



High slope roof rafters and beams are roof members defined as having a slope greater than 12/12. Roof rafters and beams with slopes greater than 12/12 have specific design issues that cannot be analyzed in Boise Cascade EWP software and should only be addressed by the project's design professional of record.

The design of roof members with slopes greater than 12/12 is generally controlled by the design wind loads. The design wind loads are controlled by variables that are both site and structure specific such as the project location, site exposure and overall height of the structure. The location of a member within the structure itself can also affect the design wind loading on individual members. In addition, standard metal hangers are not available for slopes exceeding 12/12. As such, a design professional of record would be responsible for designing the connections of the structural roof members to ensure a continuous load path through the structure to the foundation. Neither the material supplier nor manufacturer can assume the role as the project's design professional of record.

Wind loading poses an additional issue with wood I-joists. At slopes over 12/12, significant loads are applied through both the depth of the joist (wind load) and the length of the member (axial dead load). Wood I-joists are not intended for such biaxial loading conditions. Solid section wood members, such as Boise Cascade Versa-Lam® LVL, may be designed for biaxial loading. However, the sizing of these members should be performed by a qualified design professional due to the complexity of the analysis.

A significant number of inquiries regarding high slope roofs involve "A-frame" homes. In these structures, the exterior framing serves as both the roof and the exterior walls. While the International Residential Code (IRC) does not specify a maximum roof slope, it does limit exterior wall heights. Additionally, prescriptive fastening schedules in the IRC, for elements such as collar ties, rafter-to-floor joist connections, and exterior wall-to-foundation connections, may not be sufficient for A-frame construction. Therefore, a registered design professional should be consulted for these types of structures.

Design properties for all of Boise Cascade EWP products are published in the product's ICC-ES® evaluation reports and literature. Boise Cascade can provide specific product information to the project's design professional of record. However, the project's designer is responsible for the design of building areas that significantly affect the entire structure, such as high slope roofs.