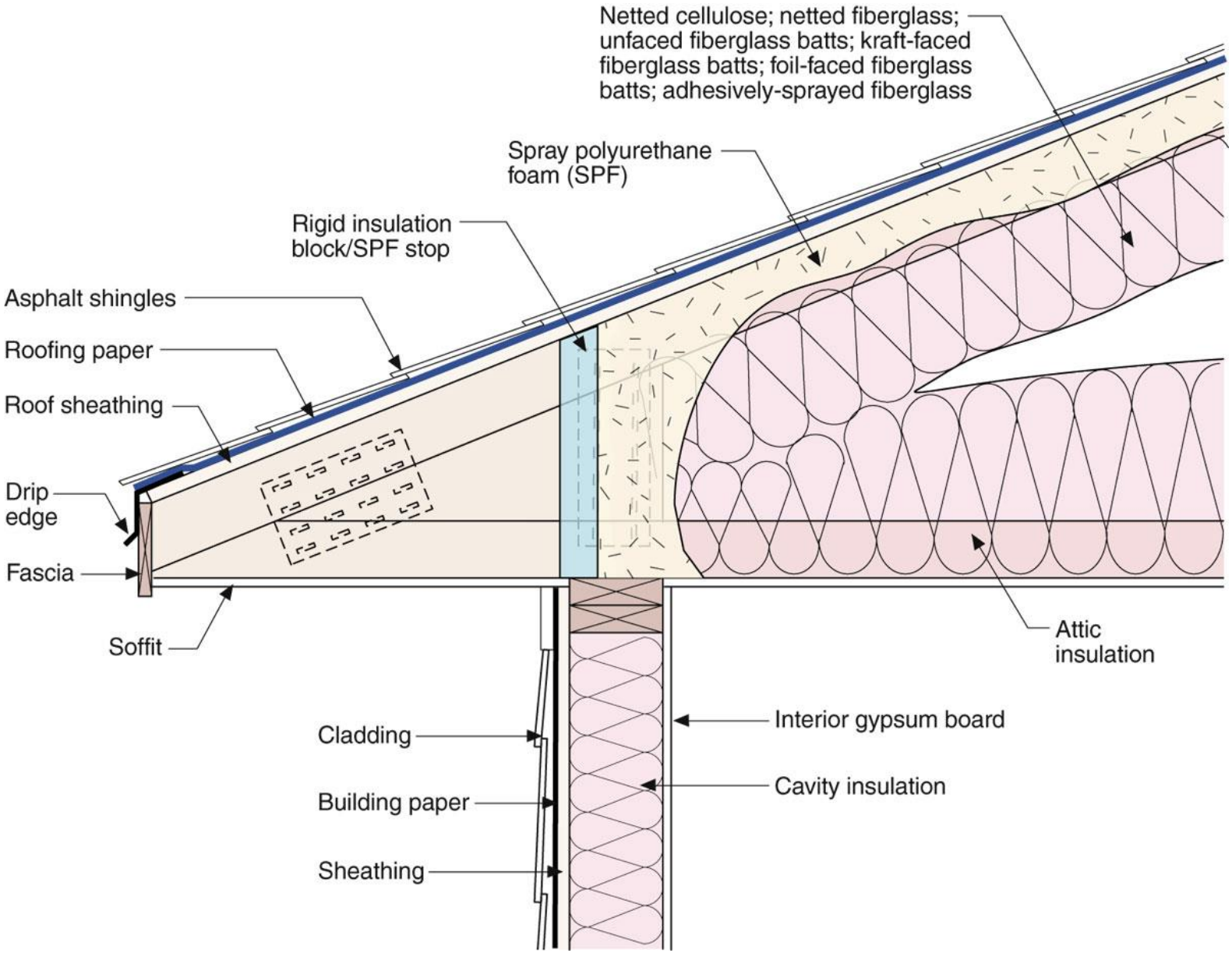
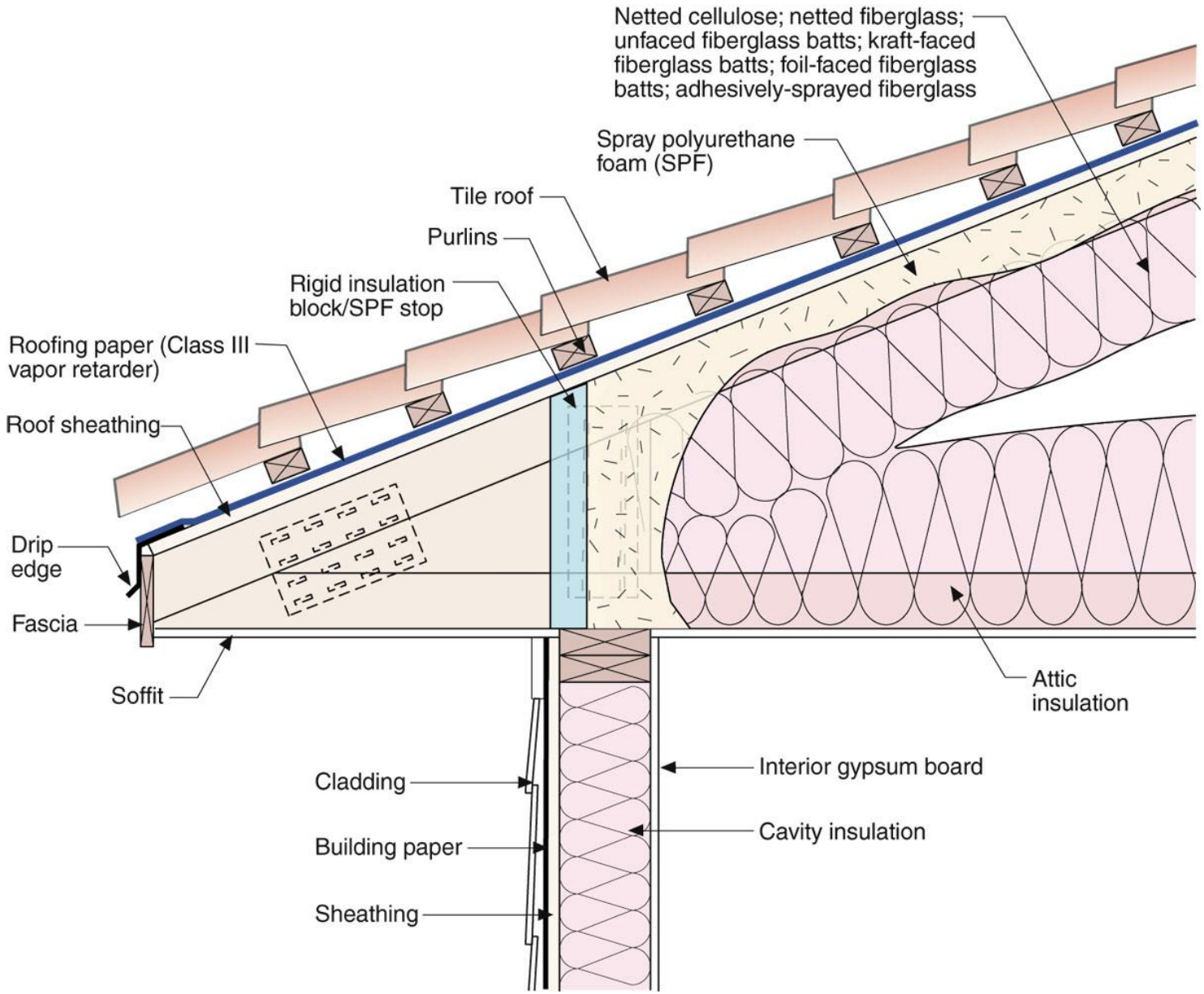
Interior gypsum board
Cavity insulation


