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Hip and Valley Support Location in Wood Framing

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Abstract : Wood Light frame construction is one of the most common types of construction methods for residential and light commercial building in North America and parts of Europe. The typical roof framing for wood framed building is sloped and consists of several structural members such as rafters, hips, and valleys which are connected to the ridge and ceiling joists. The common slopes for roofs are 3/12, 8/12, and 12/12. Wood framed residential roof failure is most commonly caused by wind damage in such buildings. In the recent study, one of the weaknesses of wood framed roofs is long unsupported structural member lengths, such as hips and valleys. The purpose of this research is to find the critical support location for long hips and valleys with different slopes. ForteWeb software is used to find the critical location. The analysis results demonstrating the maximum unbraced hip and valley length are from 8.5 to 10.25 ft. dependent on the slope and roof type.

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