

Parapet Parodies: Water, Air, Thermal, and Vapor Control

“Out on the edge you see all the kinds of things you can’t see from the center.” - Kurt Vonnegut



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This article is part of a 1.5 LU | HSW & IIBEC CEH course on [Parapets: Continuity of Control Layers](#) that goes further into detail about critical parapet design. Click [here](#) to learn more and to earn credits.

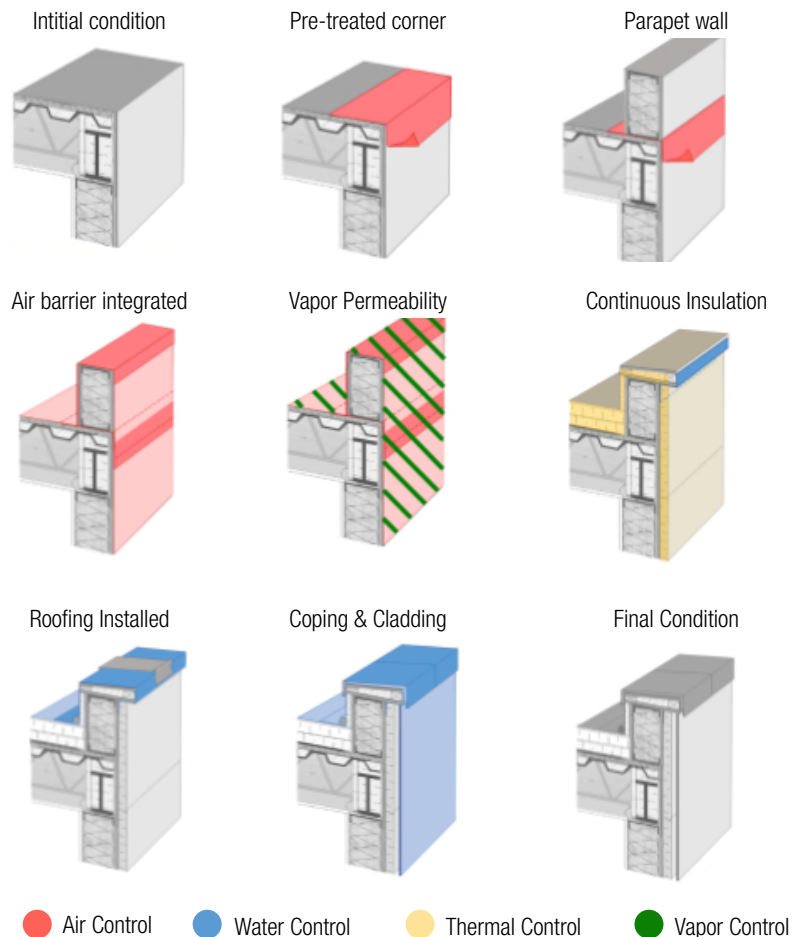
Parapets are a critical interface where building aesthetics meet performance. The parapet is so much more than the intersection of roof and wall. It’s also the junction where building aesthetics meets structural performance, air and moisture management, energy efficiency, construction trade sequencing, and operational maintenance.

The 2018 International Building Code (IBC) defines a parapet as “the part of any wall entirely above the roofline.” At such a critical interface, proper parapet detailing, installation coordination, and execution are paramount.

Control Layer Continuity

To better understand common parapet challenges, it is important to review continuity across the roof and wall systems, specifically the key four control layers: water, air, thermal and vapor.

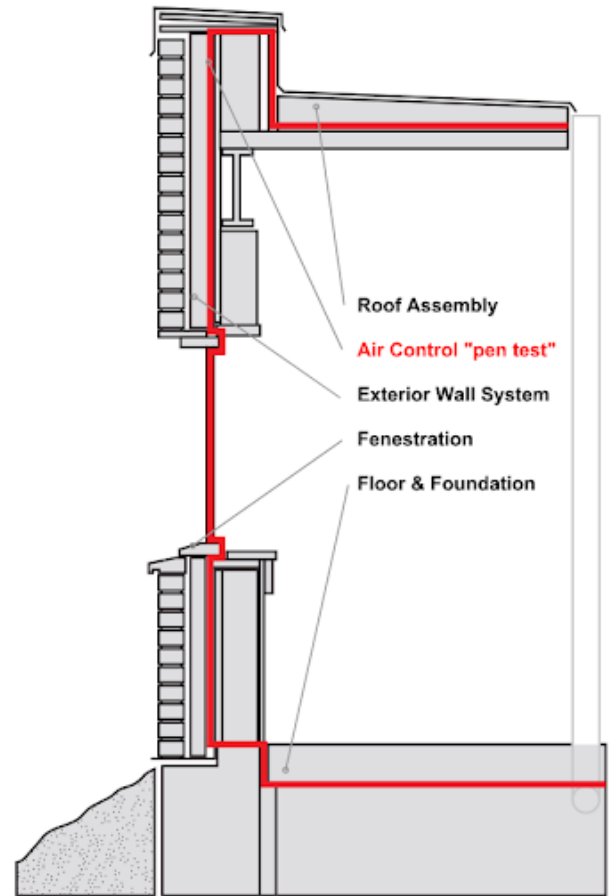
These four key control layers should generally be continuous across all six sides of the building enclosure. The “pen test” — tracing



each of the control layers across the building enclosure—is a helpful tool to design and communicate the intent of the critical components and functions of the building enclosure. The “pen test” is relatively easy in theory, but it can get complicated as we zoom in and consider the control layers at each condition, penetration and transition.

The following are key points to maintain continuity of the control layers:

- Water Control is managed by the roof membrane and the cladding. A secondary water control layer is often found against the structure, behind or below the exterior insulation.
- Air Control can be managed at the deck level of the roof, which can more readily be married into the wall air barrier. The roof membrane can also be used as an air barrier as long as the detailing and transitions are done carefully.
- Thermal Control continuity is maintained by connecting the roof and wall insulation, which can be challenging. It's important to be mindful of cavity insulation and the potential design risks of condensation at the thermal bridges.
- Vapor Control can also be in the same plane as the air control layer, based on location needs, construction methodologies, and occupant use of the building.



Example of Air Control “pen test” continuity across the building enclosure

Enabling Success

Identifying and maintaining continuity of the four key control layers is important in the design phase. To get the design intent implemented in the field, detailing and identification of the control layer(s) in the drawings and specifications is critical. This can require the design to be pretty specific—more than just “or equal” or “by others.” Specifying materials with known compatibility is important. And if the sequencing of components and members in the field impacts the intended continuity or performance of the control layer in the design—it should be addressed.

Critical detail locations are often difficult to illustrate on 2D drawings alone and can require exploded diagrams and/or sequence information to communicate the design intent. Control layer discontinuities can lead to failures in the field. For instance, air leakage can lead to concealed condensation, which can be mistaken for roof leaks. Engaging a building enclosure professional and selecting products with applicable manufacturer details and field support to assist in maintaining the four key control layers are critical to achieving optimal performance of the building enclosure.



[Click here](#) to earn 1.5 AIA LU/HSW & IIBEC CEH by reading the full article [Parapets: Continuity of Control Layers](#) that goes further into detail about critical parapet design.