

Guide to perimeter roof flashing in hurricane-prone regions

Introduction

Surviving a hurricane with minimal property loss begins with maintaining the integrity of the building envelope. Any failure of the roof, glazing or cladding will allow storm water to enter the building. Once water gets in, the potential for severe property damage and lengthy business interruption begins.

Concerns

Roof-covering failures are common during hurricanes. Many begin with a failure of the perimeter roof flashing that forms the weather seal between the roof cover and the building wall.



Figure 2. Perimeter roof flashing failure
Thomas Smith – TlSmith Consulting, Inc.



Figure 1. Roof cover failure
Thomas Smith – TlSmith Consulting, Inc.

Perimeter roof flashing is usually installed with hidden fastening systems for aesthetic purposes. The hidden fasteners leave smooth metal surfaces visible to the general public.

Figure 3 shows a typical roof edge flashing detail that includes a hidden, continuous hook strip detail.

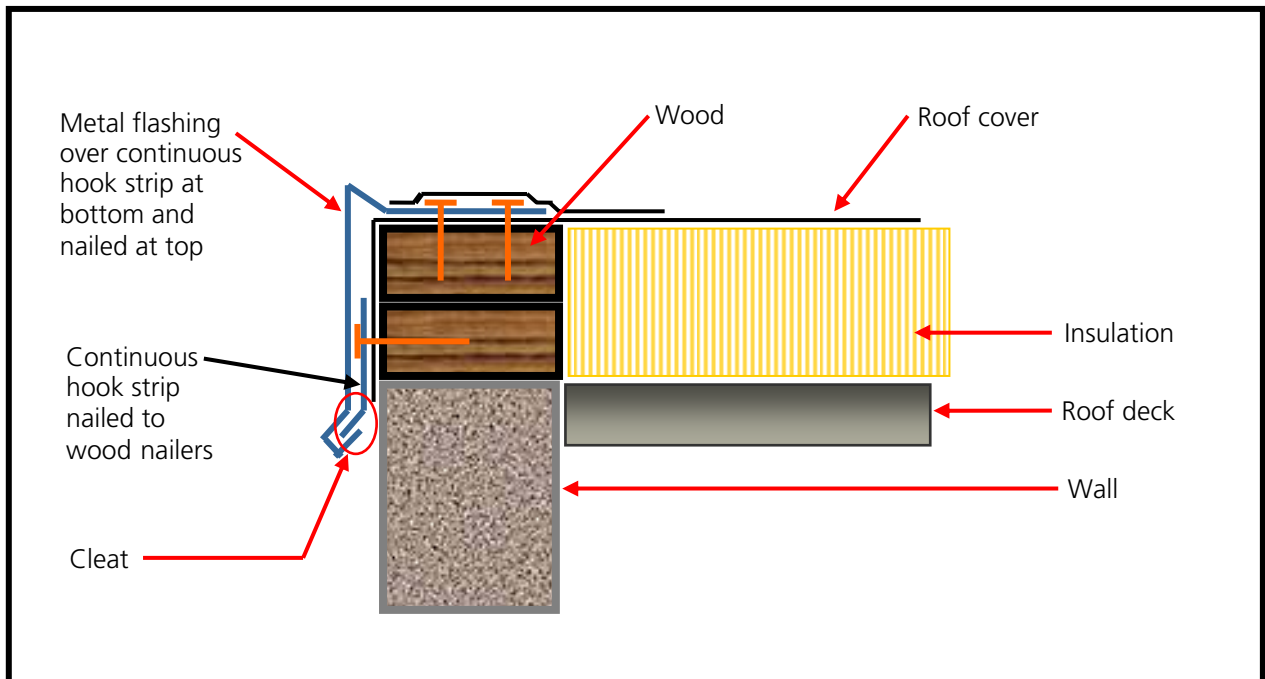


Figure 3. Typical roof flashing detail with continuous hook strip
Concept from Thomas Smith – TlSmith Consulting

While the continuous hook strip design offers an aesthetically pleasing finish to the building, it becomes a source of roof failure for several reasons.

