

In Class 5:

Parapet to Window Head

Organization

- Break into the groups you've created
- Do, and report on the in-class problem
- Turn in materials produced, with names of participants, for credit

Background Information

- This class session looked at contemporary practice by focusing on parapet design
- The ongoing work for assignment 3A and 3B will incorporate some of the concepts
- The building envelope (skin) include systems that address:
 - wind force
 - precipitation
 - thermal conductance
 - condensation
- All building envelope systems are tied back to the structure
- Each in-class group is going to propose a window head to parapet design

Discussion / Writing / Sketching

- **Examples of 'new-pup' parapet design included**
- **Propose section details from window head to parapet-roofing intersection**
- **Account for architectural metal and masonry**
- **Identify each envelope system**
- **Highlight strategy for tying systems back to structure**

Presentation: Report out your results to the class

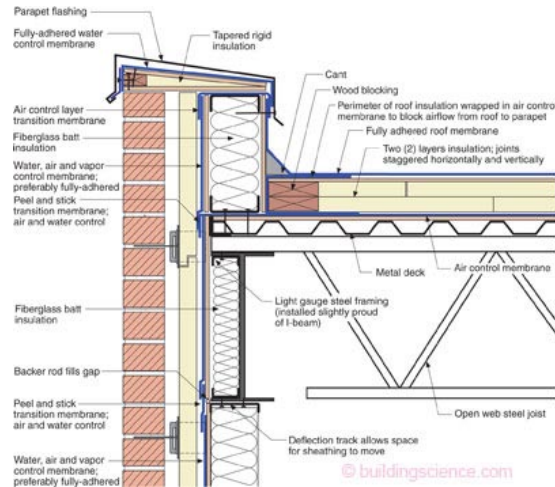


Figure 12a: Steel Stud Parapet “Old Timer.”—Wood blocking and a cant anchored to the structural deck restrain membrane shrinkage at parapet. Notice the continuity of the control layers.

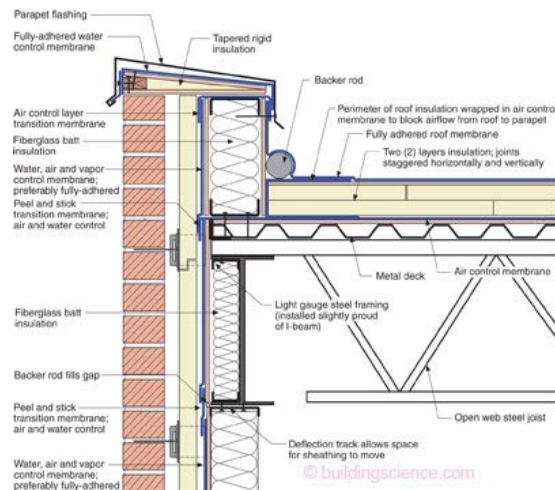


Figure 12b: Steel Stud Parapet “New Pups.”—Large backer rod supporting a bunch of extra membrane that lets things move when they have to move. The “Zen” approach to membrane movement. Use a more dimensionally stable membrane and then let things move when they have to. Again, notice the continuity of the control layers.

Now on to the continuity stuff. All we have to do is apply the Baker Principles (Figure 5) to typical roofs and walls. To that end, with the help of my colleagues at the Skunk Works at Building Science Corporation, I have drawn up a few of the more common parapet constructions following the “Baker Principles”: the already discussed Steel Stud Parapet (Figure 12b), the Masonry Parapet (Figure 13), the Balloon Framed Steel Stud Parapet (Figure 14) and, finally, the Cantilevered Mini Parapet (Figure 15).

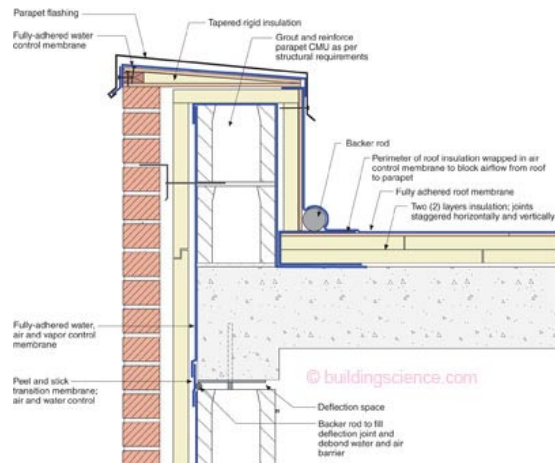


Figure 13: The Masonry Parapet—The thing to note here is that the concrete deck is the air control layer so an additional one is not necessary. However, joints in the concrete deck need to be addressed for air control layer continuity.

