

GUIDE TO ENFORCEMENT OF COMMERCIAL AIR BARRIER PROVISIONS

Design to minimize air leakage through the envelope has proven to contribute significant energy savings, as well as comfort and indoor air quality improvements for Commercial buildings. This checklist will serve to provide guidance to Code Enforcement Officials (CEOs) for the enforcement of those requirements in the MA Stretch Energy Code, or to Project Managers for compliance support.

1. CONFIRM COMPLIANCE APPROACH.....

A continuous air barrier shall be provided throughout the building thermal envelope and can be any combination of inside, outside, or within the building thermal envelope. The air barrier shall comply with Sections C402.5.1.1 and C402.5.1.2. Air leakage must be tested in accordance with C402.5.2.

Air Leakage Requirements	Go To...
Thermal envelope test according to C402.5.3	Table 1, Table 4 & Table 5
Assembly requirements C402.5.2.3.2	Table 2 & Table 4
Material requirements C402.5.2.3.1	Table 3 & Table 5

*See C402.5.1.2 for exceptions

**See C402.5.2.2 for testing requirements of dwelling and sleeping units

2. CONFIRM AIR BARRIER COMPLIANCE DETAILS.....

AIR LEAKAGE COMPLIANCE

The air barrier shall comply with Sections C402.5.1.1, and C402.5.1.2. The air leakage performance of the air barrier shall be verified in accordance with Section C402.5.2.

Table 1: Envelope Test Verification (C402.5.2)

Compliance Specification	Verified in Plan Review? Y/N	Verified in Site Inspection? Y/N
Target air leakage rate $\leq .35$ cfm/ft ² @ 75 (Pa)*		
Responsible testing agent		
Proposed remediation if failed		
Final documentation provided		
Class I motorized dampers installed on outdoor air intakes and exhaust openings per C403.7.7		
Loading Dock weather Seals C402.5.7		
Enclosed Vestibules installed C402.5.8**		

*See C402.5.2 for exceptions

**See C402.5.8 for exceptions

3. ASSEMBLY REQUIREMENTS.....

The Air Barrier system that is being proposed must be detailed in the construction documents and specifications provided to show that systems comply with C402.5.2.3.2. Assemblies comply with this section when average air leakage is not greater than 0.04 cfm/ft² @ 75 (Pa) when tested in accordance with ASTM standards E2357, E1677, D8052 or E283. Assemblies listed in Table 2 shall comply provided joints are sealed and C405.5.1.1 requirements are met.

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Table 2: Assembly Compliance Verification (C402.5.2.3.2)

Deemed Assembly	Verified in Plan Review? Y/N	Verified in Site Inspection? Y/N
Concrete Masonry walls coated with either one application of block filler or two applications of a paint sealer coating		
Masonry walls constructed of clay or shale masonry units $\geq 4"$		
Portland cement/sand parge, stucco or plaster $\geq 1/2"$		

4. MATERIALS REQUIREMENTS.....

The installed location and type of the materials that form the air barrier must be included in the construction documents (C102.2). Air barrier materials in Table 3 shall be deemed to comply with this section, provided that joints are sealed, and materials are installed as air barriers in accordance with manufacturer's instructions.

Table 3: Materials Compliance Verification (C402.5.2.3.1)

Material	On Product Sheets or Plans? Y/N	Verified in Site Inspection? Y/N
Plywood $\geq 3/8"$		
Oriented strand board $\geq 3/8"$		
Polystyrene board $\geq 1/2"$		
Foil-back polyisocyanurate board $\geq 1/2"$		
Closed cell spray foam (1.5 pcf) $\geq 1.5"$		
Open cell spray foam (0.5 - 1.4 pcf) $\geq 4.5"$		
Gypsum board $\geq 1/2"$		
Cement board $\geq 1/2"$		
Built-up roof membrane		
Modified bituminous roof member		
Single-ply roof membrane		
Portland cement/sand parge or gypsum plaster $\geq 5/8"$		
Cast in-place or precast concrete		
Fully grouted concrete block masonry		
Sheet steel or aluminum		
Solid or hollow masonry constructed of clay or shale masonry units		

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5. CONFIRM OTHER CONSTRUCTION DETAILS.....

Table 4: Other Air Barrier Construction Details. See Table 5 for fenestration requirements.

