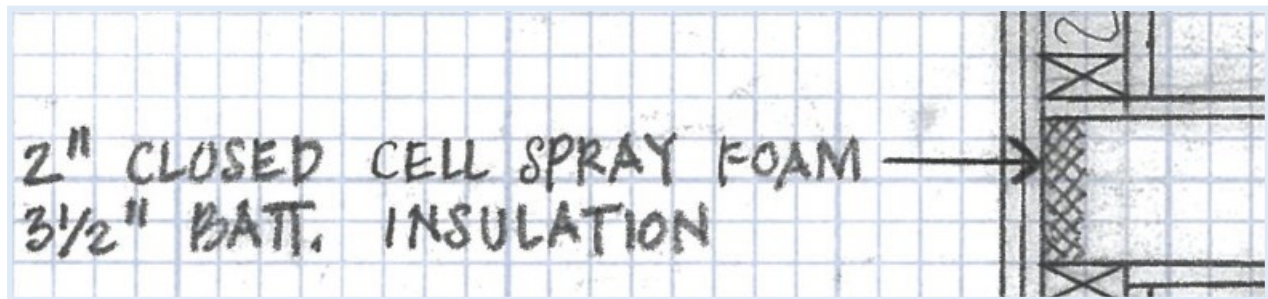


What to Look For...

How should Air Barriers be shown on the submitted plans?

What are the requirements?

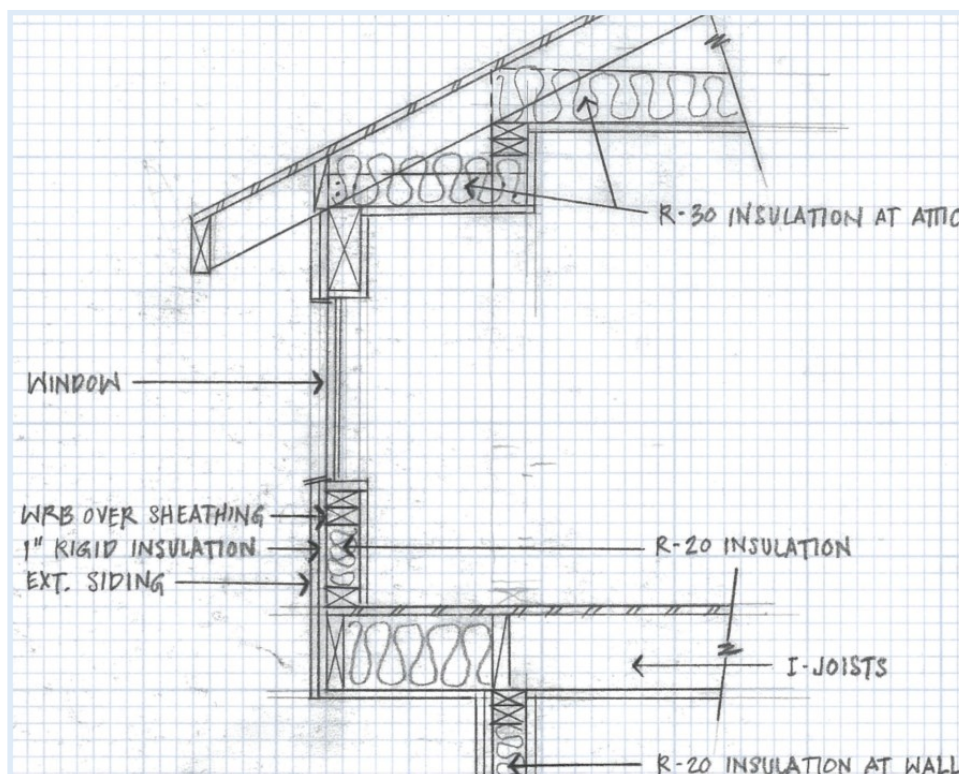
What should I be looking for?



Air Leakage / Air Barrier Requirements

R402.4 Air Leakage (2018 IECC)

- Thermal envelope assembly designed to limit air leakage, including the use of air barrier
- Sealing methods must account for expansion and contraction
- Components of the thermal envelope must comply with Table R402.4.1.1
- Testing must be performed in accordance with R402.4.1.2
- Testing air leakage rate can not exceed the values in R402.4.1.2



Regulated Systems

2018 IECC Table R402.4.1.1

- ♦ General requirements
- ♦ Ceiling/attic
- ♦ Walls
- ♦ Windows, skylights and doors
- ♦ Rim joists
- ♦ Floors, including cantilevered floors and floors above garages
- ♦ Crawl space walls
- ♦ Shafts, penetrations
- ♦ Narrow cavities
- ♦ Garage separation
- ♦ Recessed lighting
- ♦ Plumbing and wiring
- ♦ Shower/tub on exterior wall
- ♦ Electrical/phone box on exterior walls
- ♦ HVAC register boots
- ♦ Concealed sprinklers

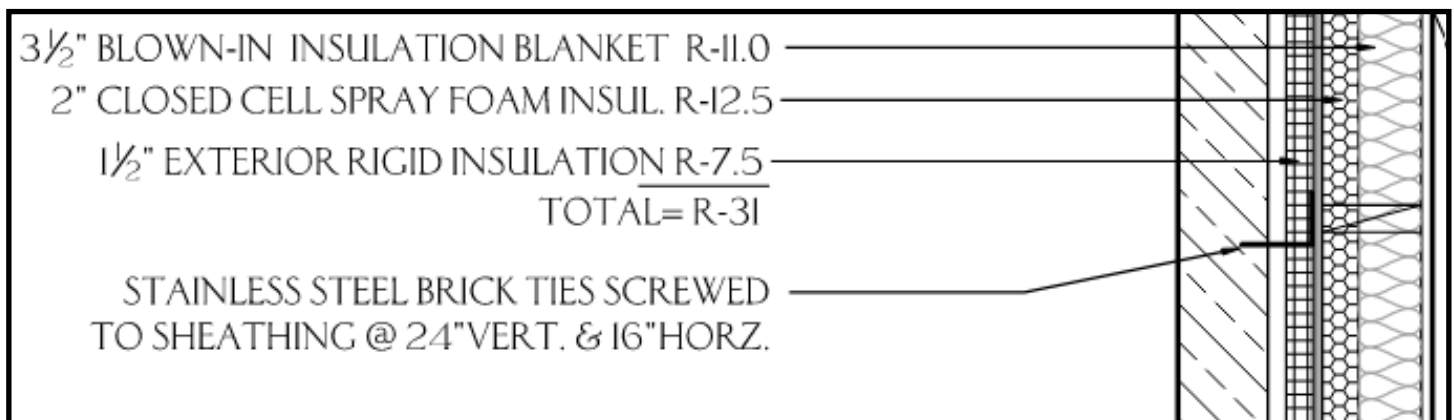
General Requirements

2018 IECC

- A continuous air barrier shall be installed in the building envelope
- Breaks or joints in the air barrier shall be sealed

