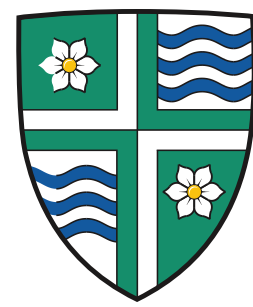


## Air Barrier Approaches Shown in This Mock-Up

This mock-up shows examples of interior and exterior air barrier approaches. The intent is not to suggest that both are required. A project may use an interior approach, an exterior approach, or both. The key is maintaining continuity and good detailing.



Township of  
**Langley**  
Est 1873



### Can a Wall Have Two Air Barriers?

**Yes.** A wall can have more than one air barrier. While one continuous and well-installed air barrier is usually sufficient, two air barriers is not a building-science concern as long as each layer is detailed and continuous.

### Can a Wall Have Two Vapor Barriers?

**No.** Avoid two vapor barriers. An assembly must be able to dry in at least one direction. A double vapor barrier can trap moisture limiting drying potential and increasing the risk of condensation, mold, and durability problems.



#### 1. Below-Grade to Wall Air Barrier Transition

This detail shows the transition between the below-grade foundation to the framed wall in an exterior air barrier system. Ensure a continuous, sealed connection using compatible materials that adhere to concrete; proper surface preparation (cleaning and priming).

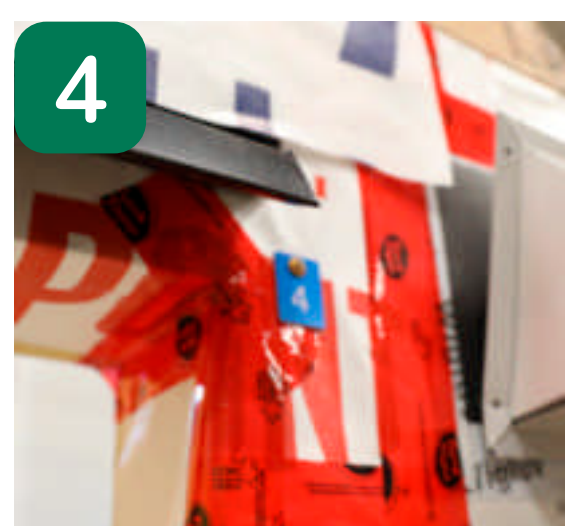
#### 2. Exterior Air Barrier Using Water-Resistive Barrier

This detail shows an exterior air barrier strategy using the water-resistive barrier (WRB). Seal all laps, seams, and accessories continuously both vertically and horizontally using compatible tapes and products, following manufacturer requirements.



#### 3. Lower Window Corner Air Barrier Detail

This detail shows lower window corner detailing in a WRB-based air barrier. Use compatible self-adhered sill products and gussets as needed, and avoid stretching materials with memory.



#### 4. Upper Window Corner Air Barrier Detail

This detail shows upper window corner detailing in a WRB-based air barrier. Use compatible tape and gussets to maintain continuity and waterproofing, avoiding stretched materials that pull back over time.

## Acknowledgements

This mock-up was commissioned by the Township of Langley and developed in collaboration with the BCIT ZEB Learning Centre. We gratefully acknowledge the Township of Langley team for their guidance and support, and the BCIT ZEB Learning Centre for designing and constructing the mock-up. The construction details in this mock-up are informed by NRCan's LEEP program and the Net Zero Energy Wall Guides, which provide practical guidance for high-performance, energy-efficient building assemblies.

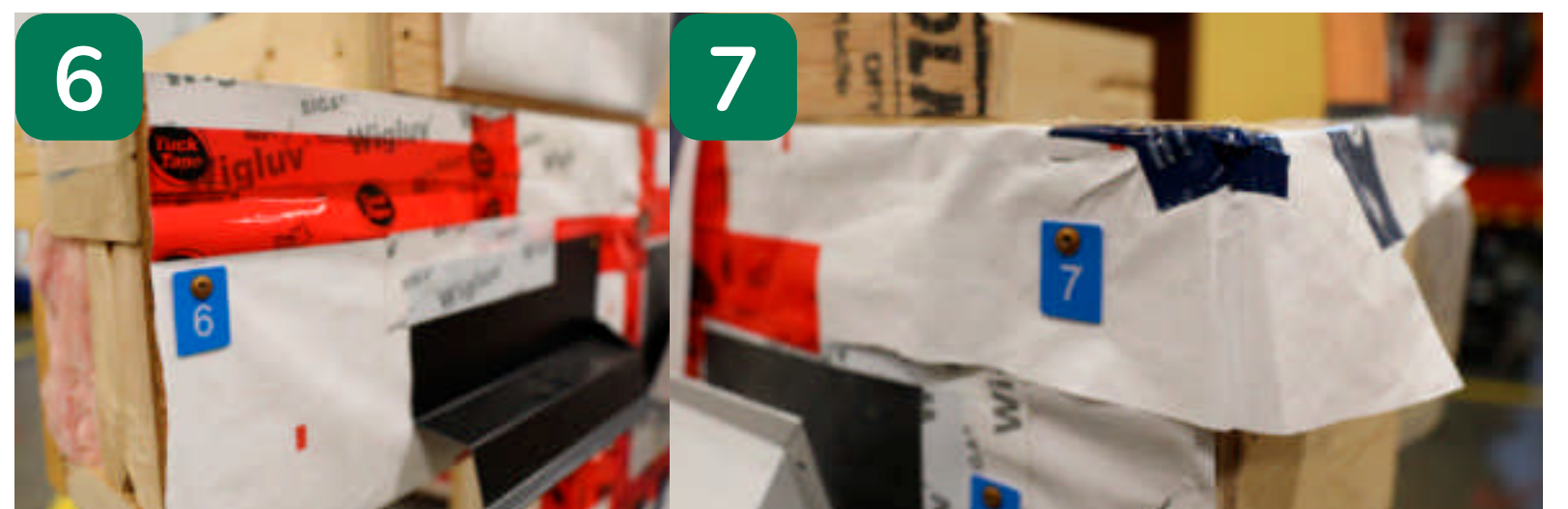
#### 5. Window Frame to Wall Air Barrier Connection