Detail Number	System	Verified in Plan Review? Y/N/NA	Verified in Inspection? Y/N/NA
2	Wall assembly continuity		
3	Windows and doors sealed/flushed		
4	Utility/other penetrations sealed - pipe, shaft, conduit, recessed lighting, electrical/communications boxes		
5	Wall-roof transition is continuous (e.g. parapets, roof curbs)		
6	Wall-ceiling (with attic) transition continuous		
7	Wall-floor transition continuous (rim/band joist, wall to foundation/footing)		
8	Structural elements (beams/posts) sealed		
	Rooms containing fuel-burning appliances (C402.5.4)		
	Doors and access openings to shafts, chutes, stairways, and elevator lobbies (C402.5.5)		
	Dampers on air intakes, exhaust openings, stairways and shafts (C402.5.6)		
	Loading dock weatherseals (C402.5.7)		
	Vestibules (C402.5.8)		
	Recessed lighting (C402.5.9)		
	Operable Openings Interlocking (C402.5.10)		

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Table 5: Maximum Air Leakage Rate for Fenestration Assemblies Checklist (C402.5.3)

Fenestrations in buildings that are tested in accordance with C402.5.2 are not required to comply with Table 5

Fenestration Assembly and Maximum Rate CFM/ft ²	Identified in Plan Review? Y/N	Inspection Y/N
Windows ≤ 0.20		
Sliding doors ≤ 0.20		
Swinging doors ≤ 0.20		
Skylights: with condensation weepage openings ≤ 0.30		
Skylights: all other ≤ 0.20		
Curtain walls ≤ 0.06		
Storefront glazing ≤ 0.06		
Commercial glazed swinging entrance doors ≤ 1.00		
Power-operated sliding doors and power-operated folding doors ≤ 1.00		
Revolving doors ≤ 1.00		
Garage doors ≤ 0.40		
Rolling doors ≤ 1.00		
High-speed doors ≤ 1.30		

*Leakage table recreated from 2021 International Energy Conservation Code Table C402.5.3. Test procedures should be administered per AAMA, WDMA, CSA, NFRC, ASTM, ANSI/DASMA as noted.

**Air leakage of all fenestrations is listed in the Windows Schedules and must comply with Table 5, or Documentation that site-built fenestration assemblies will be tested to meet the requirements in Table 5 and are listed in the specifications and are sealed according to C402.5.2.