Common Materials Used

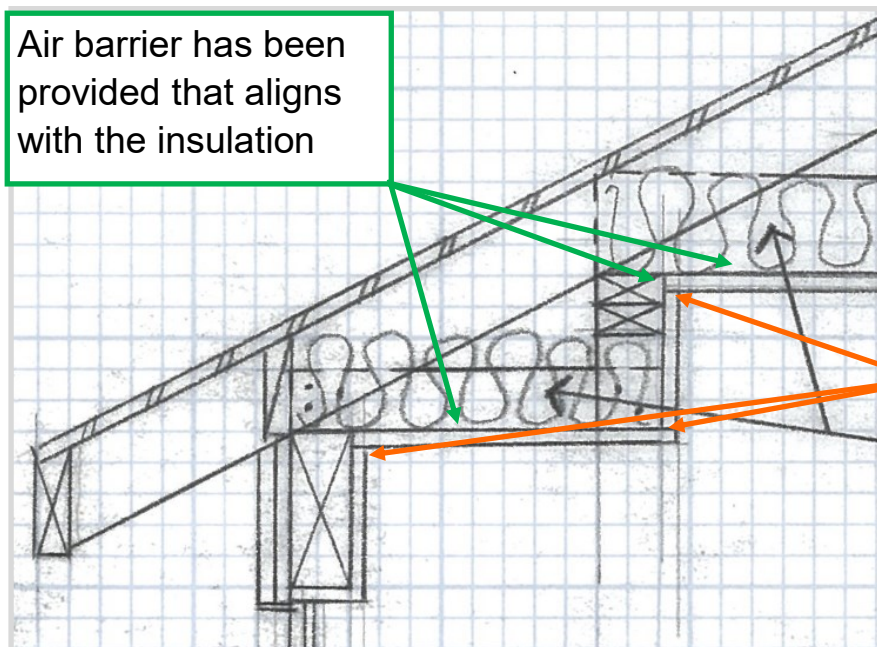
- Continuous rigid insulation on the exterior
- House wrap installed as tested for air barrier
- Zip Panels
- Drywall



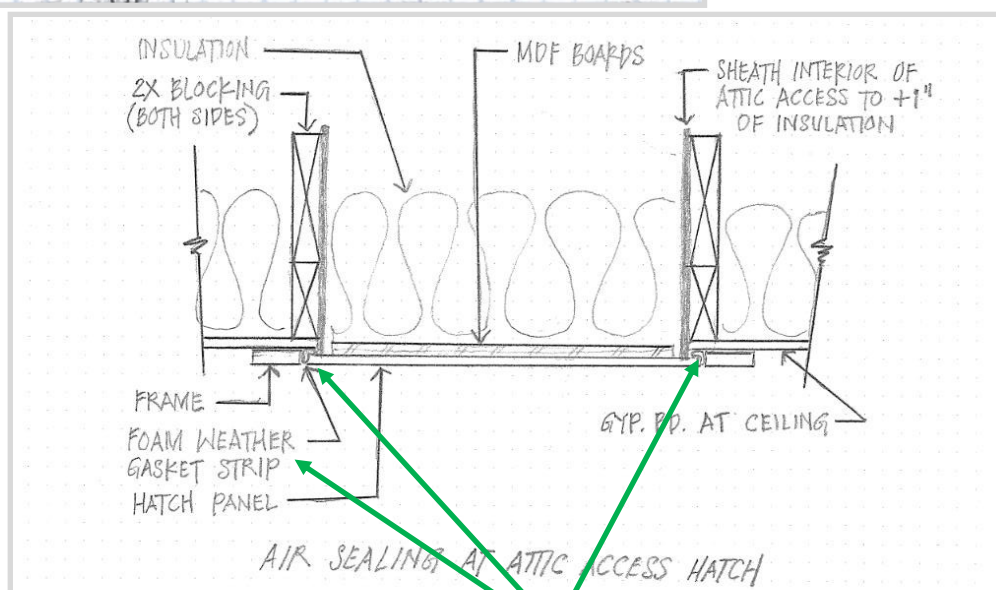
Ceiling/Attic

- The air barrier in any dropped ceiling or soffit shall be aligned with the insulation and any gaps in the air barrier shall be sealed.
- Access openings, drop down stairs or knee wall doors to unconditioned attic spaces shall be sealed.

Air barrier has been provided that aligns with the insulation



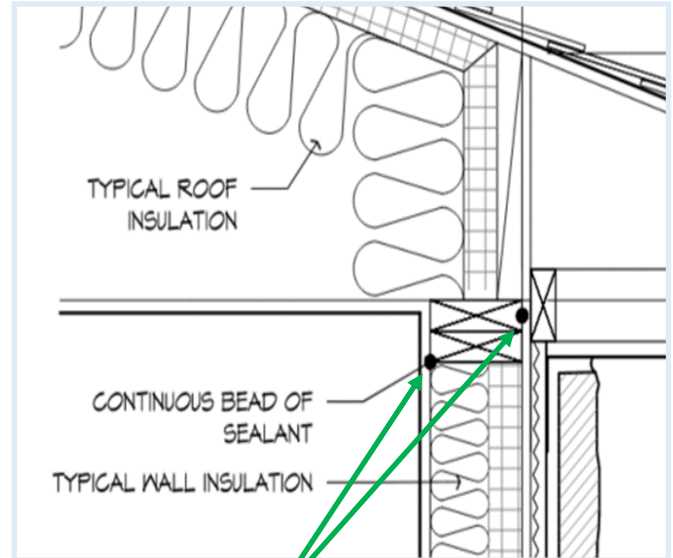
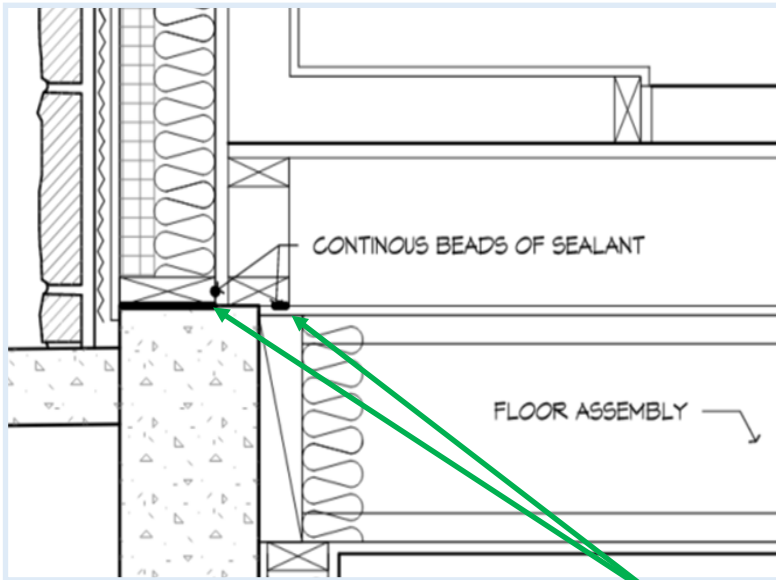
Missing the sealing as required



