

IS YOUR DECK SAFE?

By

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With sadness, I read and hear of tragic and needless decks that collapse each year causing personal injury and property damage. As a home inspector, I must sadly report that the majority of decks that I evaluate are built with substandard materials and workmanship that endanger the safety of the occupants. I urge you to take a few moments and examine the safety of a few key checkpoints that could ultimately cause injury or death if not corrected. Let's inspect the deck together from top to bottom.

Firstly, walk across the deck and take note of any springiness in the floor frame or do a little bounce at the center point. Did you know that a springy floor frame is a telltale sign of a problem? The floor frame should be capable of supporting live and dead loads without exhibiting movement. If the deck does shake, rattle or roll, then the floor frame is most likely undersized, over-spanned or both. Reinforcement is needed to prevent collapse.

While on the deck, walk to the center of the outside guardrail. Holding the railing with hands spread wide and feet spread wide apart, shift your weight left and right while pulling on the railing with the objective of trying to make the deck move from side to side. If the deck exhibits lateral movement, it is unsafe and reinforcement is needed to prevent collapse. Elevated decks are notorious for dangerous swaying problems.

Let's take a moment to examine the guard railing. Measure the height of the railing - it should be a minimum of 36 inches high. Take a look at the balusters, they should be vertical (not horizontal) and the spacing should not exceed a maximum of 4 inches. Low railings, large spacing between balusters or horizontal balusters can all result in a personal injury and are unsafe. Grasp some of the balusters and give them a little twist test to check for secure attachment. The balusters are best fastened with exterior screws. Shake the railing and posts, there should be no sign of movement. The posts that support the railings are best fastened with carriage bolts that run through the post and rim joists. Did you know that the railing should be capable of withstanding 200 lbs. of lateral pressure?

Even treated lumber requires maintenance or sun damage and decay may result. Most of the decks I inspect have never received a treatment with wood preservative and obvious nail pops and splinters stick up from the floor boards and railings posing a risk of personal injury. Have you ever had to restrain your child while the doctor struggles to remove nasty splinters from hands or feet? You should examine all deck surfaces and replace those boards that have splinters or

decay. Sanding away splinters is not an option, as the grain will continue to lift. Nail pops should be countersunk. Lastly, get out there and apply a wood preservative at 2-3 year intervals.

Take a look up in the air. If a new deck has been added and it is located beneath the overhead electrical wires, there could be a serious risk of shock or electrocution. A ten-foot clearance is needed. Many do-it-yourselfers never consider the proximity to the electrical service. Shocking!

Take a walk down the deck stairs. Are the tread & riser dimensions uniform? Are the handrails and posts secure? Is a center stringer missing resulting in springy stairs? Are the bases of the stringers buried in the soil or do they rest upon a nice little concrete stoop? Next, take a look underneath the stairs as many that I inspect a weakly attached to the deck as an afterthought just waiting to collapse.

Time to get underneath and take a look at things. One of the most flagrant problems that I find when inspecting decks is the omission of lag bolts. Check where the ledger joist or deck is fastened to the house. If you see only nail heads, then the installer failed to properly secure the deck frame to the house frame and the entire structure could collapse during that graduation party. You should see the presence of "lag bolts" spaced several feet apart that firmly tie the two structures together. Without the lag bolts, the shear strength of the nails alone may fail under load resulting in total deck collapse!

Next, take a look at each end of the floor joists. You should see the presence of metal joist hangers beneath each end of each joist. If the hangers are missing, then the floor joists are only end nailed and could collapse under load. The joist hangers provide each joist with 1 1/2 inches of required end bearing to safely support all of your guests. If the joist hangers are present, inspect the nail holes in the hangers themselves to see that each is filled with a joist hanger nail (not a roofing nail).

If a main girder is present, it should be properly assembled so that any splices fall above support posts and with support posts that are properly sized and spaced. If you note any evidence of sagging or scissoring at joints then there could be a problem. If the floor joists are cantilevered beyond a main girder, then as a "rule of thumb" the cantilever should not exceed approximately two feet.

I hope that you notice some support posts beneath the deck and that they are spaced about 4-7 feet apart. Examine the joint and the method of fastening where the posts join the floor frame. Often posts are over-notched, decayed or poorly secured at this location. Next, probe the base of each post for decay at they are exposed to constant wet dry cycles. Better builders will raise the base of the posts

up on metal anchors to prevent decay and also to secure the posts to the footings. Sight down the row of support posts and footings for plumb. If you see any signs of tilting, then a problems is indicated and repair is needed.

Down at ground level, there should not be any vegetation left under the deck and the footings should extend below frost level (four feet deep in this area). If you find that the deck posts only rest on concrete blocks or patio blocks then it is obvious that proper construction standards were not followed and the deck is vulnerable to frost movement. If you find that the deck posts are buried within the concrete footings, then the footings will eventually crack from water infiltration and frost expansion. Ideally, the footings should be four feet in the ground and should project slightly above grade.

In closing, your deck is part of the means of egress for the occupants and another living space. It must be safely built, safely supported and safely fastened to the home. Any deficiencies in the above could result in collapse and personal injury. If you have questions about the safety of your deck, then you should consult a member of the American Society of Home Inspectors or your local building department.

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