



9.36.2.9 Airtightness

**Module 3
BCBC 9.36.
2014**



9.36.2.9. Airtightness

- **9.25.3. currently requires an airtight building envelope.**
 - But does not get into details, although appendix notes clarify intent.
- **9.36. addresses construction of air barrier details (9.36.2.10.) because of the heat loss implications.**



9.36.2.9. Airtightness

- Testing is NOT required.
- Whole building airtightness test results may be used in the performance compliance path
- Use of assemblies tested to ULC-S742 is an option for compliance with specified prescriptive construction details
- Added prescriptive requirements for common details



9.36.2.9. Airtightness

- **Air barriers must be continuous**
 - Across construction, control and expansion joints
 - Across junctions between different *building* materials and assemblies, and
 - Around penetrations through all *building* assemblies.



9.36.2.9. Airtightness

- Heated garages require weatherstripped garage doors
- Fireplaces - restrict air movement



9.36.2.10. Construction of Air Barrier Details

- Critical air sealing junction and penetration have been identified in 9.36.2.10.



Figure 5: Air Barrier Detail Locations



9.36.2.10. Construction of Air Barrier Details

- Air barrier materials must meet criteria in 9.25.5. for air barrier materials
- Air sealing materials must be compatible with adjoining materials
- Rigid panel assemblies must have all joints sealed to maintain continuity of the airtightness.



9.36.2.10. Construction of Air Barrier Details

- **Air barrier systems can be:**
 - **Rigid panels or materials**
 - Air-tight drywall
 - Spray applied foam insulation
 - Rigid panel materials (e.g. extruded polystyrene; sheathing panels)
 - **Membrane sheets**
 - Sealed polyethylene
 - Exterior house wrap
 - **A combination of these**



9.36.2.10. Construction of Air Barrier Details

- Rigid panel air barriers: joint sealing achieved by compatible materials:

- Caulking,
- Sealants,
- Spray foam
- Tapes
- Gaskets





9.36.2.10. Construction of Air Barrier Details

- Joints in panel-type air barrier materials must be sealed
 - Air sealing tapes





9.36.2.10. Construction of Air Barrier Details

- Flexible sheet air barrier materials require all joints to be
 - lapped at least 50 mm (2")
 - Sealed and
 - structurally supported
- Sealants must be non-hardening





9.36.2.10. Construction of Air Barrier Details

- 9.36.2.10. (7)
Penetrations by electrical wiring, outlets, switches or recessed light fixtures through the air barrier must be sealed.



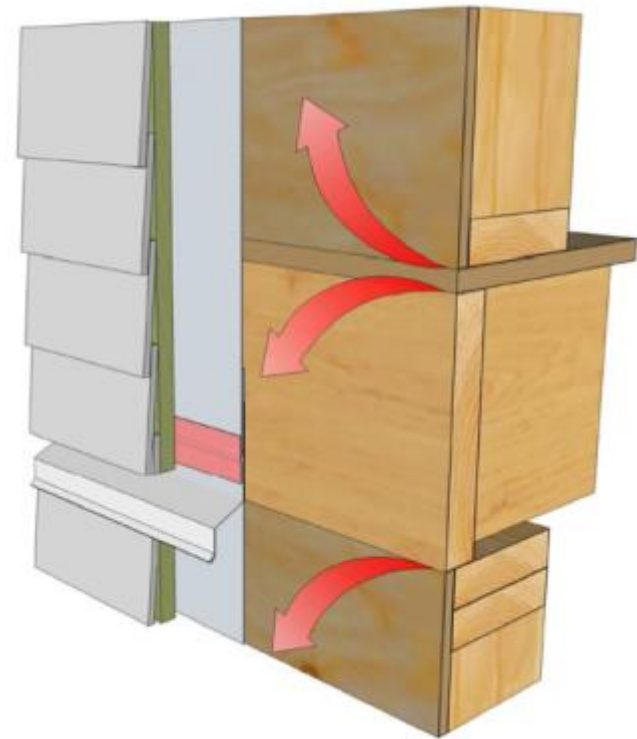


9.36.2.10. Construction of Air Barrier Details

- **9.36.2.10. (8) Joints between foundation wall and framing must be sealed**
 - Sill plate
 - Sill plate & rim joist
 - Rim joist and subfloor
 - Bottom plate and subfloor



9.36.2.10. Construction of Air Barrier Details



9.36.2.10. Construction of Air Barrier Details

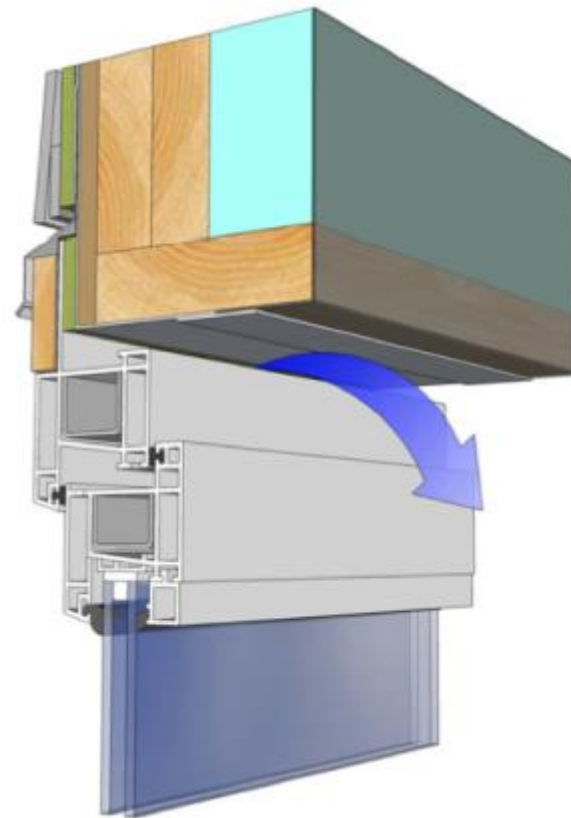
- 9.36.2.10. (8) sealing can be done by
 - Sealing joints between structural elements
 - Covering the structural elements with an air barrier material and sealing it