This detail shows the window frame connection to the wall air barrier. Maintain continuous, compatible seals between the frame, membrane, and sealants, and apply sealant from the interior side to allow outward drainage and preserve continuity at back dams or clip-mounted systems.



#### 6 & 7. Wall-to-Ceiling Air Barrier Transition

This detail shows the transition from exterior wall air barrier to the interior ceiling air and vapour barrier at attic level. Ensure continuous connections with compatible materials and sequencing. Where required, use tape-to-tape connections at the top plate.



#### 8. Electrical Penetration Through the Air Barrier

Electrical penetrations through the air barrier, can be sealed with a gasket for a reliable airtight seal, reduced reliance on tape alone, easier future repair, and long-term performance when compatible materials are used.



#### 9. Mechanical Penetration Through the Air Barrier

Mechanical penetrations through the air barrier can be sealed with a gasket to provide a reliable airtight seal without relying on tape alone. Use compatible materials and ensure the duct is properly supported for long-term durability.



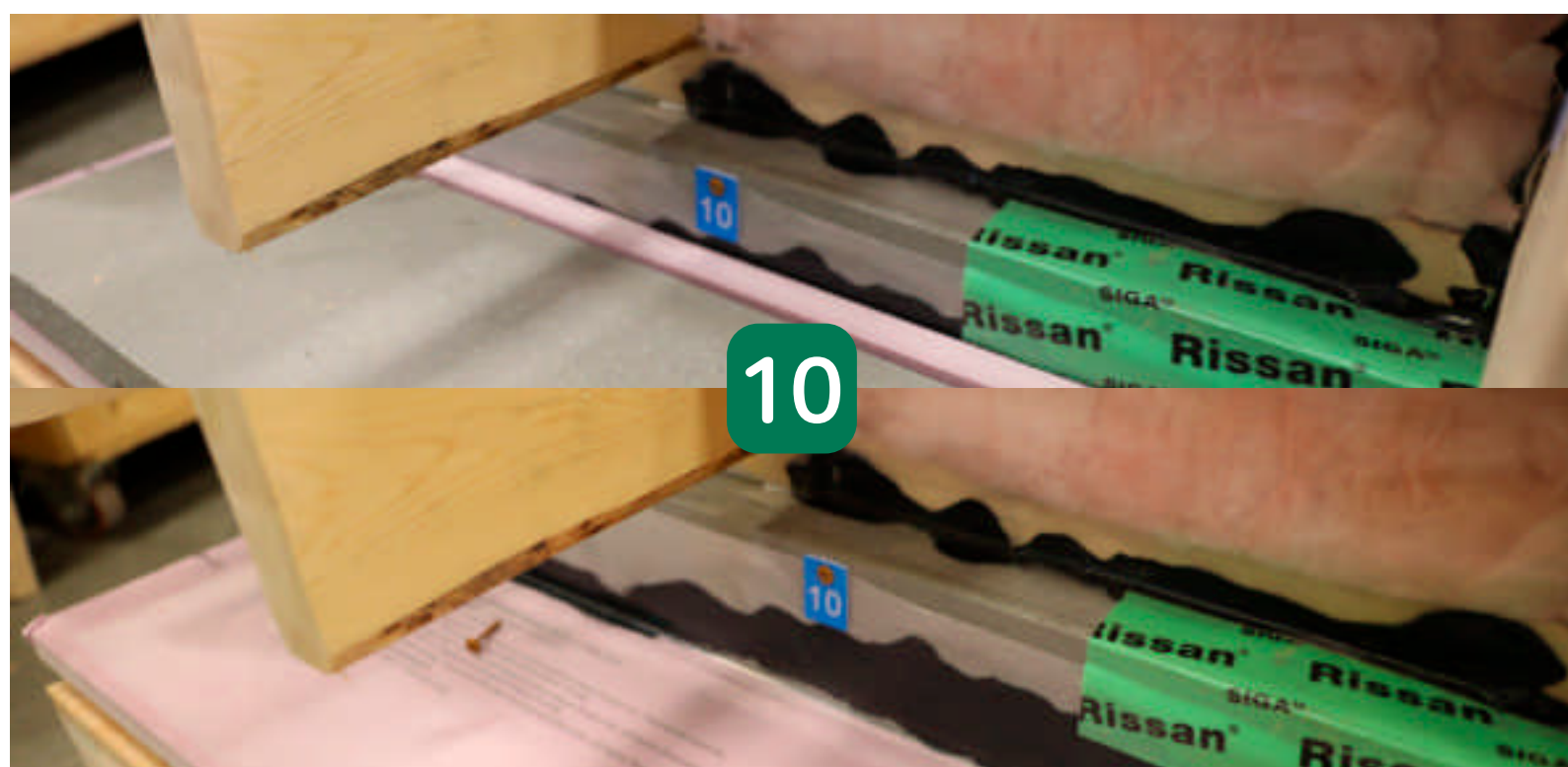
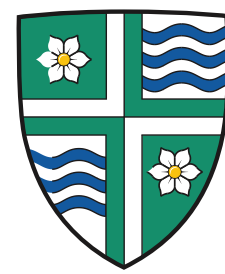
Scan the QR code for additional details, resources, and full technical information on the BCIT website.

