PROPER INSTALLATION TECHNIQUES FOR ROOFING IN HIGH WIND REGION

In the wake of the major storms of the past few years, metal roofing systems are gaining popularity in areas of the world that are subject to high wind events, such as hurricanes. This acceptance is obviously based upon visual proof that metal roofing withstands these extreme forces of nature better than most products used for roofing today. However, with proper planning and installation techniques, even these proven systems can be improved to ensure their performance when a severe weather event strikes.

As building codes are improved to address regional climatic conditions, the roof system installation becomes somewhat of a science. States, such as Florida, already have product approval systems in place due to their likelihood of experiencing severe weather. Products that are approved for use within the state must undergo stringent testing for wind uplift and, in some cases, water penetration when combined with high wind. One must realize however, that these tests are performed in a laboratory. Installation is performed in a controlled environment on a relatively small roof surface (in the case of the commonly used UL 580 test procedure where the test deck is only a 10'-0" x 10'-0" area). Products are typically tested for what is commonly known as the "field area" of the roof system, consisting only of the metal roof panel. As the metal panels are part of a complete roof system, all components of the roof typically are not tested with metal roof systems. Building codes rely on manufacturer's standard installation instructions or relatively vague descriptions of flashing requirements. In low slope membrane roof applications, the importance of the perimeter edge detailing has been identified as an integral component of the entire roof system. Perimeter edge flashing components must meet standards identified within the building codes. These standards are based upon physical testing of the flashing assembly itself to determine the strength of the flashing design, assembly and securement methods. Recently a new metal roofing flashing test has been developed to determine the load resistance of flashings used with metal roof systems which was modeled after the codified test standards for low slope membrane roof applications. The new ANSI approved test standard should be used as a baseline for best practice in the design and installation of those perimeter flashing components for metal roofing.

The versatility and design of metal standing seam panels, as well as metal roof shingles, allow for increasing the number of clips or fasteners used for attachment of the roof system to the substrate to meet the greater uplift requirements in high wind regions. Roof areas are also broken into zones (field, perimeter and corner) with the perimeter zones and corner zones of a building requiring greater resistance to wind uplift.

How would one increase the wind resistance of the trim and flashing components used with metal roof systems? Designs of the flashing assembly should comply with manufacturer's recommendations.

Also, fasteners of enough strength, corrosion resistance and compatibility with dissimilar materials should be used.

A failure of the perimeter metal often leads to a catastrophic failure of the entire roof system. All elements of a roof system interact with each other and must remain a system for resistance to the elements.

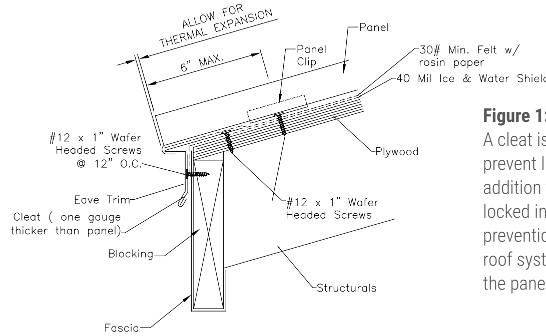

Figure 1: Typical eave/drip edge detail
A cleat is added to the drip edge to prevent lift-ing of the edge metal. In addition the panel is turned over and locked into the drip edge to aid the prevention of wind funneling under the roof system and provide hold down of the panels itself.

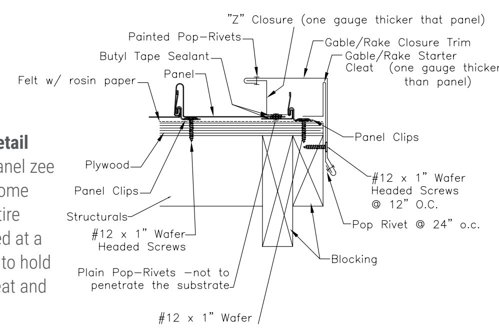

Figure 2: Typical gable end detail
The gauges of the cleat and panel zee closure are increased and become a critical component of the entire flashing detail. Rivets are added at a spacing o 24 inches on center to hold the exterior cap to both the cleat and panel zee closure.

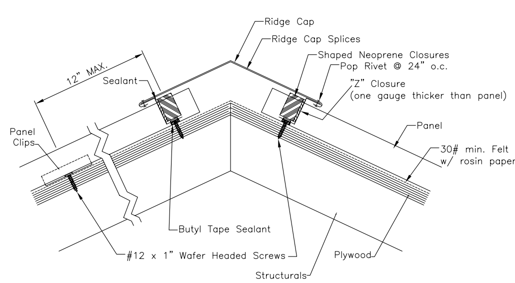

Figure 3: Typical ridge/hip flashing
Panel zee closure gauge is increased. Pop rivets are added to the assembly as added strength to prevent disengagement of cap