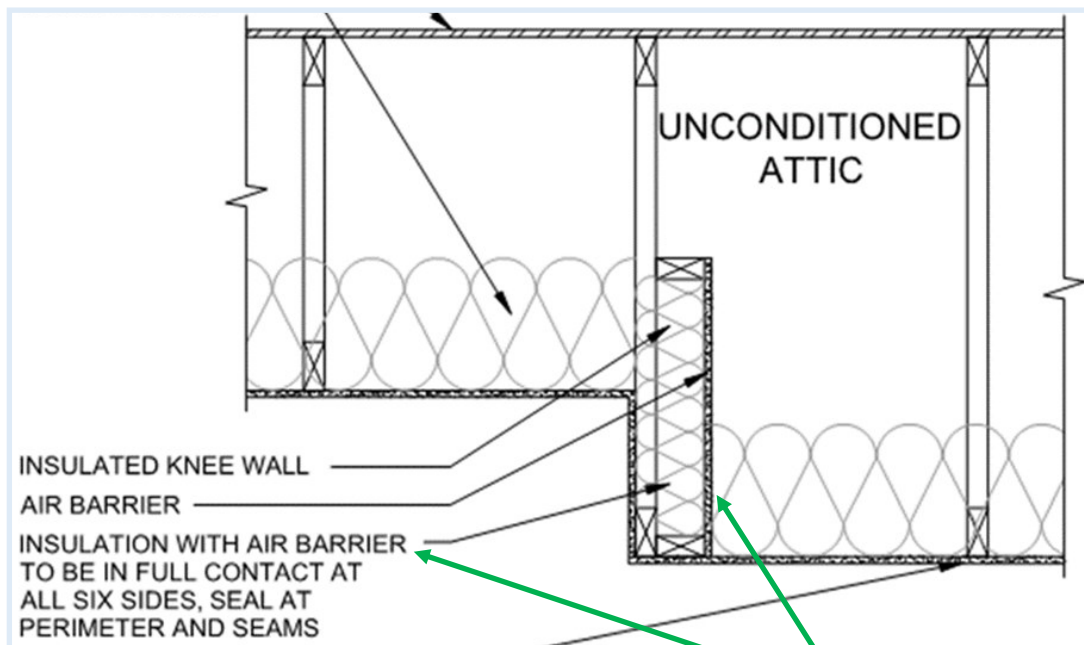
Sealing shown at edges of opening with a gasket

Walls

- The junction of the foundation and sill plate shall be sealed.
- The junction of the top plate and the top of exterior walls shall be sealed.
- Knee walls shall be sealed.



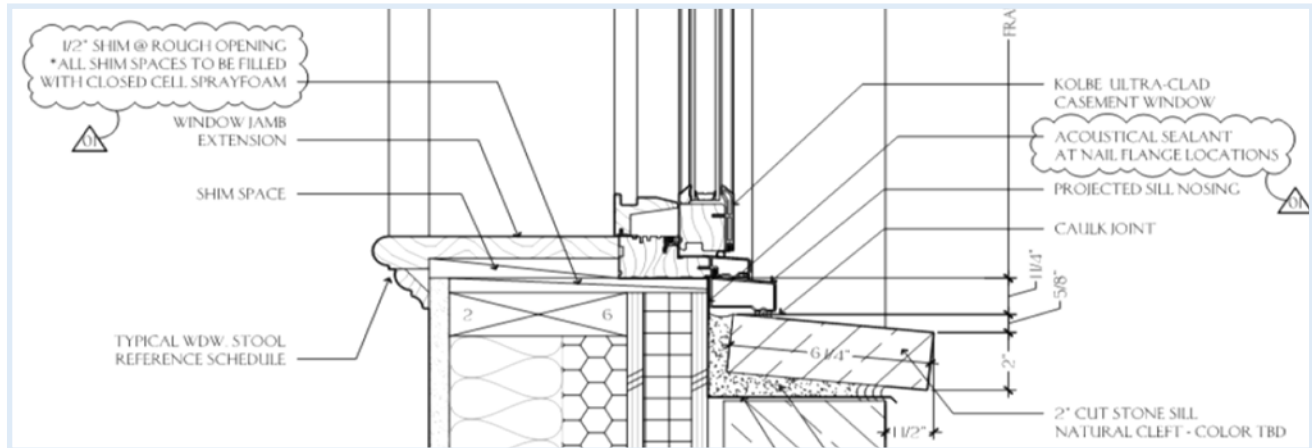
Sealing provided at bottom (sill) plate and at top plate



Air sealing is called out and an air barrier is provided and called out

Windows, Skylights, and Doors

- The space between framing and skylights, and the jambs of windows and doors, shall be sealed.



Openings between window and door assemblies and their respective jambs and framing shall be sealed and insulated with sprayed foam with a thermal resistance of R-3 per-inch minimum.

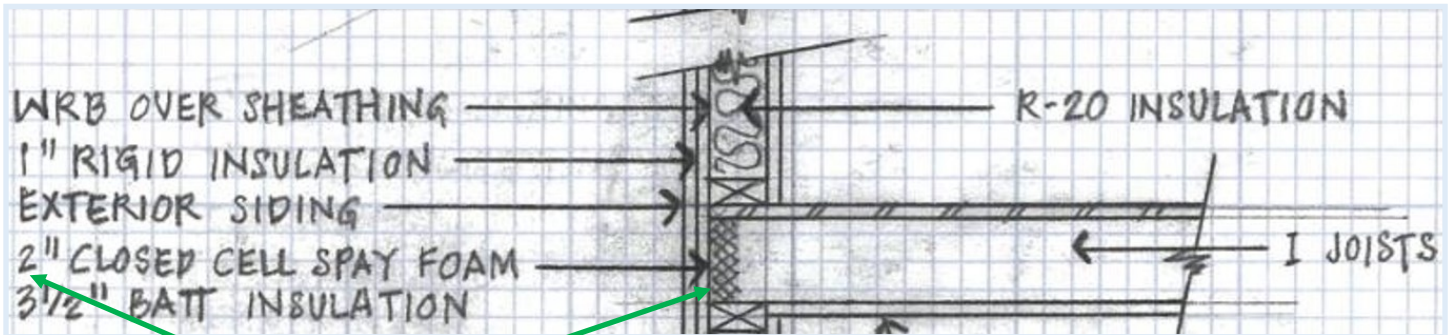
- Can be shown as either part of a window detail
- More likely to be in the form of a note on the plans

FYI - Foam sealants can be used, however the window and door manufacturers do not want/suggest that fast expanding foam to be used.

Rim Joists

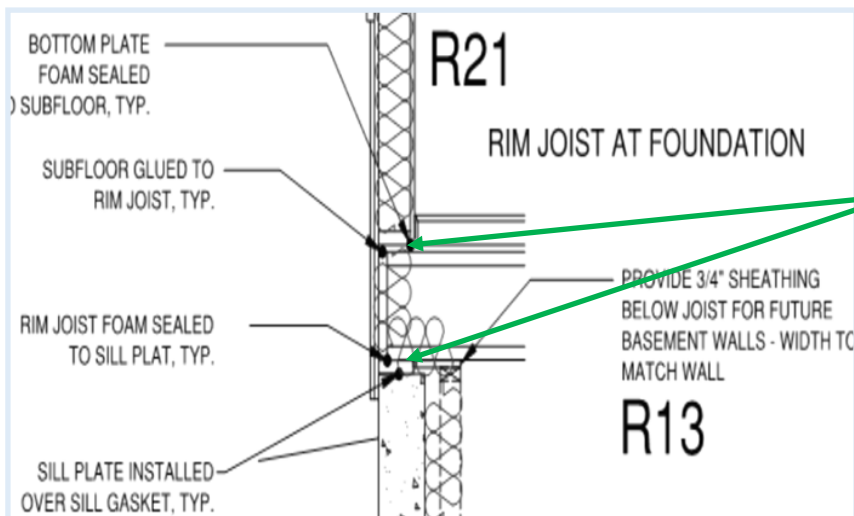
2018 IECC

- Rim joists shall include the air barrier.



Closed cell spray foam can be considered an air barrier if installed to a certain thickness.

Closed cell spray foam can be both an air barrier and part of the above grade wall insulation R-value.