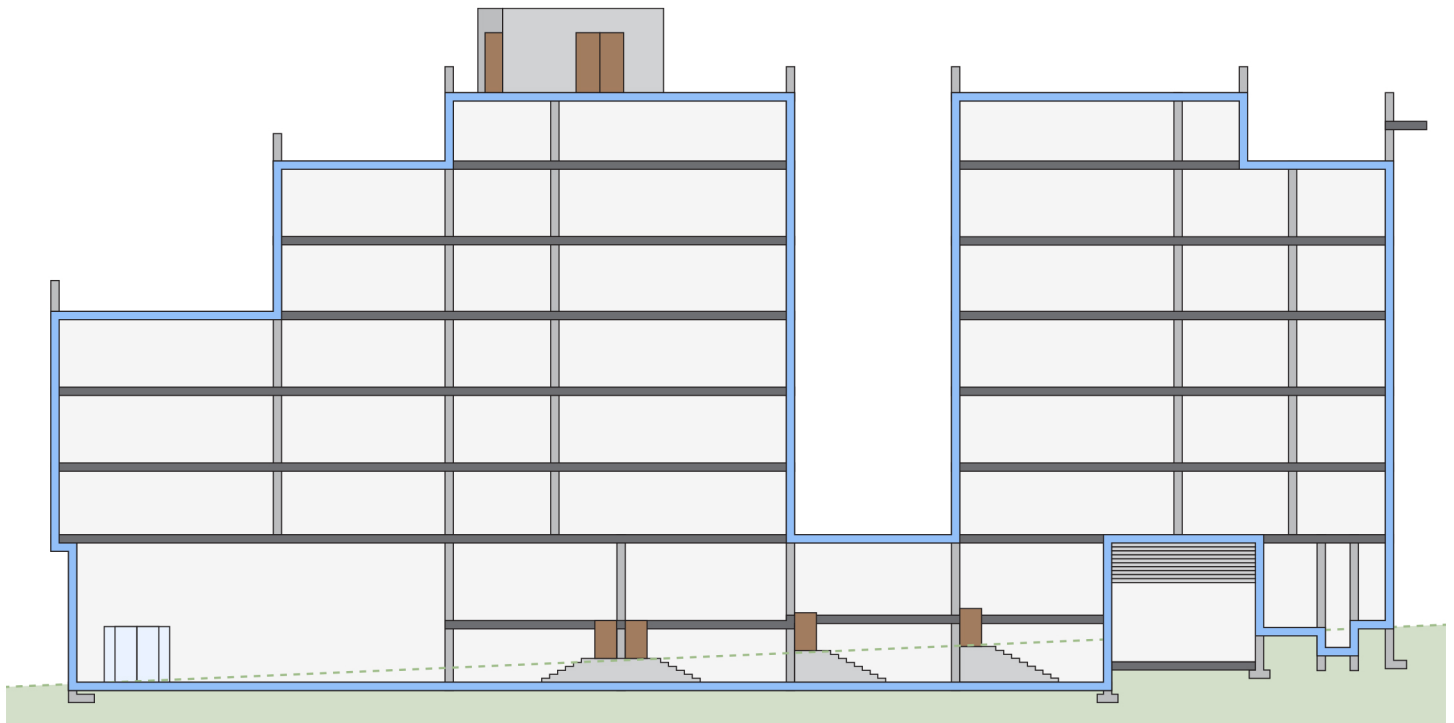
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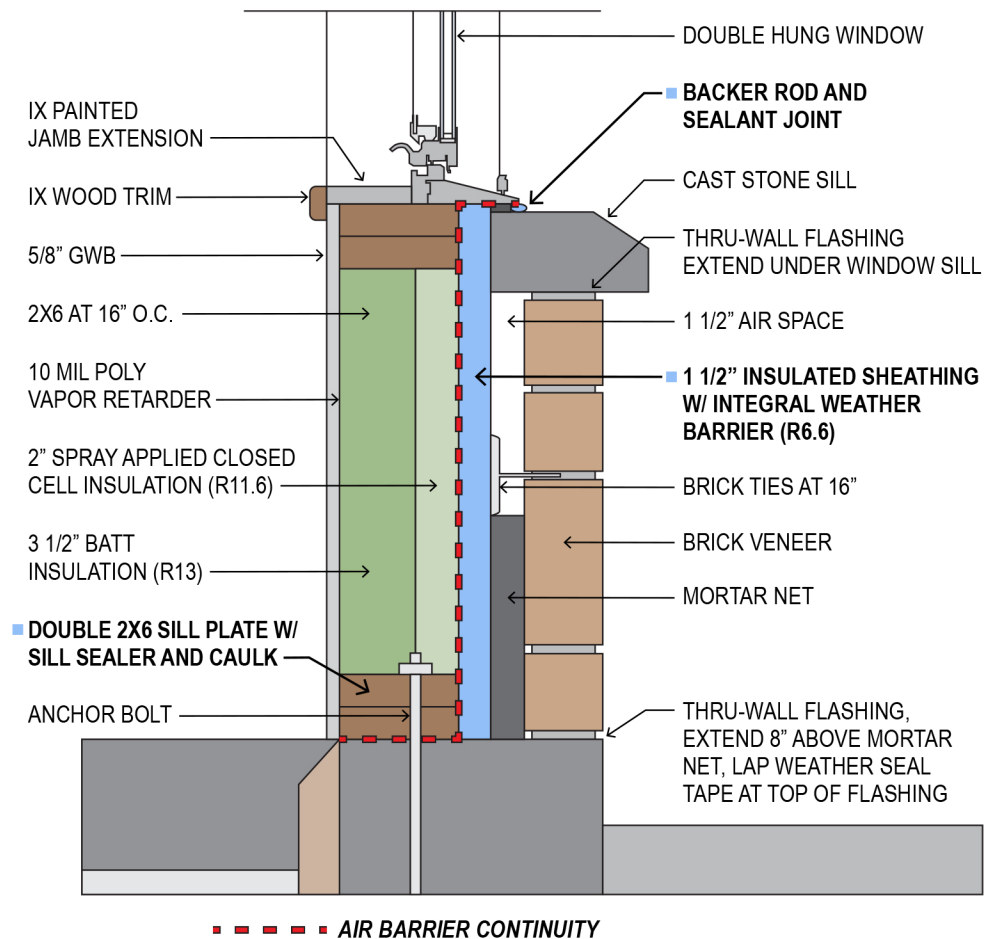


APPENDIX - AIR BARRIER CONSTRUCTION DETAILS.....