Netted cellulose; netted fiberglass; unfaced fiberglass batts; kraft-faced fiberglass batts; foil-faced fiberglass batts; adhesively-sprayed fiberglass
Asphalt shingles
Roofing paper
Roof sheathing
Rigid insulation
Roof sheathing
Drip edge
Fascia
Soffit
Rigid draftstop/ blocking
Attic insulation
Continuous air seal
Cladding
Interior gypsum board
Building paper
Cavity insulation
Sheathing


Netted cellulose; netted fiberglass; unfaced fiberglass batts; kraft-faced fiberglass batts; foil-faced fiberglass batts; adhesively-sprayed fiberglass
Tile roof
Purlins
Roofing paper (Class III vapor retarder)
Roof sheathing
Drip edge
Fascia
Soffit
Rigid draftstop/ blocking
Attic insulation
Continuous air seal
Cladding
Interior gypsum board
Building paper
Cavity insulation
Sheathing


Netted cellulose; netted fiberglass; unfaced fiberglass batts; kraft-faced fiberglass batts; foil-faced fiberglass batts; adhesively-sprayed fiberglass
Spray polyurethane foam (SPF)
Rigid insulation block/SPF stop
Asphalt shingles
Roofing paper
Roof sheathing
Drip edge
Fascia
Soffit
Attic insulation
Cladding
Building paper
Sheathing
Interior gypsum board
Cavity insulation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