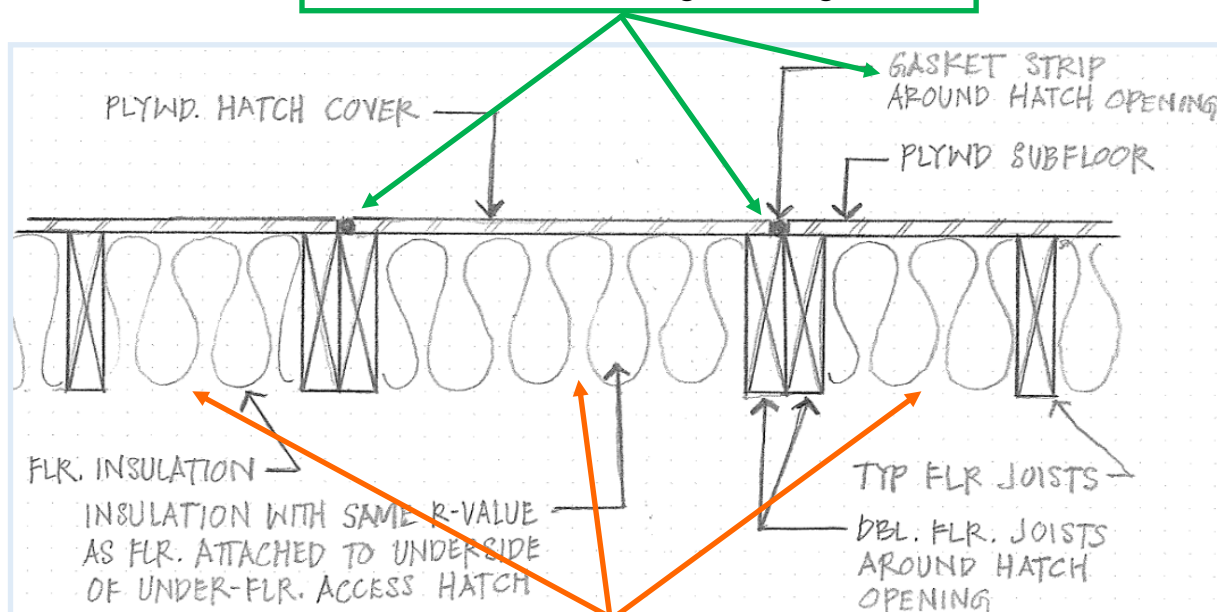
Calls out for the sill plate and subfloor to be sealed

Floors

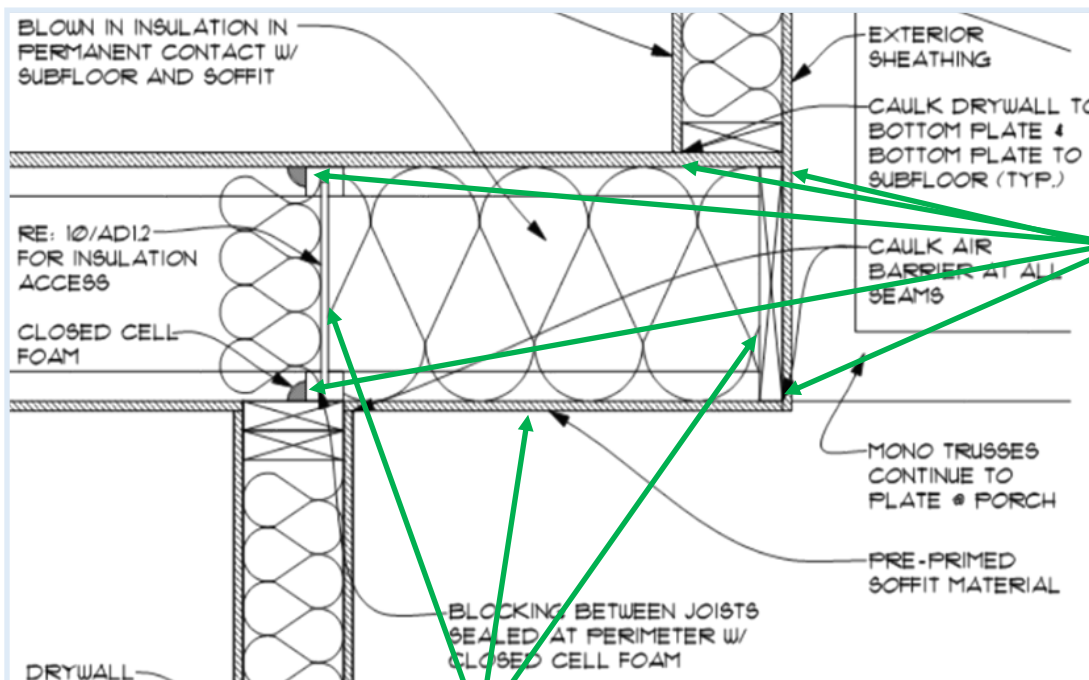
(including cantilevered floors and floors above garages)

- The air barrier shall be installed at any exposed edge of insulation.

Floor hatch has sealing with a gasket



Air barrier is missing to separate the unconditioned space from the conditioned with it in alignment of the insulation.



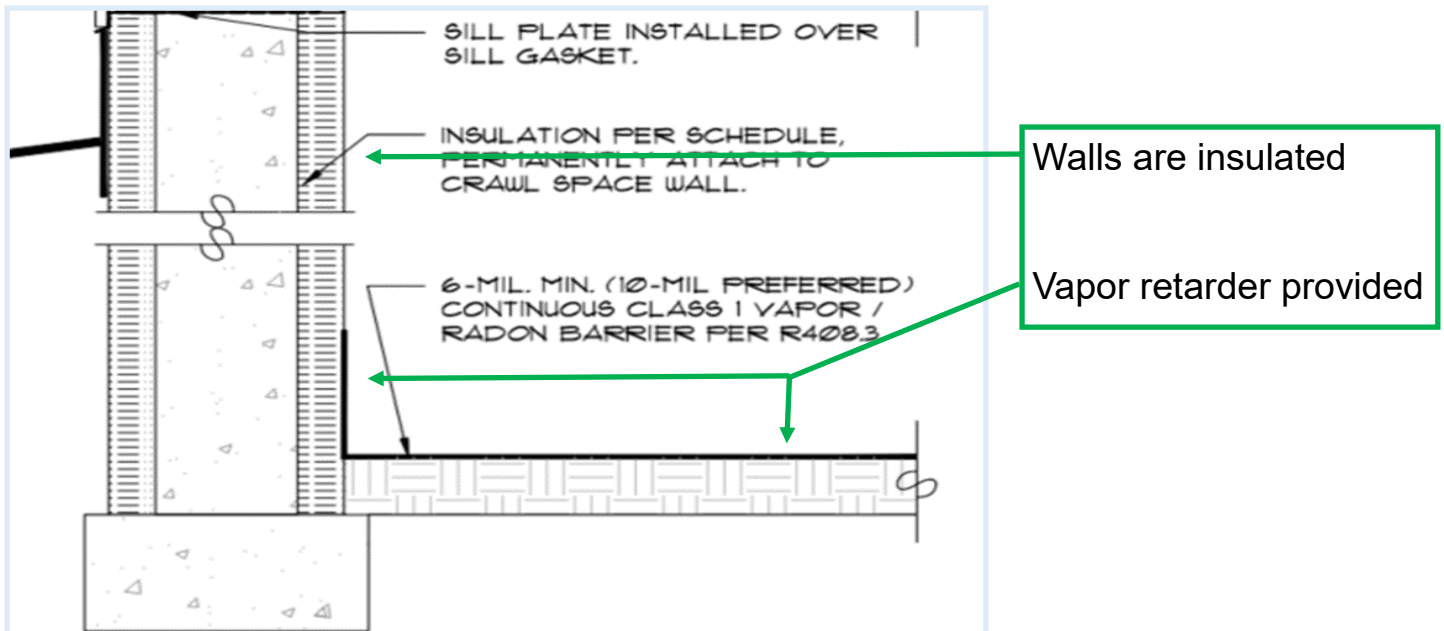
Air sealing has been provided at the correct locations

Air barrier has been provided in correct locations

Crawl Space Walls

2018 IECC

- Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.