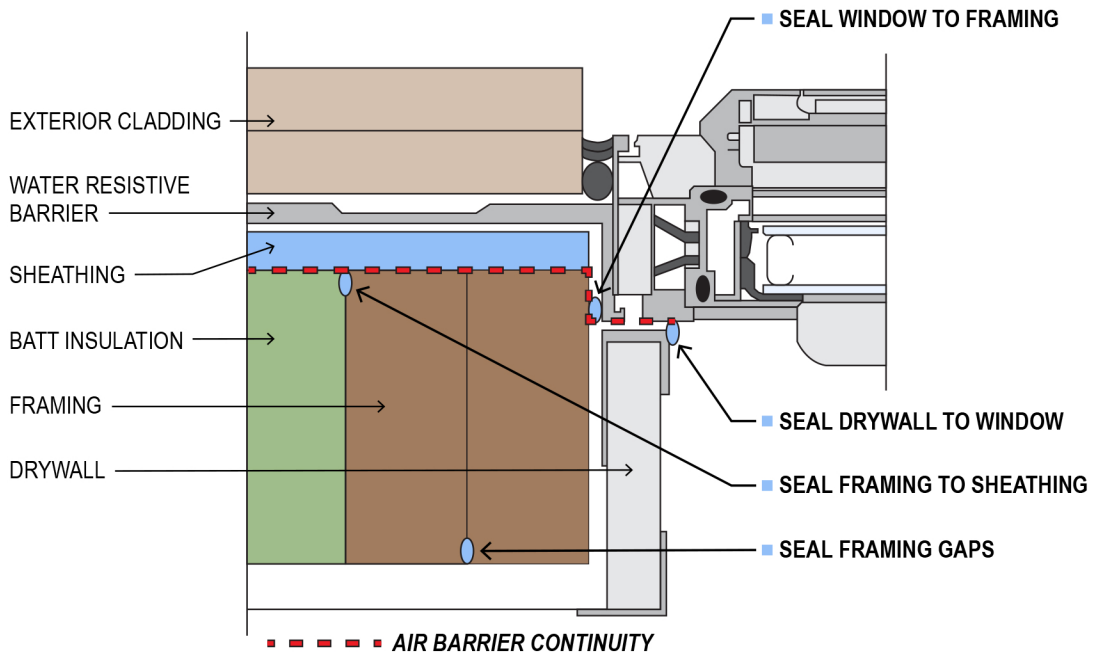
DETAIL 1. AIR BARRIER IN BUILDING CROSS-SECTION



