

Exterior Wood Deck Failures: An Almost Certain Multi-Claim Event

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Summary

Imagine if you will... You are a property insurance claims professional setting at your desk managing the normal flow of property claims that are coming your way. Life is good. Then the telephone rings. One of your policy holders was having an outside barbeque at their residence for approximately 60 people. The guests, table settings, and the caterers (with their open flame Sterno cans heating the food) were all located on the 11 feet high exterior wood deck. At 6:00 p.m., the dinner bell rings and all gather in front of the serving table. Without warning, the deck detaches from the house and collapses. This group of 60 that were once gathered together for dinner are now piled on top of each other. Bones are breaking. Flesh is burning. Every single person has an injury of some kind that requires medical attention. While no one dies, one person's neck is broken and becomes a quadriplegic. This is a true story that the author was involved with several years ago.

It seems that exterior wood deck failures are second in media coverage only next to geological sink holes. Sink holes, while affecting only one to two parties, pale in comparison to the exposure a deck failure can produce. The previous deck failure example is typical in that there are many, if not dozens, of claims that arise out of this type of event. In addition to showing typical causes of exterior wood deck failures, this article will outline the steps to limit your exposure and prepare for subrogation actions in the future.

Causes of Exterior Wood Deck Failures

Properly designed, constructed and maintained exterior wood decks (Decks) should not fail as often as they do. For decades, decks have been designed for a minimum Live Load (i.e. people and things) of 40 pounds per square foot (PSF). For clarity, imagine a 3 feet by 3 feet area (9 square feet) occupied by one person. This area should hold a person that weighs 360 pounds ($9 \times 40 = 360$). As you can see, people crowding together on a deck should not make a difference from a design perspective. Unfortunately, it is when so-called carpenters are allowed to improperly construct decks that problems occur. Decks are usually an afterthought of the contractor and are not given proper attention. In addition, property owners habitually do not appreciate the large amount of environmental exposure a deck encounters over the years. Even when a property owner is conscientious and has the deck inspected, the inspector does not appreciate the hidden problems in a deck. In the example above, the policy holder astutely hired an exterminator to inspect the deck to see if there was insect infestation, or any other problems with the doomed deck. Even though the ledger board connecting the deck to the residence was grossly decayed from insect infestation, a clean bill of health was given by the exterminator.

Case Study #1 – The Wrong Fastener

Figure 1 shows a functioning deck. The arrow in Photograph 1 indicates the ledger board. The ledger board is the portion of the deck that is attached to the main structure. If the ledger board is not properly attached to the main structure, and if it is not properly protected from the environment, the deck will fail.

Figure 2 shows the proper installation of metal flashing over the wood ledger board where horizontal wood siding is the exterior veneer. Note that the metal flashing prevents rain water from entering behind the exterior wood siding.



Figure 1

pregnant woman, and no injuries to the unborn child. Unfortunately, the real estate agent broke her back, and took months to recover. So, why did this brand new, properly flashed deck fail?

Attaching Ledger With Flashing

Wood Siding

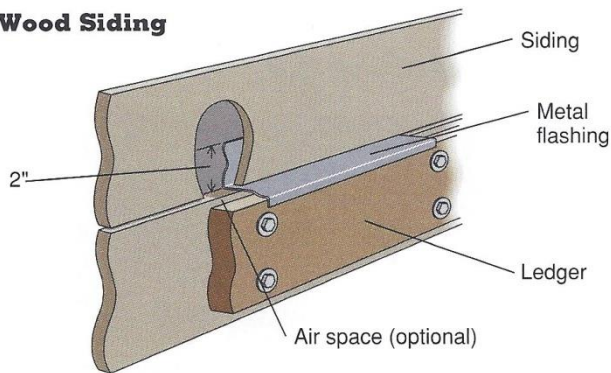


Figure 2

Also note the heads of the lag bolts or through bolts used to attach the ledger board to the main structure.