Either a note or detail might be provided for the new requirement of sealing of penetrations through slab or foundation wall.

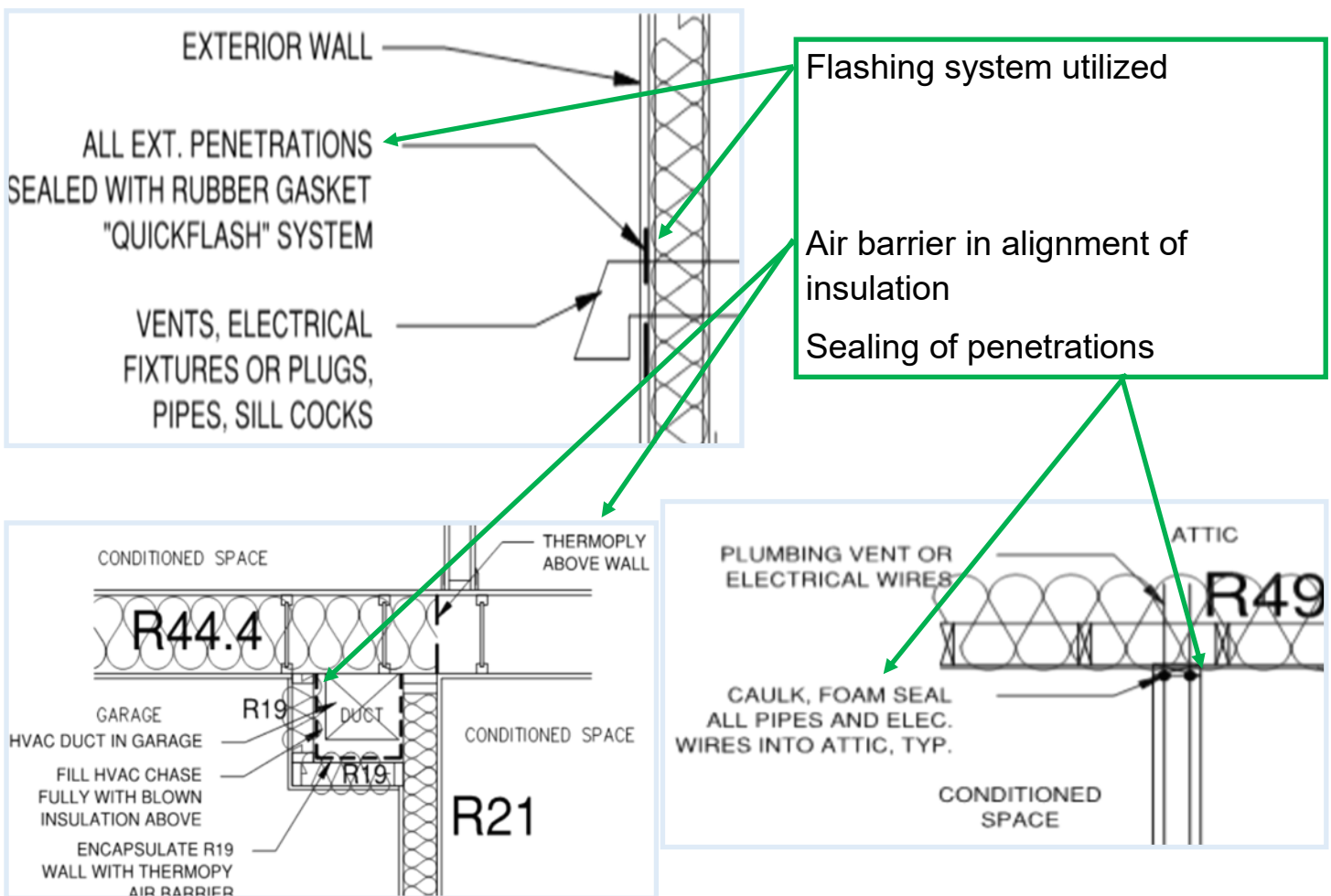
Shafts, Penetrations

2018 IECC

- Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.

RECOMMENDED

- Utility penetrations of the air barrier shall be caulked, gasketed or otherwise sealed and shall allow for expansion, contraction of materials and mechanical vibration.



Narrow Cavities

2018 IECC

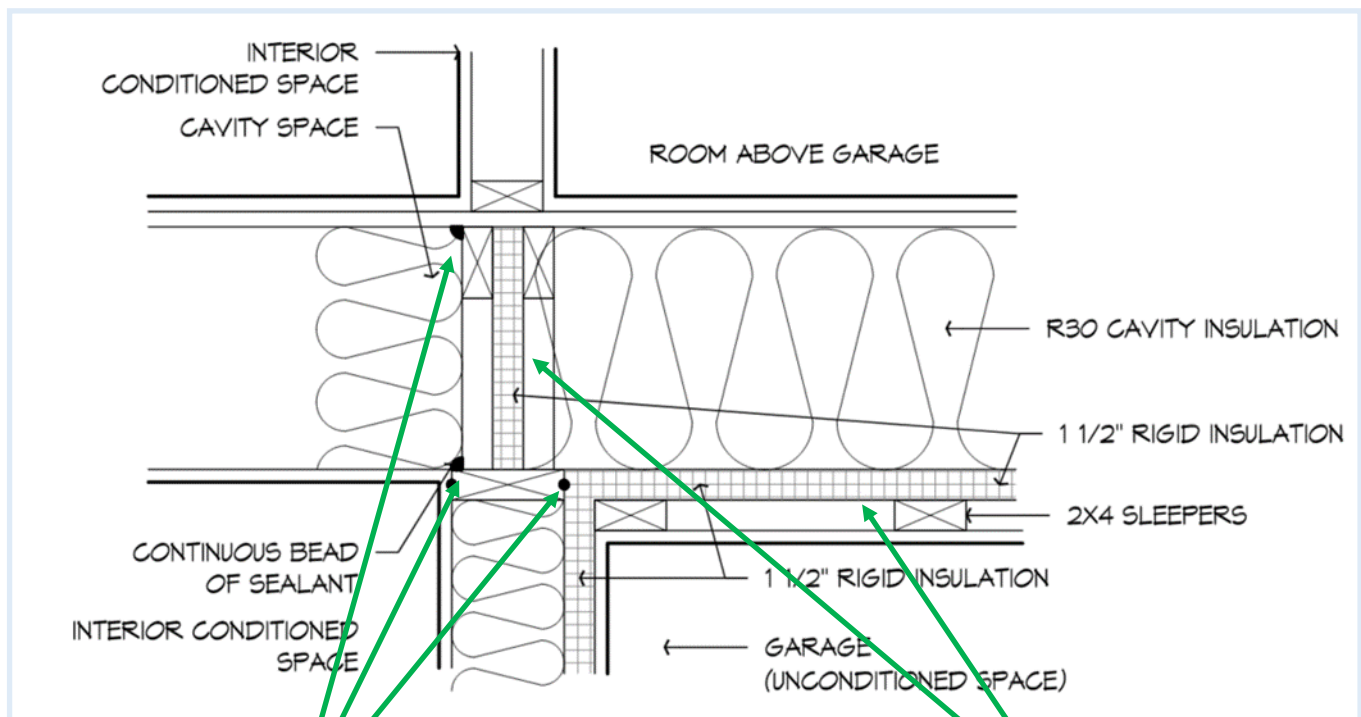
NO AIR BARRIER CRITERIA PROVIDED – INSULATION INSTALLATION CRITERIA CALLS FOR PROPER INSTALLATION THAT CONFORMS TO AVAILABLE SPACE

- The image below demonstrates the intent of this requirement to seal those narrow cavities.