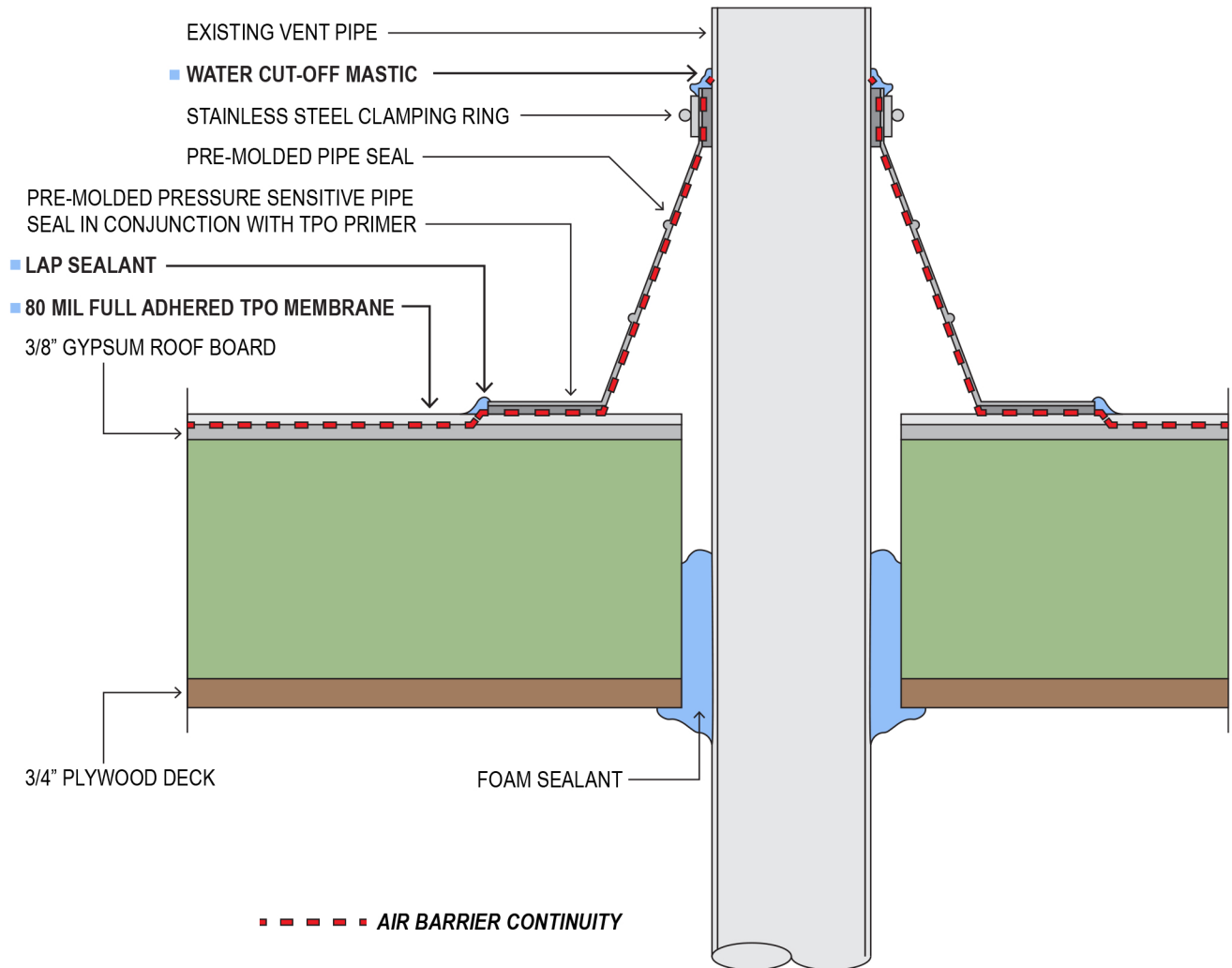
DETAIL 2. WALL ASSEMBLY CONTINUITY