We kept text to a minimum on purpose for simplicity and clarity, and encourage you to visit the website for all the details.



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For more information:  
[tol.ca/gblearn](http://tol.ca/gblearn) [bcit.ca/zeb](http://bcit.ca/zeb)



### 10. Slab-on-Grade to Foundation Wall Air Barrier Transition

This detail shows the air barrier connection between the slab and foundation wall using polyethylene. Maintain continuity with compatible materials and ensure connections are visible for inspection before concealment.



### 11. Rim Joist Interior Air Barrier Connection

This detail shows an interior air barrier at the rim joist using polyethylene and sealant. Maintain continuity across transitions with compatible materials and inspect connections before covering.

### 12. Rim Joist XPS Insulation Detail

This detail shows XPS used at the rim joist for thermal and air control. If used as an air barrier, seal all joints and edges, and confirm product compatibility and suitability.



### 13. Polyethylene Air and Vapour Barrier

This detail shows polyethylene used as both air and vapour barrier. Seal all joints and penetrations continuously; note that acoustic sealant requires compression to perform effectively. Note: electrical tape is shown only to indicate the sealant bead location.

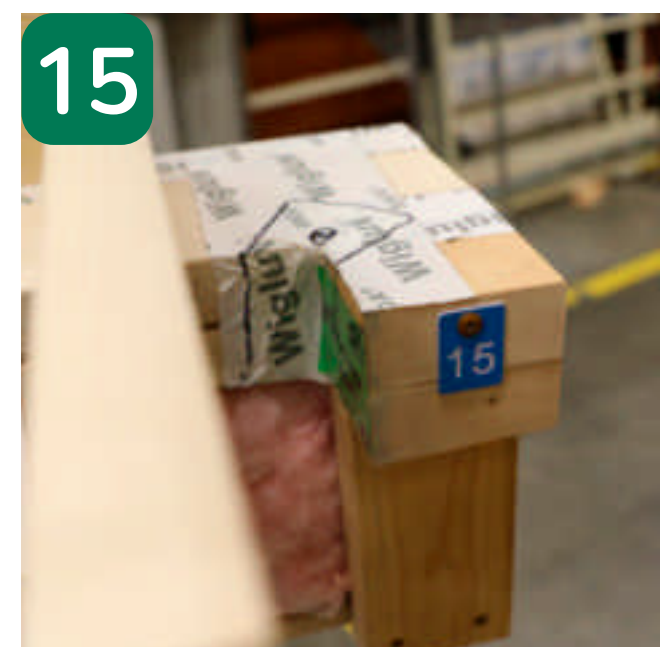


### 14. Interior Window Air Barrier Connection

This detail shows the window connection to the air barrier from the interior side. Ensure continuous sealing with compatible materials, allowing moisture to dry outward.

### 15. Top Plate Tape-to-Tape Air Barrier Transition

This detail shows a tape-to-tape connection between exterior WRB and interior ceiling air barrier. Use compatible tapes and ensure proper sequencing and inspection before concealment.



### 16. Top Plate WRB Strip Air Barrier Transition

This detail shows a WRB strip used to connect exterior and interior air barriers at the top plate. Maintain continuity with proper sequencing, sealing, and inspection before concealment.



### 17. Electrical Penetration Through the Air Barrier

This detail shows an electrical penetration through a polyethylene air barrier. Seal all penetrations using compatible materials; fire putty may be used if suitable and properly installed.



### 18. Ceiling Air Barrier Penetration

This detail shows a pipe penetration sealed with a gasket at the ceiling transition. Use compatible materials and proper support to maintain long-term airtightness.



Scan the QR code for additional details, resources, and full technical information on the BCIT website.

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