
Deck and Balcony Inspection: Things to Look For

It is estimated that of the approximately 40 million existing decks and balconies, only half are building code-compliant. Experts believe that it is likely that many of these decks and balconies are potentially unsafe. In situations where it is not feasible to rebuild an existing deck or balcony, it may be preferable to retrofit it by applying hardware to existing framing members. The International Code Council (ICC) suggests looking for the following when inspecting decks, balconies, or porches: split or rotting wood; loose or missing nails, screws, or anchors where the structure is attached to the building; missing, damaged, or loose support beams and planking; and wobbly handrails or guardrails. The following provides guidance on evaluating decks and balconies:

Improper or Loose Connections

Any connections that do not meet building code requirements can compromise the safety of a balcony or deck. In many cases, toenailing (i.e., joining two wood members with angled nailing) does not constitute a proper connection. Connectors must be installed with the proper fastener. Check local building codes for proper connectors and fasteners.

Vital connections may have degraded over time. Wobbly railings and loose stairs and ledgers that appear to be pulling away from the adjacent structure are all causes for concern. Nail connections can be a problem because, unlike bolts, nails can pull out. The U. S. Forest Products Laboratory in Madison, Wisconsin, studied five years of newspaper articles on deck collapses from around the country while researching a deck-building manual. The research showed that "nearly every collapsed deck had been attached with nails, rather than bolts, and investigators had pinpointed nails as the cause of the collapse."

A screwed-in connection works differently than a nail by gaining increased strength from the wedging action of wood fibers along the entire length of the thread. For every inch of penetration, lag bolts have as much as nine times the pullout resistance of a nail. A thru bolt with a nut gives even better resistance with its metal-to-metal connection. The thru bolt is inserted in a drilled hole and fitted with a nut on the other side. A washer on both sides spreads the pulling force over a larger portion of the beam. Check the deck or balcony to ensure that the connections are secure and designed to meet building codes.

Corrosion

Metal connectors and fasteners can corrode over time, especially if a product with insufficient corrosion resistance was originally installed. Outdoor environments are generally more corrosive to steel because connectors are exposed to the elements. If a deck or balcony is installed in an area especially prone to moisture, such as along the coast or near bodies of water, the risk of corrosion is much higher. Periodically inspect the connectors and fasteners or have a professional inspection performed. Regular maintenance including waterproofing of the wood used to construct the balcony or deck is also a good practice. For higher exposure applications, stainless-steel connectors and fasteners offer the best defense against corrosion. Remember when using stainless-steel connectors, stainless-steel fasteners are also required.

Rot

Wood can rot and degrade over time with exposure to the elements. Members within the deck frame that have rotted may no longer be able to perform the function for which they were installed. A number of balcony failures are attributed to dry rot. Horizontal and parallel beams that support the deck should be inspected. Moisture can lead to decay of support beams. Balconies and other exterior projections exposed to weather should be periodically inspected to determine if they have been structurally compromised and are in need of repairs.

Cracks

As wood ages, it is common for cracks to develop as the moisture content of the wood decreases. Large cracks or excessive cracking overall can weaken deck-framing members. Balconies, landings, decks, stairs, and similar exterior projecting elements and appurtenances exposed to the weather and sealed underneath must have cross ventilation for each separate enclosed space by ventilation openings protected against the entrance of rain and snow. Blocking and bridging must be arranged so as not to interfere with the movement of air.

Flashing

The condition of flashing is another important consideration. Water can leak under the flashing, causing the wood to rot and the deck's foundation to weaken. The property owner may not be aware of the problem until it is too late and both the deck and the structure are impacted by rotted wood. Recent changes in the chemicals used in the manufacture of treated wood have had an impact on materials used in flashing. According to the lumber and fastener industry, newer chemicals being used to treat wood are more corrosive than wood previously treated with chromated copper arsenate. This means special attention should be paid to fasteners, hangers, and other materials that may contact the wood, since aluminum flashing may deteriorate and dissolve when it is exposed to treated wood.

Railings

Railings can be made of many materials formed to different shapes and connected in many ways. However, the railing design should adhere to local building codes that are designed to ensure safety. Typically, if a deck is more than a certain distance from the ground, as little as 18 inches in some areas, railings are required for safety purposes. Codes specify a certain maximum opening between balusters, spindles, or pickets so that a four-inch diameter ball will not pass through the railing. The height of the railing is also regulated, with a height of 36 inches standard for residential properties and 42 or 48 inches most common for commercial applications. The attachments can fail where the guardrail support posts are attached to the deck and where the guardrail attaches to support posts. A qualified building inspector should evaluate how railings are attached and verify that the railing attachments are properly installed.

Many communities make amendments to the model building codes to accommodate specific issues in their geographic area. There are changes to the building codes every three years. State and local amendments are added to those changes. New building materials and deck-related products are appearing on the market in record fashion. In addition to inspecting and maintaining a balcony or deck, review the local building code to identify what best practices should be incorporated into the inspection process.