

NU Claims

COVERING THE BUSINESS OF LOSS



PULLING BACK THE CURTAIN ON FRAUD



Cyberfraud
P. 22

Frauds against seniors
P. 25

Restaurant & bar coverage
P. 28

The customer experience
P. 30

Diversifying insurance
P. 34

Driving claims outcomes
P. 36



FIGURE 1

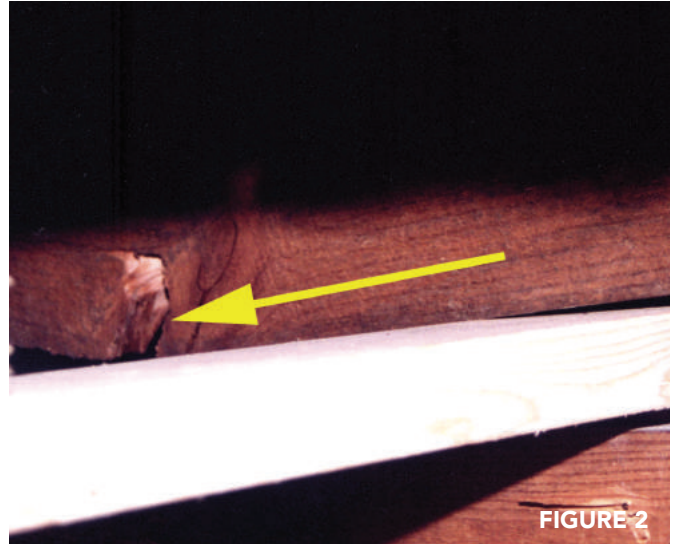


FIGURE 2



FIGURE 3



FIGURE 4

Roof Ponding: Expect Roof Failure

By Charles C. Roberts, Jr., Ph.D., P.E.

FLAT ROOFS ARE UTILIZED ON many buildings throughout the country. They offer space on top for rooftop heating and air conditioning units and other mechanical equipment. Inside, they offer a superstructure to attach ductwork, electrical conduit, suspended piping systems and lighting systems.

The term flat roof is sort of a misnomer. The roof is typically pitched slightly to allow water to run off the side of a building using scuppers (channels

through parapets that allow water to drain from a flat roof). Flat roofs are also designed to channel water to drains on the roof.

Unlike the pitched roof, flat roofs are susceptible to water accumulation (ponding) as a result of several factors limiting water drainage. Ponding can occur during a heavy rain where the drainage cannot keep up with the amount of water falling on the roof. In some instances, this can cause a permanent

deflection of the roof (structural failure) that allows water to continue to accumulate over time and a final catastrophic failure of the roof. In other instances, a roof structure can fail, deflect downward and form a basin for ponding that increases roof loading and final collapse or leakage.

Figure 1 is a photo of a roof section that has failed as a result of a structural defect. The brownish areas and “bathtub ring” are evidence of ponding over time.

Figure 2 shows a cracked joist under the ponding area. The joist failed at a defect (knot) in the wood, raising the possibility that the joist failed first and then the ponding resulted. Water had accumulated over time causing additional deflection of wood joists below and the final localized collapse of the roof.

Figure 3 highlights a relatively new roof showing ponding near the roof edge. The roof has deflected downward near the roof edge as a result of heavy rainfall. The large hose is an attempt to mitigate a design problem with the roof drainage.

Figure 4 shows a nearby roof that had downspouts draining onto the flat roof shown in Figure 3. It would be an improvement to have the neighboring pitched roof drain separately and not unload onto the flat roof.

One can see the hose that directs water away from the flat roof, a solution constructed by the building owner to direct water away from the flat roof. This design is also problematic in that during a very heavy rain event, the gutters can be overloaded and spill onto the flat roof.

Water ponding also adds to the sealant failure, corrosion of fasteners, blisters, wrinkles and generic deteriorations. There are typical dead loads on the flat roof such as air handling units, condensing units and other heavy mechanical equipment that may have been added over time. These dead loads increase roof deflection, which adds to the chance of forming a location for ponding.

Aerial photos of the building can show the existence of long-term related ponding. The claims analyst often has to determine if a single rain event caused a loss or whether long-term related ponding was the cause. To aid in this determination, the following information would be helpful:

1. Do “bathtub rings” exist or do aerial photos show evidence of long-term ponding, suggesting deterioration.
2. Are the scuppers and drains clear of debris which, if not, would suggest poor maintenance.
3. If a sudden collapse of the roof occurred as a result of a rain event

without any evidence of deterioration or deficient maintenance, then check for design deficiencies like those shown in Figures 3 and 4.

Knowing what to look for and which questions to ask can help in determining how to handle a roof failure claim.

Charles C. Roberts, Jr., Ph.D., P.E., (ccr@croberts.com) is president of C. Roberts Consulting Engineers, Inc., which provides professional engineering services in accident reconstruction, failure analysis, fire causation, explosion analysis, and biomechanics.
