

### Frequently Asked Questions

#### Partition Separation by Rachel Smith

My first encounter with what is sometimes referred to as “truss arching or truss uplift” was back when I worked as a truss technician in Canada. I received three calls in one week from different customers complaining about this phenomenon, and that was it for the rest of the year. That is one of the calling cards of partition separation. It is not a permanent state and it may come back on a yearly basis, as long as conditions are right in the building.

Partition separation is caused by wood’s natural response to changes in moisture levels. The problem usually shows up in winter climates where the heated building dries out the lumber throughout the building and in the insulated spaces. This also impacts the trusses as the bottom chords of trusses are warm and dry, buried under ceiling insulation. On the other hand, the top chords, are usually exposed to cool, moist outside air. Without proper attic ventilation the result can be high moisture in the top chords wanting to expand and low moisture content in the bottom chords wanting to contract. You can’t stop Mother Nature and when they both try to go their own way, the bottom chords can move. Once moisture levels in the lumber start to equalize, the problem goes away.

Partition separation can be a problem if the truss is over interior partition walls. Movement between the truss and the partition, due to shrinkage in the studs and any truss movement may be severe enough to develop an opening between the top of the partition wall and the truss—called partition separation. Many contractors and homeowners are aware of this problem and call it truss arching or truss uplift. Therefore, any time there is a partition separation problem, they assume it’s the truss. There can be many factors at work to produce partition separation. In fact, our experience suggests that truss movement is the cause of only about 20 percent of reported cases of partition separation.

The following question deals with ways of minimizing the effects of truss arching from the outset.

#### QUESTION:

I installed roof trusses in my house and drywalled the ceiling to the bottom of the trusses. Now I seem to have a problem with the change of the seasons, where the ceiling meets the interior wall a gap opens and closes—in winter it opens, in summer it closes. What did I do wrong, how can I correct it, and how should the drywall be installed in the first place?

#### ANSWER:

It sounds as if you are experiencing a partition separation problem. This can be caused by

several factors working either independently or in combination with one another. The possible causes include building settlement, inconsistent framing, moisture effects, deflection and truss movement. The fact the problem appears to be seasonal leads me to believe that moisture is involved. Do you have enough ventilation in the roof plenum? If you do not, the trusses could be "arching" due to a substantial difference in moisture content between the top and bottom chords. The easiest way to check if this is part of the problem is to measure the moisture content of several truss chords with a handheld moisture meter. You should also consider using a level to check for settlement of bearing walls, headers, beams and floor members.

WTCA has a brochure on partition separation that discusses this phenomenon in greater detail (contact us for a sample copy). This brochure contains some wall corner details that allow the gypsum to "float" with any differential movement between the wall and the ceiling. It is important that you determine the cause(s) of the problem. Otherwise you will just be treating the symptom and it will never be permanently fixed.

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