

## Frequently Asked Questions

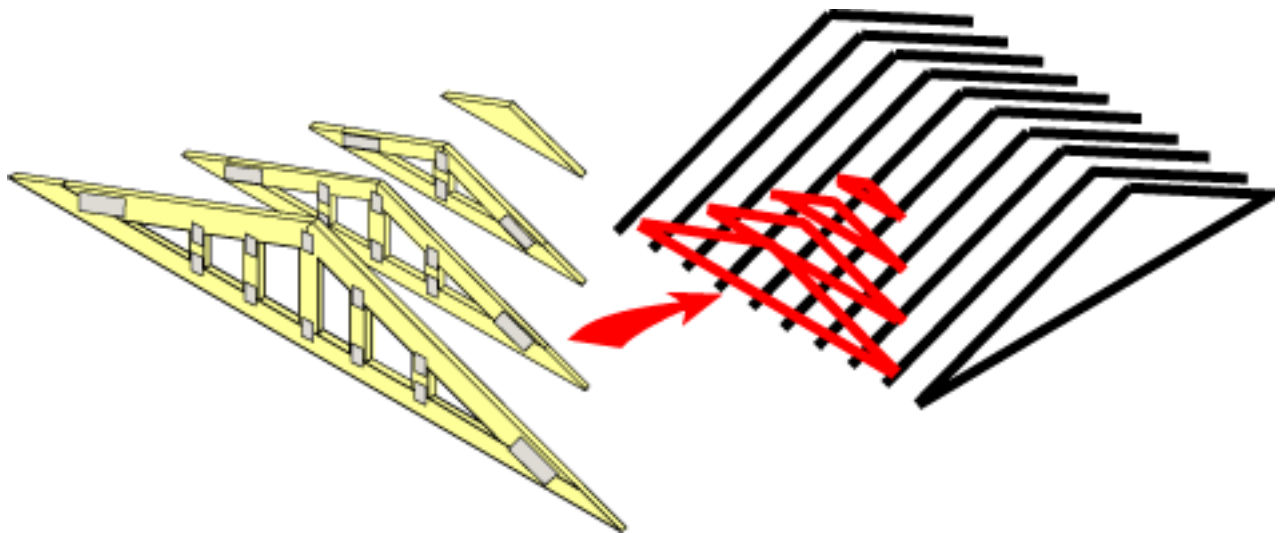
### Valley Sets by Rachel Smith

Valley sets are non-structural frames that fill in roof spaces that structural framing does not. Some truss manufacturers don't bother supplying these items since they are, more or less, a cosmetic part of the roof system and leave them to be just as easily conventionally "framed by others." The fact is the effects of manufactured versus conventionally framed valley sets can be quite different.

These "non-structural" items do transfer vertical loads to the underlying trusses, much like a gable end frame to the bearing wall below. The placement of manufactured valley frames at 24 in o.c. means that the load is spread more evenly over the supporting trusses and provides lateral bracing like purlins do.

Hand-framed valleys, by contrast, rely on ridge boards and rafters that transfer point loads to the trusses below. Add to this the fact that many framers neglect to properly brace trusses under valley framing and the result is you have an unbraced compression top chord with point loads for which it was not designed. It sounds like a recipe for deflection or serviceability problems at the very least and potentially more serious structural trouble in the worst cases.

Truss installers can avoid problems with conventional valley framing by installing continuous sheathing on top of the supporting truss and then installing the valley framing over that. A far better choice would be to request valley sets from the truss manufacturer.



QUESTION:

What are the requirements for installing valley sets over roof trusses? I am interested in nailing and support conditions. Some engineers ask for the bottom chord of the valley truss to be ripped to match the roof pitch of the underlying trusses. Is this necessary? How can I calculate values for uplift resistance for the building inspector?

**ANSWER:**

Valley sets are non-structural, but they do transfer roof live and dead loads to the underlying trusses. Ripping the bottom chord would spread the load over more area and theoretically reduce any problems with wood crushing at contact points. The amount of load that is typically going to be seen there will most likely not cause crushing problems in the first place. The key issue is installing the proper nailing to hold the truss in place. Again, given the load, all the nailing has to do is to ensure that there is contact of wood to wood and keep the truss in plane.

For uplift calculations, you could use the Truss Technology in Building brochure "Toe-Nailing for Uplift Reactions" to help you calculate the uplift resistance of the nail connection or you could contact your engineer to help with that. In 2002, Simpson Strong-Tie introduced a metal connector for a valley to truss connection called the VTC2. The connector specification lists gravity and uplift values.

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