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Suggested Guidelines for Watertight Chimney Construction

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Introduction

A chimney is one of the most vulnerable parts of a structure because it is exposed to weathering on all sides. If the proper steps are not taken, both on the drawing board and in the field, water can enter the chimney and cause efflorescence and eventually freeze thaw damage. However, if industry guidelines are followed, chimneys can be designed to be watertight for decades. As with most forms of masonry construction, steps should be taken to prevent moisture damage.

Roof / Chimney intersection

The intersection between the chimney and the roof is a critical spot where several trades have to come together to provide a watertight joint. Base flashing should be installed on top of the roof sheathing, extending horizontally under roof shingles for a minimum of 4 inches. As shown in figure 1, flashing should be turned up a minimum of four inches before it is inserted into a raked mortar joint and caulked. As shown with the dotted lines, the stepped flashing segments should be lapped at least three inches and sealed. Prefabricated corners are also suggested to properly protect the intersection.

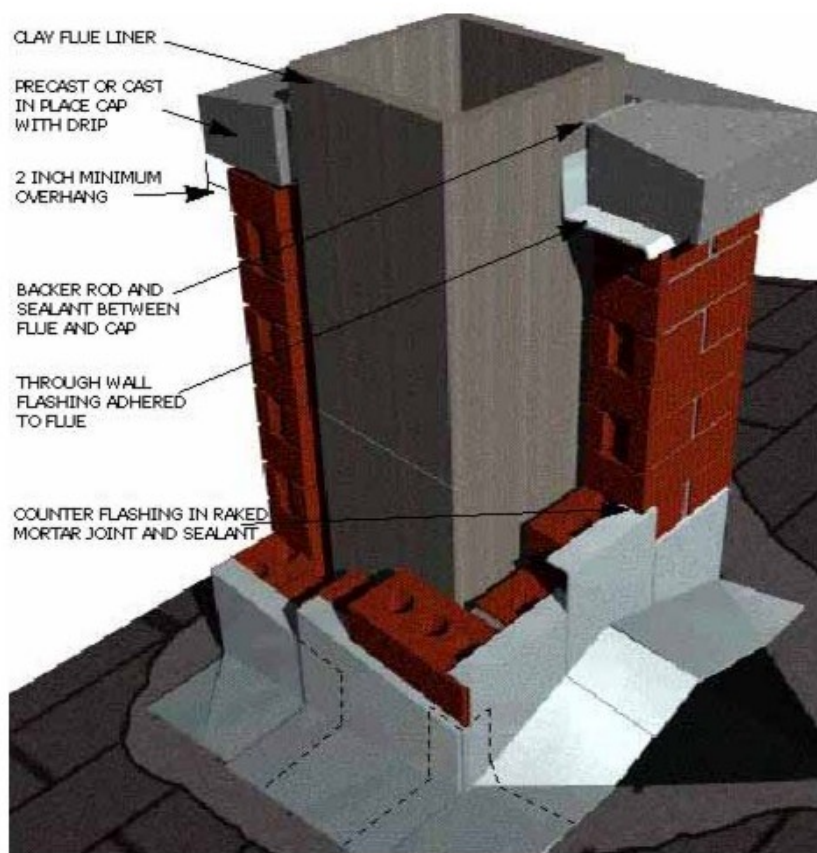
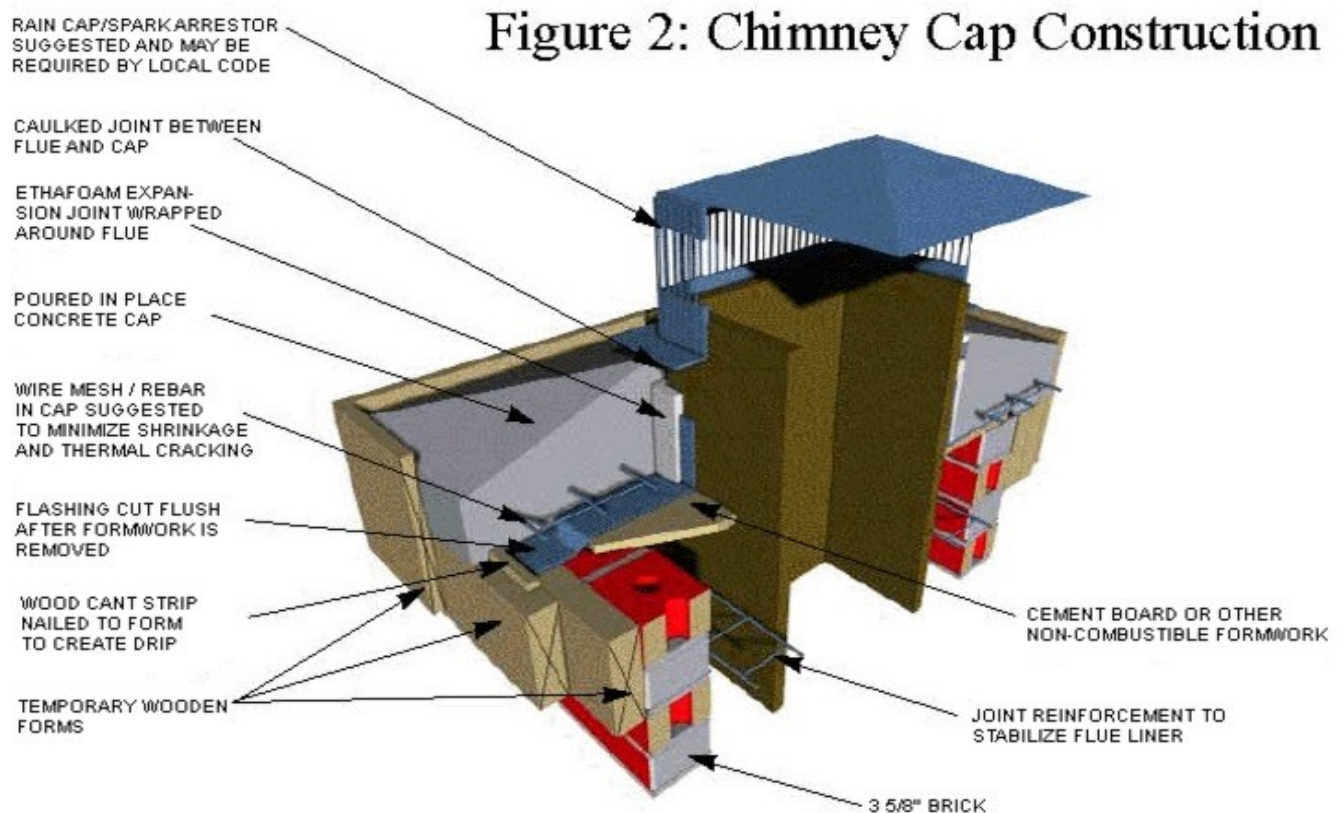


Figure 1: Chimney Construction

Chimney Cap

Look at figure 2 for a graphical representation of how a cap is constructed. The chimney cap should be designed to keep moisture from entering the system. Caps should not be constructed as a mortar wash, which is simply parging the surface with mortar. The chimney cap should be made with cast in place concrete, precast concrete or stone. The chimney cap should be sloped away from the flue to direct water out of harms way. The cap should overhang the chimney wall at least two inches and should have a drip edge cast into the overhang. Rain water is now directed off of the top of the chimney and drips off of the overhang.

Because the concrete cap and clay flue liner are different materials having different thermal expansion characteristics, there should be a void left between the cap and the flue. This void should be filled with a compressible material and caulked. This allows both materials to move independently, while the sealant keeps moisture out.



All of the measures discussed above are focused on keeping water out of the chimney. Although these measures can protect the chimney from moisture, they are not foolproof. Some water will still find it's way past the cap. For this reason, through wall flashing should be placed under the cap as a second line of defense against moisture penetration. The flashing is adhered to the flue liner, extends horizontally under the cap and is extended beyond the face of the wall.