Garage Separation

- Air sealing shall be provided between the garage and conditioned spaces.



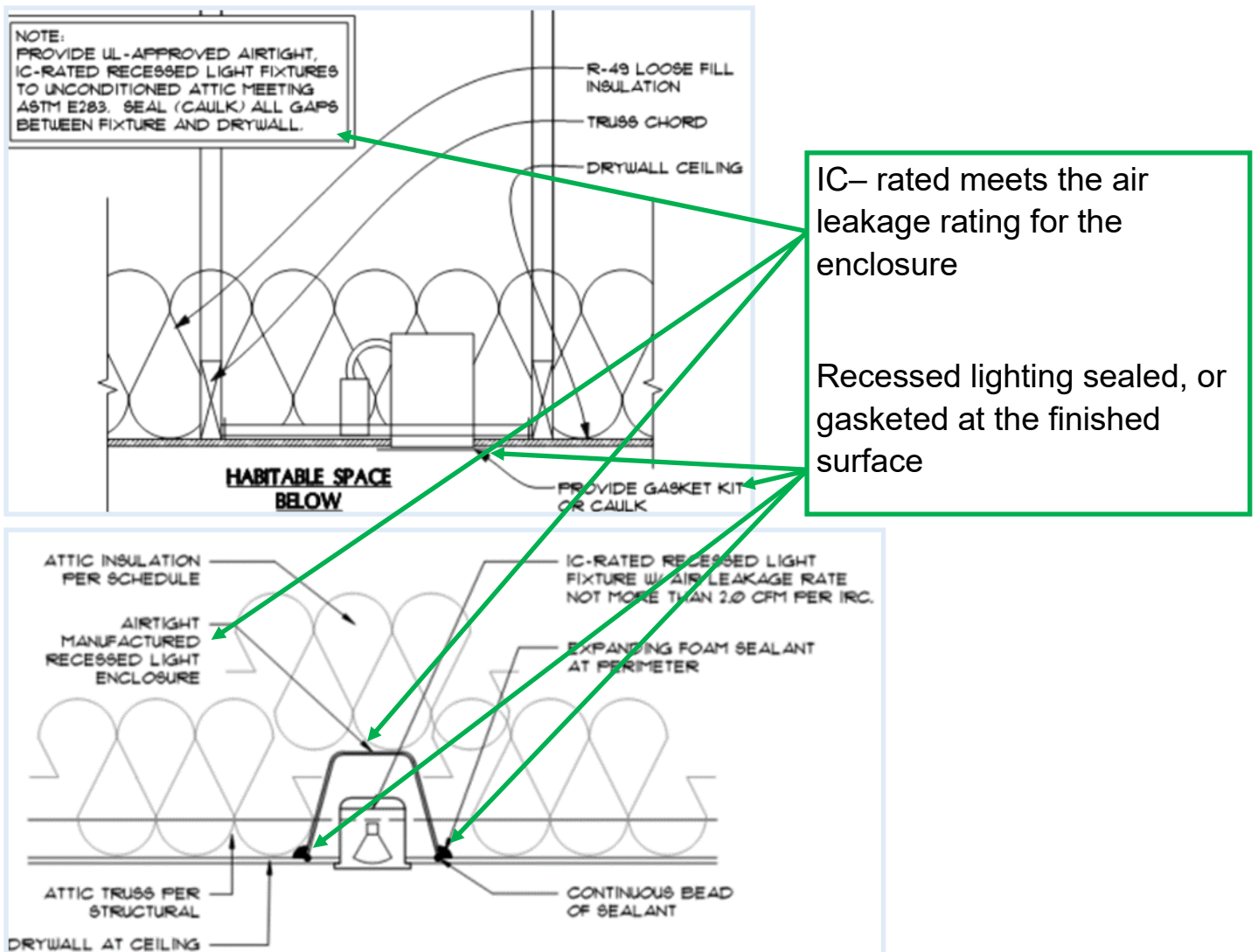
Sealing was called out to separate the garage area from the dwelling units

Air barrier is called out to separate the garage area from the dwelling units

Recessed Lighting

2018 IECC

- Recessed light fixtures installed in the building thermal envelope shall be sealed to the finished surface.

