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Frequently Asked Questions

Raised Heels by Rachel Smith

When I moved to Wisconsin, many people warned me how cold it was in winter. I wasn't too worried because I started my truss career in Winnipeg, Manitoba, Canada. As far as I was concerned, Wisconsin was a move from the perpetually frozen tundra to the "tropical south."

One of the first things I discovered was that our "standard" heel height was considered a high heel by some. We designed the bottom chord to run the full depth to the heel, with no butt cut to ensure that good insulating properties were maintained. Due to this difference, I was shocked to learn that the 1/4" butt cut heels that we considered garage trusses were being used in houses.

High heels, energy heels or raised heels—whatever you want to call them, are more common in winter climates. The purpose is to allow the full depth of ceiling insulation to continue right out past the top plate bearing. This minimizes what is known as "cold corners." If you have, say, R38 insulation in your roof that is 12" deep and you squish it down to 3" at the heel, then you no longer have R38 insulation values at that spot. Insulation works because it traps air in a space. The less space you have, like at the heel, the less R-value you have no matter how much insulation you install.

Unfortunately, the space around the heel is a crucial spot to insulate due to the thermal bridging through the wall at the top plate. The result can be cold spots and, in some cases, condensation of moisture from indoor air which can cause paint and drywall damage. If left too long, it can also promote mold and mildew growth, which in turn can contribute to air quality problems.

QUESTION:

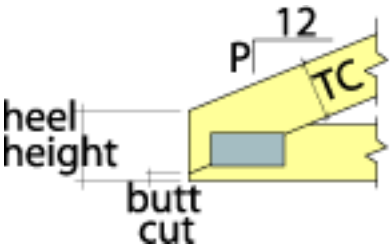
How high is a high heel?

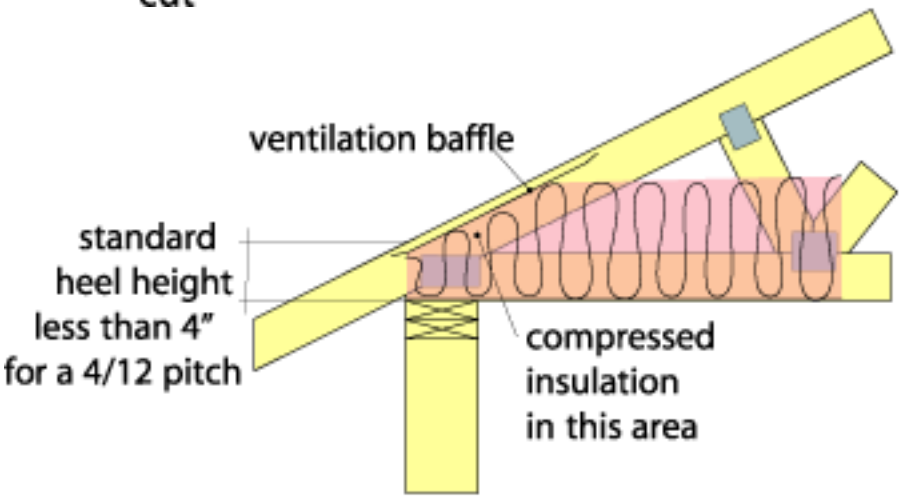
ANSWER:

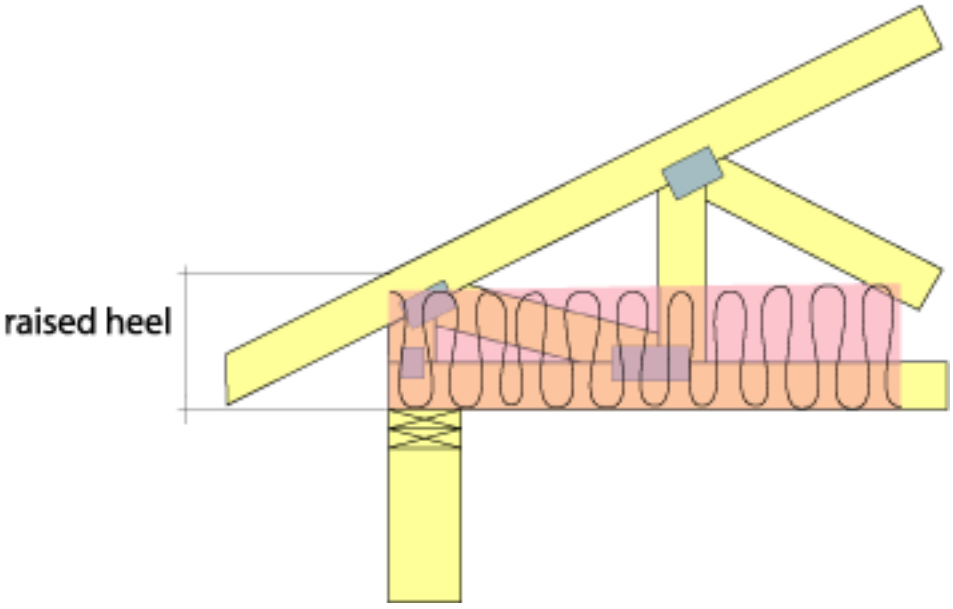
Simply put, a high heel is higher than a standard heel. A standard heel is the height of the top chord of the truss plus the pre-set butt cut. Most truss plants design with a 1/4" butt cut, although some use 3/8". One quick formula to calculate heel height is:

$$\text{Heel Height} = \frac{TC}{12}\left[\sqrt{P^2 + 12^2}\right] + \text{Butt}$$

where, TC = width of top chord lumber (inches)
P = pitch of top chord
Butt = butt cut of bottom chord (inches)







You may require a high heel or raised heel for a few different reasons. One is to allow for greater depths of ceiling insulation in the attic space. This type is generally called an energy heel. Scissor trusses may require high heels if the bottom chord pitch is too steep relative to the top chord pitch. Cathedral style trusses by definition require high heels. If the roof has different pitches that meet at a valley, the heels on one of the intersecting roof pitches will have to be adjusted so that eave lines can line up properly.

To pose a question for this column, email us at faq@woodtruss.com. To view other questions visit the WTCA website.

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