- The flashing must securely engage the cleat of the continuous hook strip so it will not disengage under high wind loads. A minimum engagement of at least a $\frac{3}{4}$ " is recommended.
- The flashing must securely engage the cleat of the continuous hook strip along the entire length of the flashing. Small deviations can lead to a weak connection.
- The continuous hook strip must be nailed as close as possible to the cleat so wind will have the least leverage to bend the cleat upward.

Once flashing installation is complete, it is extremely difficult to verify the quality of the connection between the flashing and the hidden hook strip. High winds, however, can quickly find the weakest point.

Guidance

Secure perimeter roof flashing is the first line of defense against the loss of a roof covering during high winds. Aesthetics should not be allowed to introduce potential weakness to the perimeter roof flashing system. We strongly recommend that insureds install perimeter roof flashing with face fastening as shown in Figure 4.

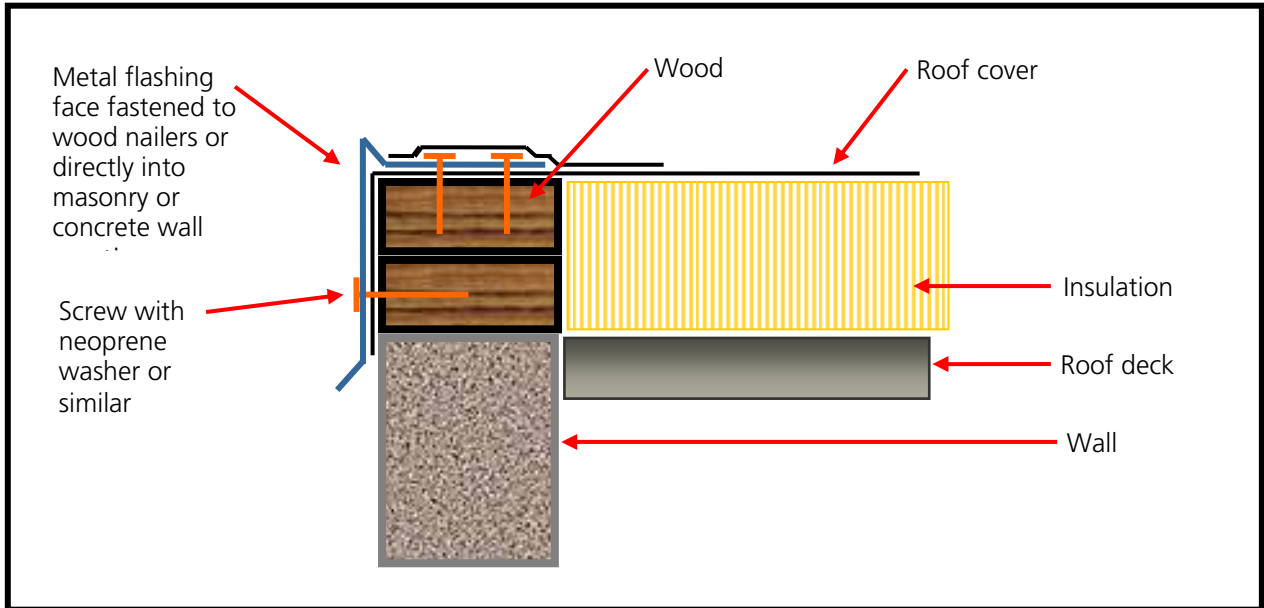


Figure 4. Zurich recommended perimeter roof flashing detail

Face fastening of perimeter roof flashing has been used successfully in Guam where the basic design wind speed is 170 mph. The Guam detail shown in Figure 5 consists of 24 gauge stainless steel flashing with $\frac{1}{4}$ " stainless steel concrete spikes spaced 12" on centers.

Conclusion

For new buildings in a hurricane-prone region, provide face fastened perimeter roof flashing. For existing buildings, consider retrofitting perimeter roof flashing with added face fasteners. Consult a structural engineer to get it right. Do not let high wind find a hidden weakness.



Figure 5. Guam detail
Source - FEMA

References

1. Tom Smith, AIA, TlSmith Consulting Inc., "Wind Safety of the Building Envelope."
http://www.wbdg.org/resources/env_wind.php

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