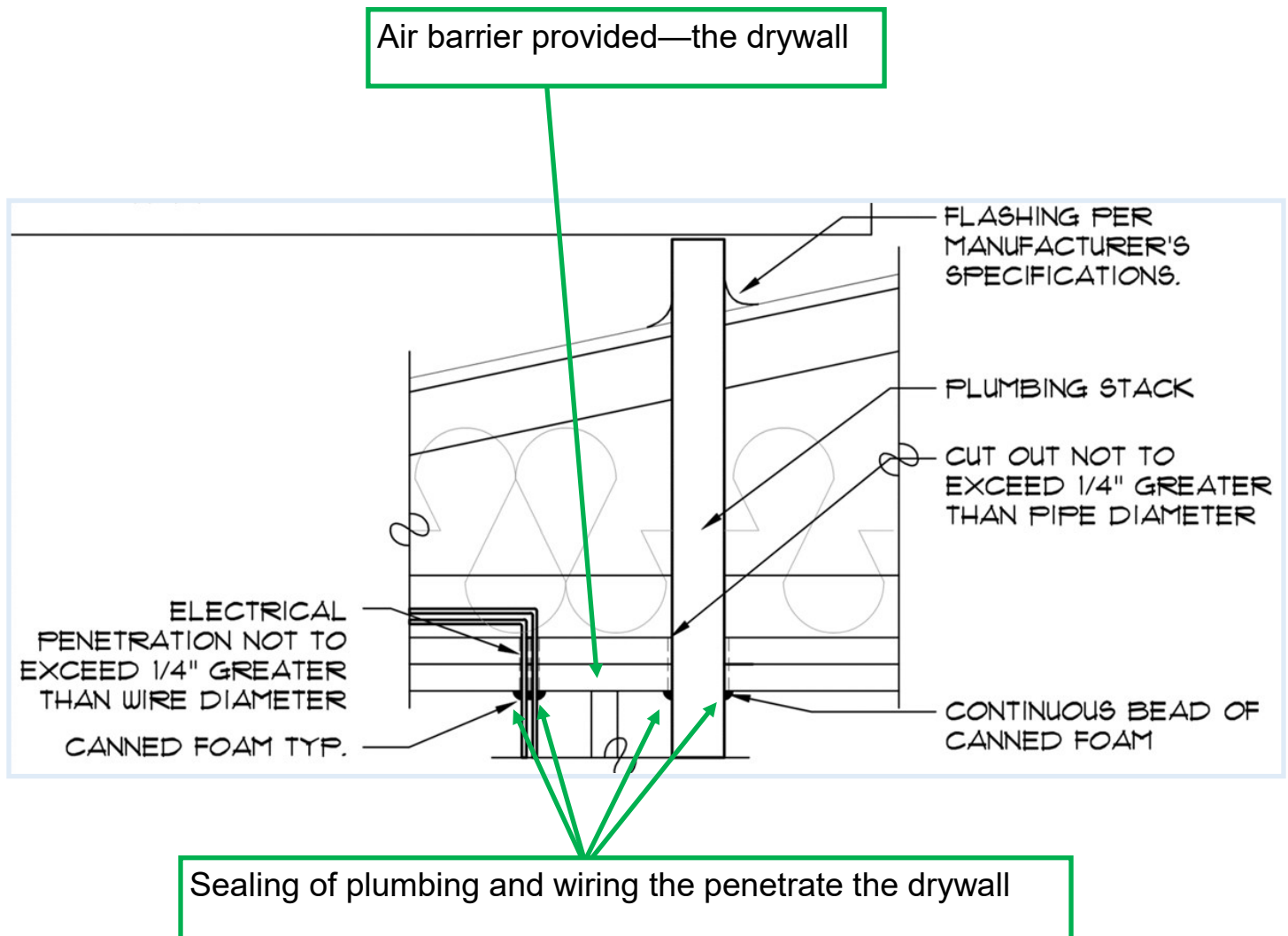


- RECESSED LIGHTING INSTALLED IN THE THERMAL ENVELOPE SHALL BE SEALED WITH A GASKET OR CAULK BETWEEN THE HOUSING AND THE INTERIOR WALL OR CEILING COVERING, BE IC-RATED AND LABELED AS HAVING AN AIR LEAKAGE RATE NOT MORE THAN 2.0 CFM PER IRC.

Plumbing and Wiring

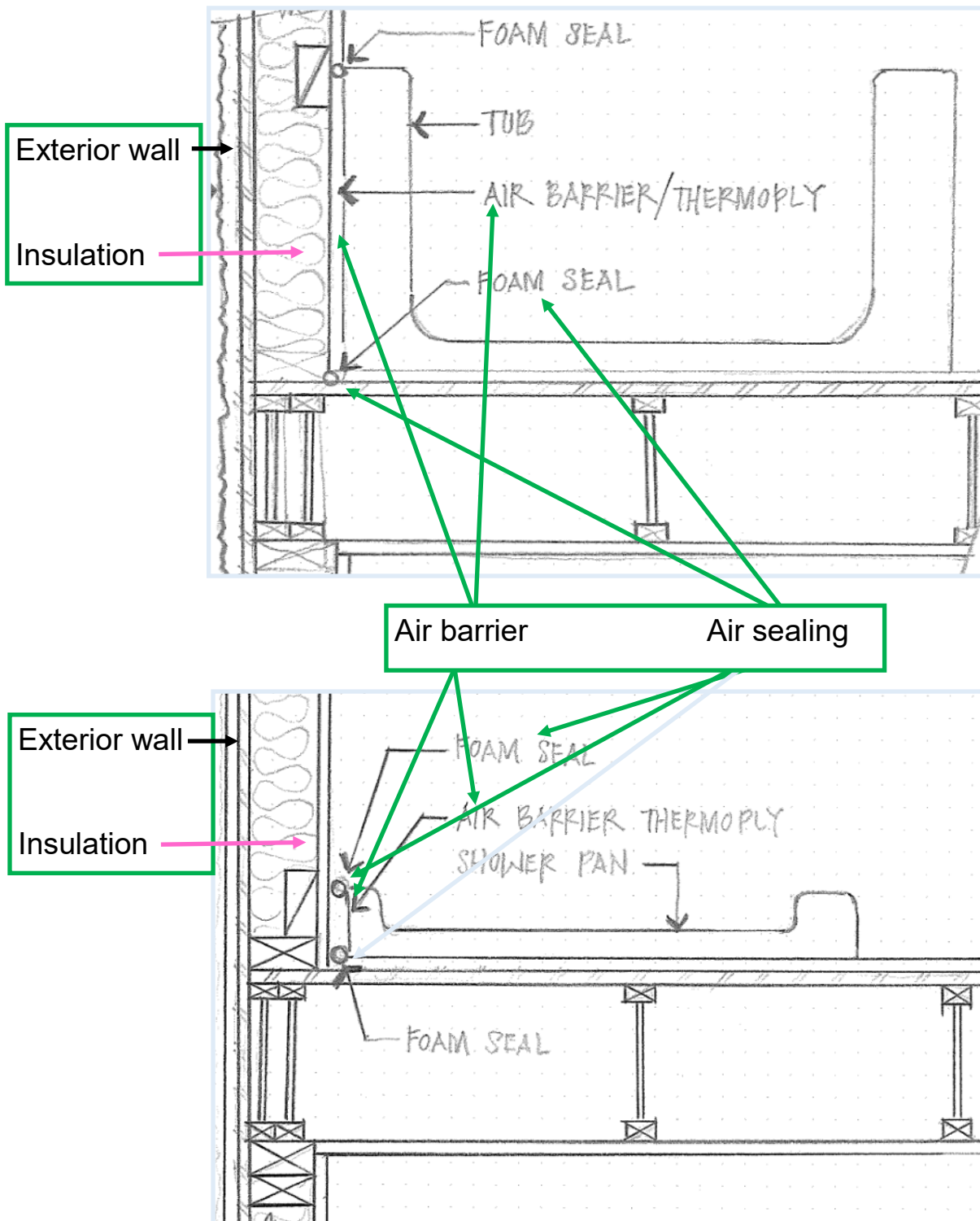
2018 IECC

- NO AIR BARRIER CRITERIA PROVIDED – INSULATION INSTALLATION CRITERIA CALLS FOR PROPER INSTALLATION THAT CONFORMS THE AVAILABLE SPACE AND EXTENDS BEHIND THE WIRING/PIPING