9.36.2.10. Construction of Air Barrier Details

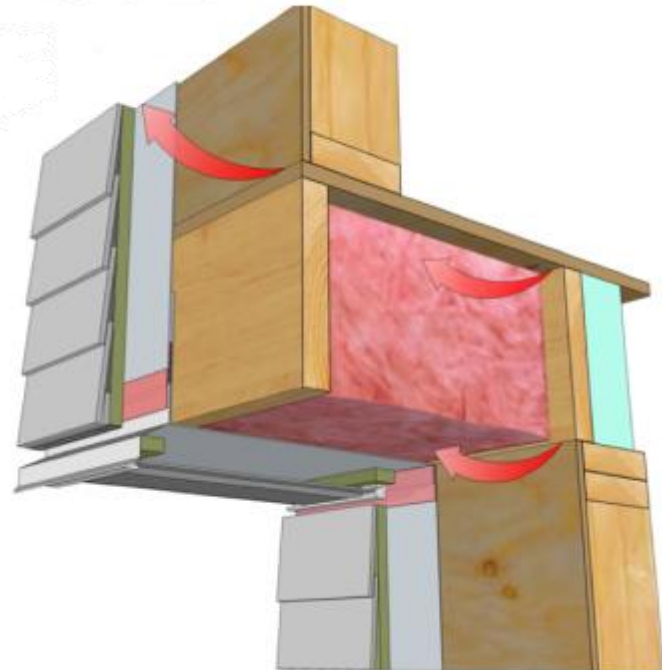
- 9.36.2.10.(9)
Interface between windows, doors and skylights and wall/ceiling assemblies must be sealed





9.36.2.10. Construction of Air Barrier Details

- 9.36.2.10.(10) Cold floors: cantilevered floors and floors over unheated spaces must be airtight.
 - Seal all joints in structural components or
 - Cover structural components with air barrier material



HPO Illustrated Guide: Energy Efficiency Requirements for Houses in British Columbia



9.36.2.10. Construction of Air Barrier Details

- **9.36.2.10.(11) Interior walls that meet exterior walls or ceilings whose plane of airtightness is on the interior of the building envelope and knee walls that separate conditioned space from unconditioned space must be built airtight**
 - **Sealing all junctions between structural components**
 - **Covering components with air barrier material**
 - **Maintaining the continuity of the air barrier system above or through the interior wall or below or through the knee wall**



9.36.2.10. Construction of Air Barrier Details

- 9.36.2.10.(12) steel lined chimneys must be airtight where they penetrate air barrier
 - Void between chimney and framing must be blocked
 - Sheet metal flashing plate must be caulked at chimney with high temperature sealant





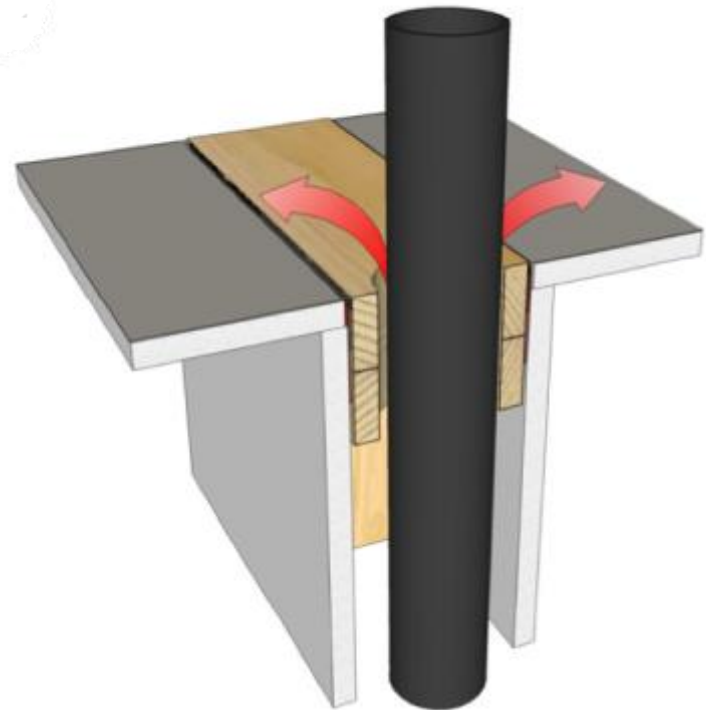
9.36.2.10. Construction of Air Barrier Details

- **9.36.2.10.(13) masonry chimneys must be airtight where they penetrate the building envelope**
 - Mechanically fasten metal flange or stud & seal the air barrier
- **9.36.2.10.(14) ducts penetrating the building envelope must be air sealed at the penetration by sealing duct splices, and the penetration through the building envelope**



9.36.2.10. Construction of Air Barrier Details

- 9.36.2.10.(15)
plumbing vents must be air sealed where they penetrate the air barrier
 - Seal with compatible sealants or sheathing tape
 - Rubber gasket or prefab flashing unit





9.36.2.10. Construction of Air Barrier Details

- **9.36.2.10.(16) a party wall at the air barrier must be built airtight by sealing voids within the party wall by**
 - **sealing all junctions between the structural components, or**
 - **covering the structural components with an air barrier material and sealing it to the adjacent**