

## **Inspecting the Structure System: Case Studies of Problems in Residential Structural Engineering with Joel Lunger, PE**

We have heard the idea that it is structure that is the most expensive to repair and the greatest reason for claims against home inspectors. Of course in some instances problems are glaringly obvious, an unfinished basement holds few secrets, or the cut truss screams out the impending problems. Then there are the other houses, the ones with clues but no big smoking gun to alert you. This is when the challenge, the excitement, and the risk starts for home inspectors.

Joel Lunger, PE spoke in March 2013 and presented 15 case studies in Residential Structural Engineering. Like Sherlock Holmes he cycled through a series of photos while pointing out clues to current and potential problems. The details of each case are too numerous to list here but there were 3 key take-aways, look for changes in load path, changes in load magnitude, and read the cracks. The key to these 3 clues is the fact that structure exists as a system, by definition, a series of things connected to form a complex whole. Therefore changes in one aspect of a home's structure, can impact the whole house.

Changes in load path are structural changes that re-distribute load, often in a way that will lead to problems. We all know the dangers of moving a wall, but homeowners often underestimate the impact (it was just a little wall!). Changes in load magnitude could be a new hot tub or waterbed (do folks still use those?). Finally, cracks, diagonal cracks, cracks that get wide at one end, cracks that reappear after being repaired. Include these 3 clues in your inspection to help in identifying potential problems.

Joel shared 15 case studies that included foundation and roof problems, differential settlement, framing issues and water damage. In the end, we know what to look for on an inspection, and when we believe there is a major problem, we know who to call!

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