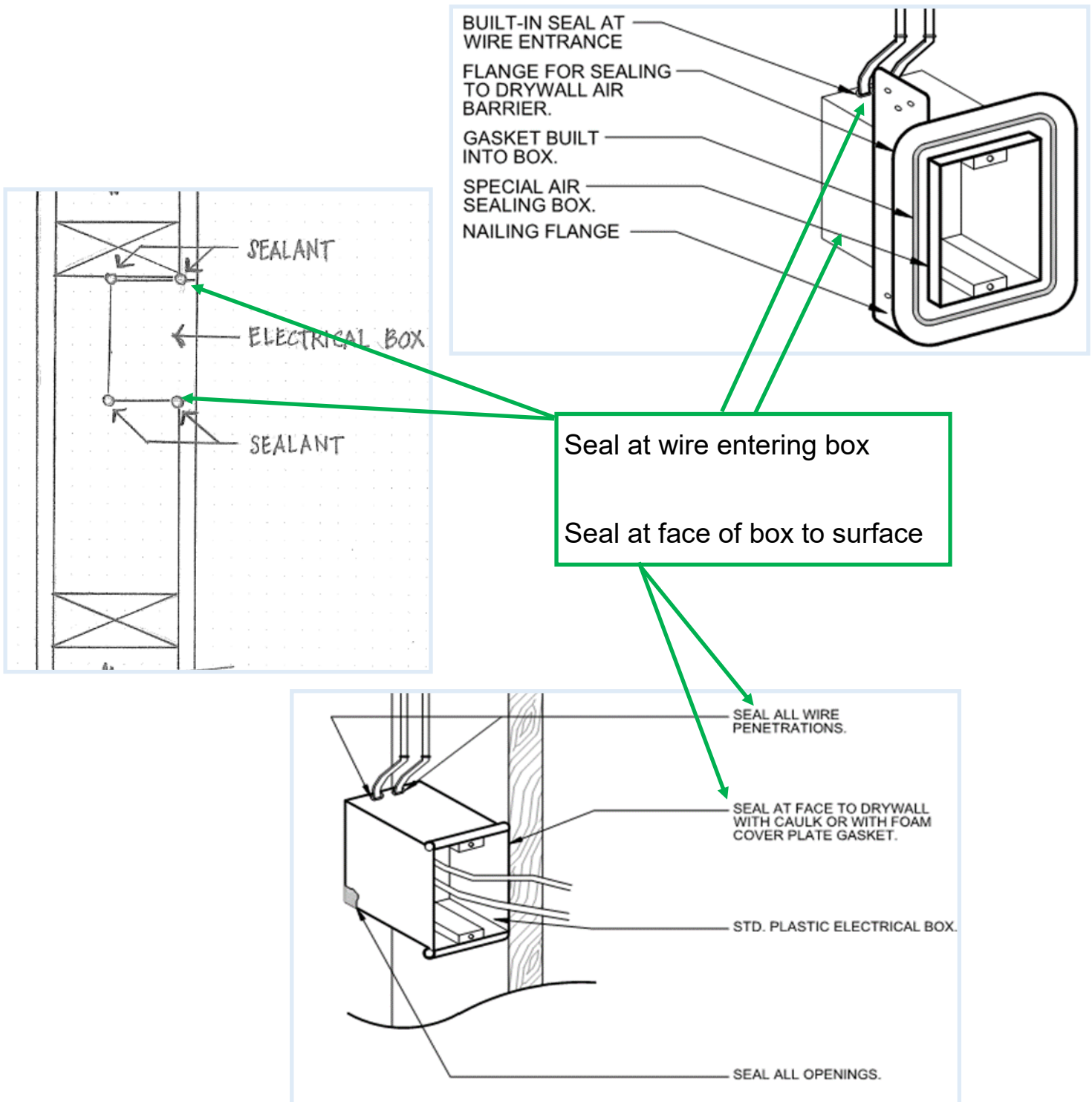
Shower/Tub on exterior wall

- The air barrier installed at exterior walls adjacent to showers and tubs shall separate the wall from the shower or tub.



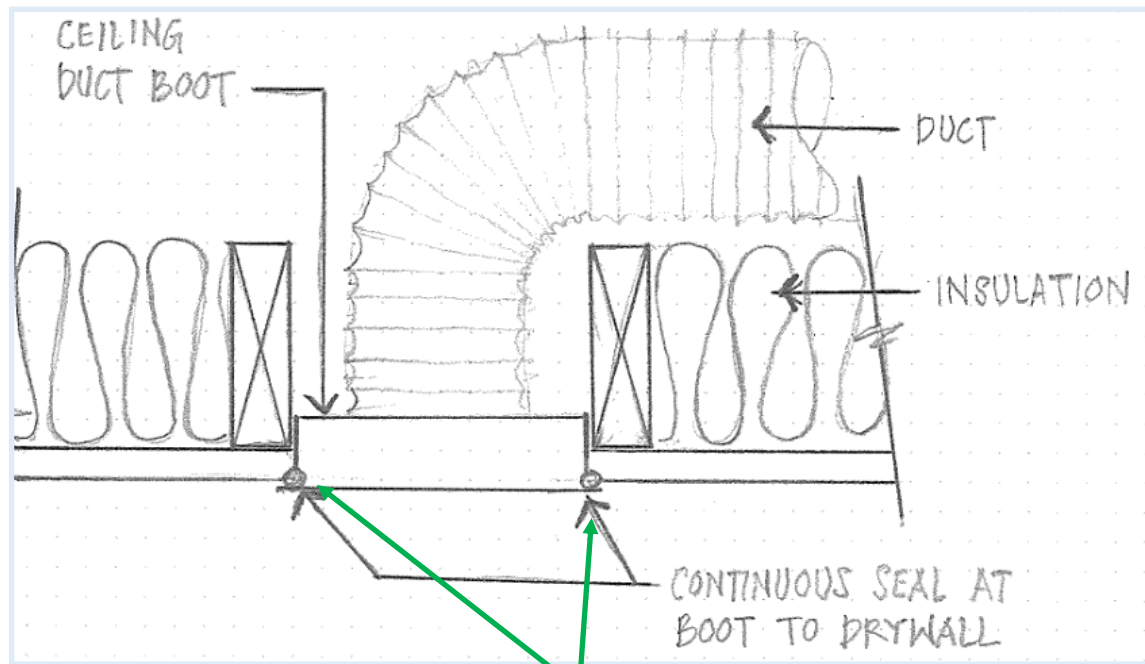
Electrical/phone box on exterior walls

- The air barrier shall be installed behind electrical and communication boxes. Alternatively, air-sealed boxes shall be installed.

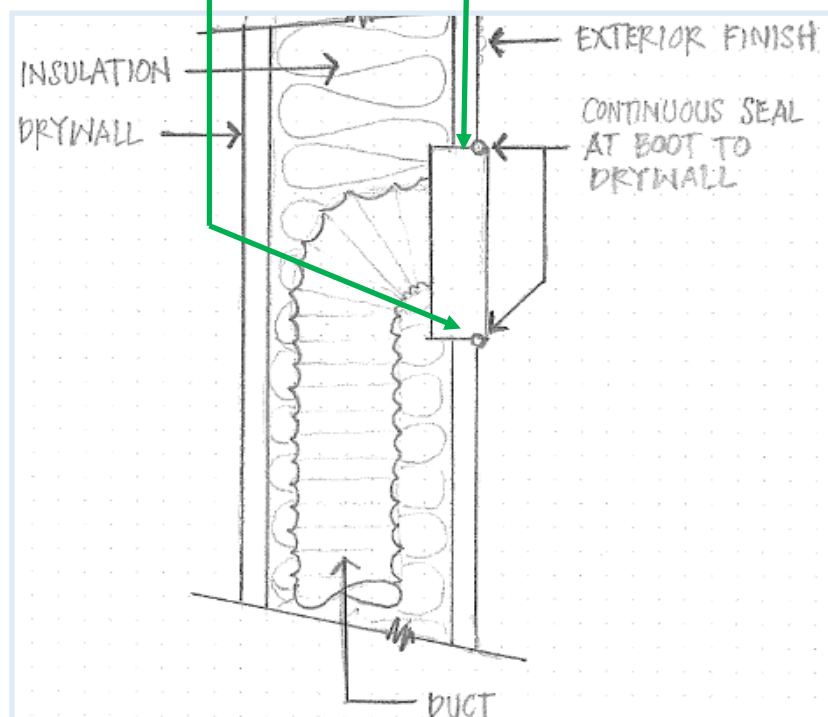


HVAC Register Boots

- HVAC supply and return register boots that penetrate building thermal envelope shall be sealed to the subfloor, wall covering or ceiling penetrated by the boot.



Sealing at register to surface



Concealed Sprinklers

- Where required to be sealed, concealed fire sprinklers shall only be sealed in a manner that is recommended by the manufacturer. Caulking or other adhesive sealants shall not be used to fill voids between fire sprinkler cover plates and walls or ceilings.

No standardized detail can be provided by the designer. It must come from the manufacturer of the concealed sprinkler head. As a plans examiner or architect/designer a request should be made to the manufacturer for the correct detail for air sealing

