

LIGHTNING STRIKE ANOMALY



The open area where the lightning struck in several spots.

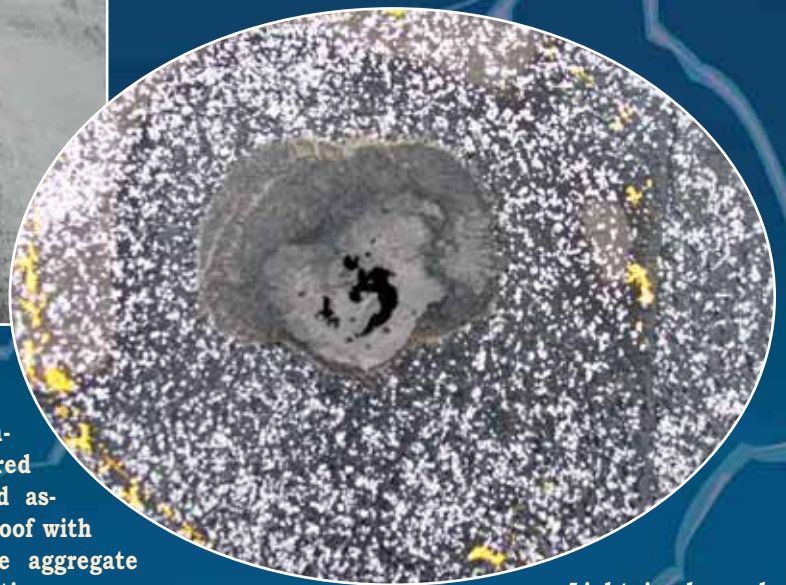
Everyone knows that lightning strikes tall objects more frequently than the level areas in between. But not always.

The adjacent photos are of anomalies of what this writer concluded were the results of a lightning strike found on a 300,000-sq-ft facility our firm had been working on for several years. Last summer during a thunderstorm, the night shift at the facility reported massive leaks in a warehouse area that had never leaked before. The next morning we carefully measured the location inside, then accessed the roof and found the defects (shown here) in an open area at considerable distance from the nearest mechanical equipment.

The roof has a gypsum deck on fiberglass form board with a base sheet mechanically fastened with


split-leg fasteners and covered with a modified asphalt, built-up roof with mineral granule aggregate cover. The defective area was near the middle of the column spacing, where there were no piping, conduits, or any other material that one would suspect could conduct electricity.

The lightning appeared to have hit the roof directly over one of the split-leg fasteners and then traveled horizontally



Lightning burned through the asphalt membrane.

in several directions under the membrane. In a couple of places, it caused the roof membrane to be torn apart from within as if there was an explosion in the roof assembly, leaving torn tabs sticking up. We suspect that there may have been some moisture entrapped in these areas that expanded rapidly when energized by the lightning.

To our knowledge, the 60-foot-high building never had lightning protection, so it is not surprising that it would be hit. It did seem unusual that it would hit out in an open area and not one of the stacks or mechanical equipment units that are spread rather uniformly across the expanse of this roof. To this writer, it is these weird anomalies that make our profession interesting. 

Left: The lightning traveled horizontally and blew up the membrane. This area probably had entrapped moisture that expanded when the electric current went through it.



A metal fastener in the gypsum deck where the lightning hit.

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