

Ask Jon Eakes

Pro: Making Roof Trusses Work

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We would like to think that roofing systems today are well thought out, easy to assemble and trouble free. And then there is the real world. We went to the manufacturers of roofing systems and roofing components to get a handle on what are some of the real world field problems that shouldn't be problems. The kind of things that you thought you had under control, but they still crop up occasionally. Planning coordination is one of the unfortunate problems that a fore-warned contractor can avoid. It seems that it still happens that on site modifications are necessary with some steep pitched roofs when it is discovered that the roof overhang covers up a window. That should have been spotted in the drawing stages and proper hips should have been added to the roof trusses. And how many times have small errors in the foundation been adjusted to by the framers as the house rises -- until they reach the non-adjustable roof trusses. Oops. Word of the foundation error should have been sent to the truss supplier before the structure telescoped the changes right up to the top walls. A new problem has arisen with engineered wood products as they are beginning to show up as commodity off-the-shelf products: improper sizing or improper application. Too often their strengths and weaknesses are poorly understood and they are used where they should not be. Training on these things is basically by the manufacturer through the supply chain. Change suppliers if they can't give you the necessary information on stock products. Now we need to get the roof trusses installed. Too often the architectural plans are left on site, but not the "roof truss layout". With the complexity of modern roofs, it is essential that trusses go up in the proper order and that right truss goes on the right spot. The framers must have a copy of the layout on site or you will be modifying trusses to finish the job -- and trusses should not be modified. Another common error with framers is getting them to understand that when ganging together girder trusses, the nails and the nailing pattern are important aspects of an engineered product. There is a nailing specification for each job and it must be followed. Did it get to the site and are the framers aware that you want it followed to the letter? How about temporary bracing. Oh, a couple pieces of scrap will hold it together. The manufacturers tell me that they are still having to occasionally replace trusses because the temporary bracing plan was not followed and a gust of wind blew them all over. The roof truss layout includes bracing requirements -- seeing that it is followed can save you a lot of time and money. How about cutting holes? The "I" beam manufacturers like to promote the ability to cut appropriate holes in their products. But we are still finding the top and bottom of "I" beams with notches in them -- a formula for failure. Should we start charging plumbers for the replacement of the beam? The roof truss manufacturers are trying to get the opposite message across -- no holes anywhere. Yet they keep finding holes in the bottom cords with electrical wires in them. Wonder who is drilling the holes? Again the contractor is faced with the challenge of how to educate and/or discipline their sub-trades. But since a roof failure is the contractor's responsibility -- he should inspect for such errors prior to installing insulation. Then there is the question of truss plates. No, you cannot nail a loose plate back on! The nails don't fit tightly into the punched holes and the stress design was not made with nails in mind. Interesting fact: a metal grip plate has 10 times the holding power of the same sized plywood plate. Plywood patches can be made, or special nail-on plates are available, but any change, adjustment or repair to a truss is an engineering question and needs an engineered solution designed for each specific truss. If plates are loose, contact the manufacturer and ask for an action plan. Yes this requires a bit of supervision and inspection after the framers have finished the roof. Engineered products for roofs have allowed us to build complicated roofs efficiently -- but the engineering of these products has to be respected through every step of the construction process. **Originally published as an article by Jon Eakes in Home Builder Magazine, the magazine of the Canadian Home Builder's Association.

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