Figure 3 shows a deck failure that occurred on a brand new home. The real estate agent was showing this home to a young married couple. The wife was six months pregnant with their first child. Without warning, the deck came away from the main structure and fell onto the ground. Because the pregnant woman fell directly onto the real estate agent, there were only minor injuries to the

Figure 4 shows a typical, 16 penny nail that was used to fasten the ledger board to the main structure. Nails can NEVER be used this way because of the tendency of nails to pull out from the wood. The only allowable way to fasten this ledger board to the main structure was with lag bolts or through bolts.



Figure 3



Figure 4

Case Study #2 – No Metal Flashing

Figure 5 shows a deck failure that occurred during a family gathering. The arrow in Figure 5 shows the area where the ledger board fastened to the main structure. No metal flashing was observed. Figure 6 shows the lag bolt that was used to fasten the ledger board to the main structure. Because there was no metal flashing to prevent water from rotting the wood behind the ledger, there was no wood for the lag bolt to grip, so the failure occurred.



Figure 5



Figure 6

Case Study #3 – Everything Looks Good...So Why Did It Fail?

Current building codes allow for the use of lag bolts or through bolts to fasten wood ledger boards to the main structure. The ends of the through bolts can be seen on the exterior and interior of the main structure. However, lag bolts can only be seen from the exterior. So, how do you know that the lag bolt is long enough? Unfortunately, you don't.

Figure 7 shows a deck failure where a family was looking at property to rent. A fifteen year old boy leapt from several steps up and landed on the deck. The deck fell away from the main structure.

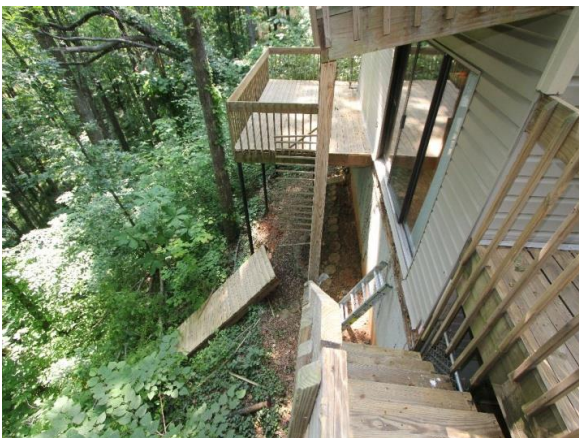


Figure 7



Figure 8

Fortunately, no one was seriously hurt. Prior to allowing the property to be rented, the property owner inspected the deck for any deficiencies. Metal flashing was noted as visible. Figure 8 shows a typical section of deck prior to the failure. The arrows in Figure 8 indicate bolt heads. Unfortunately, the length of the bolts could not be determined. A forensic investigation revealed that the bolts were not long enough. Everything looked good.

Tips to Maximize Subrogation Potential

After investigating numerous deck failures for the past 20 years, it is realized that the circumstances surrounding any deck failure are different. However, there are things in every situation that must be done in order to have a complete investigation. They are as follows:

- DO NOT let the property owner move the deck, replace the deck, or alter the scene in any way until you, or your engineer, can document the scene. Tell your policy holder that it does not matter if there is a party next week. The failed deck cannot be moved.
- Tell your policy holder to take as many photographs as they can immediately after the deck failure. It is my experience that well-intentioned neighbors will alter a scene.
- Interview the witnesses as soon as possible. What were the people doing? Were they dancing? What kind of music was playing? How many people were on the deck?
- Thoroughly interview the property owner. How old is the residence? Was the deck original to the residence or built later? When did he move in? Was there a property inspection performed prior to closing? Was the property ever a foreclosure taken over by HUD (HUD hires special inspectors to inspect a property)?
- Hire a licensed Professional Engineer who is not only experienced in deck design and construction, but also a Forensic Engineer familiar with proper evidence protocols.

Depending on your situation, subrogation potential could lie with the following parties:

- Property/Deck Owner
- Building Contractor/Sub-Contractor
- Deck Material Supplier
- Real Estate Agent
- Design Engineer
- Home Inspector (Privately or Government Hired)
- Exterminator

Conclusion

Wood deck failures have the potential to create many claims for the insurance professional if the policy holder is the owner of the deck at the time of the deck failure. A timely and thorough investigation will most likely produce other players for potential subrogation.

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