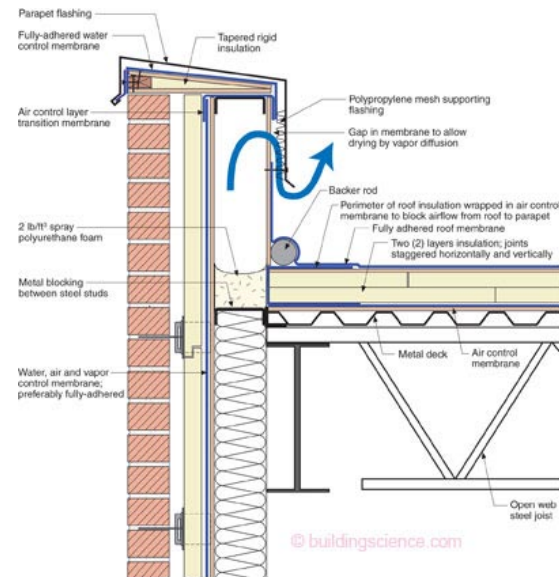


Figure 14: The Balloon Framed Steel Stud Parapet— This is the ugliest parapet to get right. Notice the use of spray polyurethane foam, the high density stuff, to provide air control layer continuity across the balloon framed exterior steel stud wall. The spray foam is supported by horizontal bridging or metal blocking. This is a tricky thing to execute and, as such, we design into the upper parapet assembly a pathway for drying via diffusion to provide some performance redundancy.

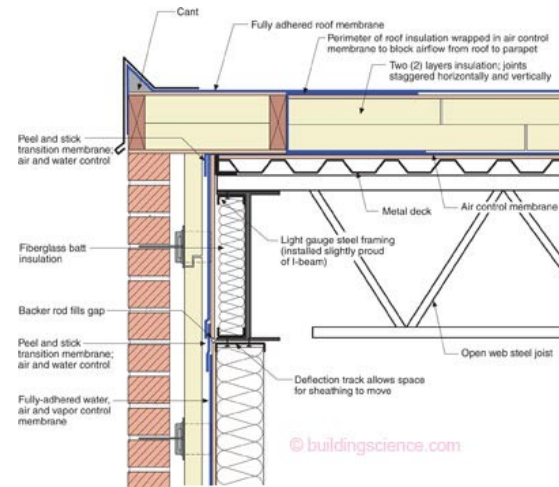


Figure 15: The Cantilevered Mini Parapet— Notice that air control layer continuity is achieved by wrapping the membrane over the building corner and then constructing the cantilevered portion of the parapet over the top of this air seal.

All of the “good” series of parapet details presented follow the “Baker Principles” and a little bit of other stuff (Figure 12a, Figure 12b, Figure 13, Figure 14, and Figure 15):

- Water control layer continuity: membranes continuous under the parapet flashing;
- Air control layer continuity: an air control layer in the roof assembly is connected to the air control layer in the wall assembly;
- Vapor control layer continuity: a vapor control layer in the roof assembly is connected to the vapor control layer in the wall assembly;
- Thermal control layer continuity: the thermal control layer of the roof assembly is connected to an effective thermal control layer in the wall assembly. The thermal control layer in the wall assembly is exterior to the structure—just as in the roof assembly.
- The roof membrane is fully adhered to a coverboard that is mechanically attached to the structural deck in the field of the roof and an allowance for membrane movement is provided at the perimeter of the roof assembly.

The perimeter of the roof assembly insulation is wrapped to prevent interstitial airflow from the parapet into the multilayered rigid insulation of the field of the roof.

The cure for “parapetitus” is continuity of the control layers and letting things move when they have to move. Max Baker and Stonewall Jackson would be proud.