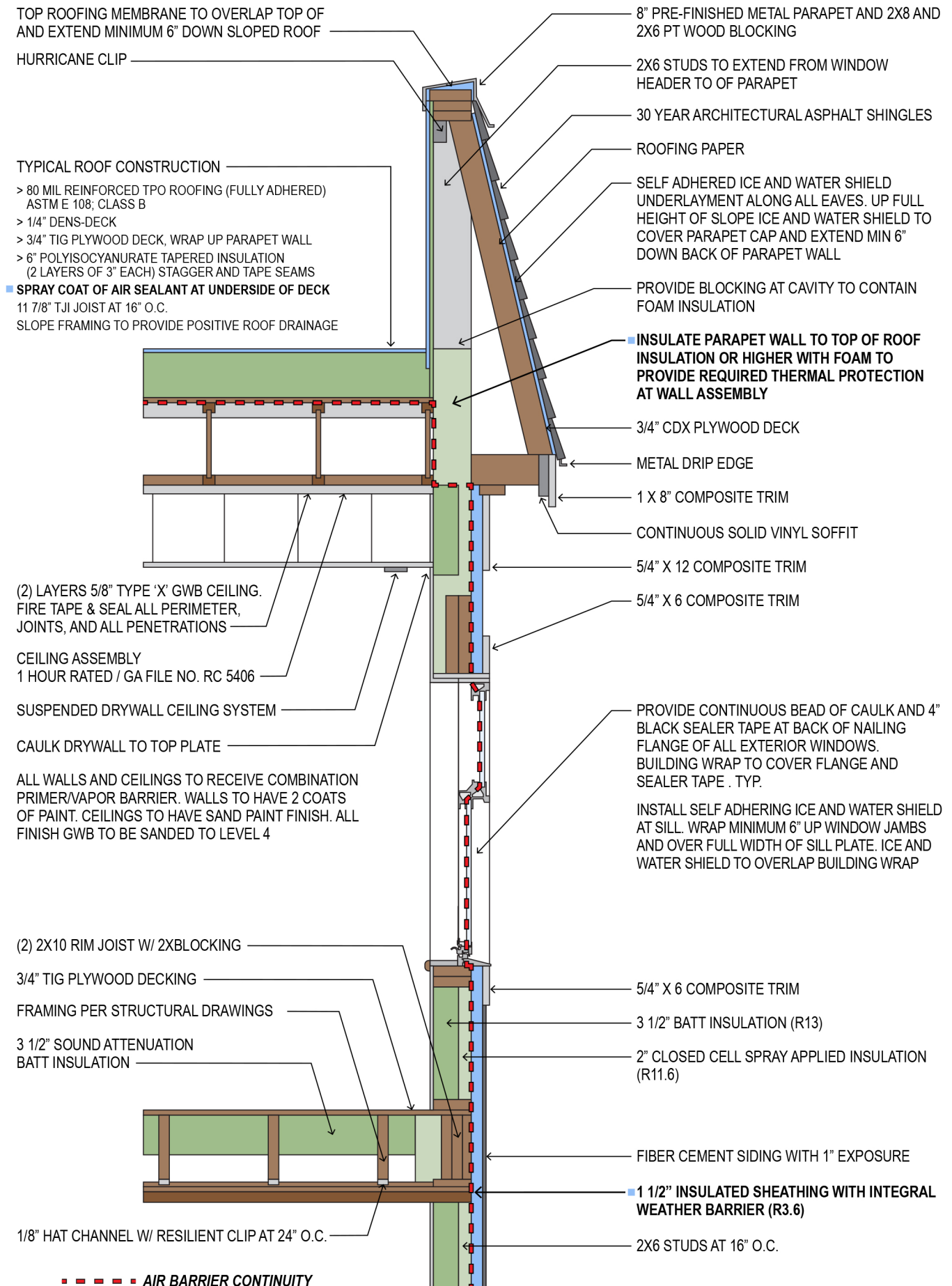
DETAIL 3. AIR BARRIER AT WINDOW (TOP-DOWN VIEW)



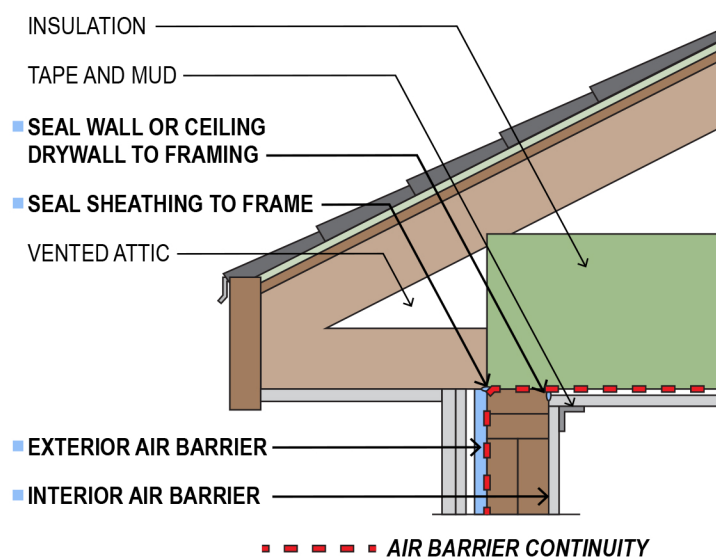
DETAIL 4. PENETRATION SEALING



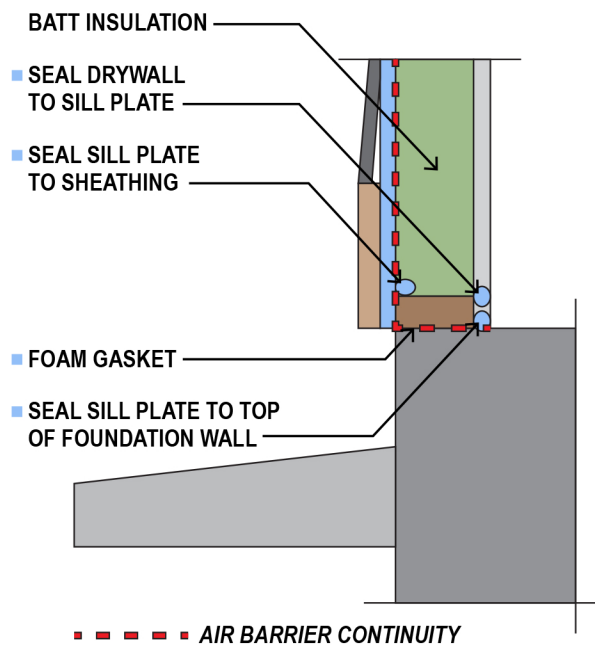
DETAIL 5. WALL-ROOF TRANSITION



DETAIL 6. WALL-CEILING TRANSITION WITH ATTIC



DETAIL 7. WALL-FLOOR TRANSITION

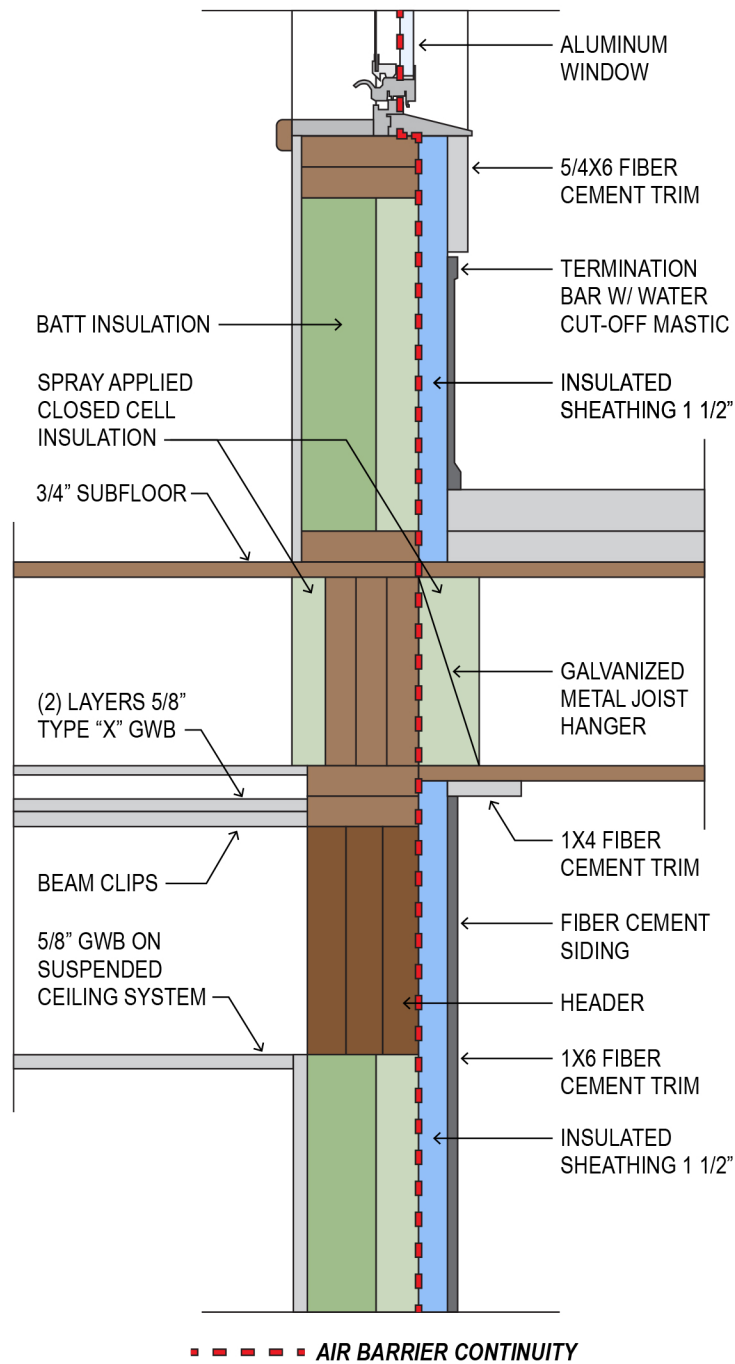


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DETAIL 8. STRUCTURAL ELEMENT SEALED (OVERHANG)



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