



Handling Lightning Protection During Your Next Reroofing Project

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Lightning protection systems are sophisticated networks that incorporate strike termination devices, lightning current conductors, bonding conductors, ground electrodes and lightning surge protection devices.

While the lightning risk for a structure is often the product of the lightning frequency and the consequence of the strike to the structure, designers typically consider a variety of factors when laying out a system plan. This risk assessment takes into account factors including the building environment, type of construction, structure occupancy, structure contents and lightning stroke consequences.

Naturally, a structure's "landscape" changes over time. Weather events like high winds, ice and snow, and extreme temperatures can degrade a structure's roof system and affect the continuity of the lightning protection system. Building upgrades can affect the lightning protection system as well. Roof construction, remodeling, and changes to electrical mechanical or communication systems can alter or interrupt the lightning protection system. Facility maintenance programs should include an annual inspection of the lightning protection system to ensure quality control.

A major development in the life of any lightning protection system will occur when the building's roofing system requires major overhaul or replacement. The entire array of direct strike protection for the structure, along with critical bonding elements for internal grounded systems that vent through the roof, can be affected during this process.

The re-roofing process is seldom as simple as removing and reinstalling the existing lightning protection components. There are

so many potential problems with unqualified contractors attempting a removal and reinstall; it has proven to be a major source of substandard systems on older structures.

When lightning protection systems are inadequately integrated into a roof system and/or not maintained properly, roof-related problems can arise and the lightning protection system may be rendered ineffective. Common problems include:

- Bitumen displacement-Displacement of bitumen can occur in hot climates when conductors rest directly on the roof.
- Surface abrasion-The loss of the roof's protective granules.
- Detachment due to high winds-Wind damage can occur in areas with a basic wind speed greater than 90 mph.
- Alterations and additions-Changes in mechanical equipment, antennas, and equipment vents will need to be bonded to the lightning protection system.

Various elements of the re-roofing process require the supervision of a qualified lightning protection contractor. A decision must be made on the removal and care of existing system components for possible reinstallation. The process of removal and reinstallation on phased projects needs coordination to maximize time under protection. Structurally mounted hardware needs to be properly anchored according to the standards. Bonding reinstallation must fulfill the system needs for roof-level potential equalization. Runs of cable conductor must provide the most direct low-impedance path to building downleads and structural steel. The total package must return the building to the protected zone of the lightning protection system for the expected safety level of occupants and contents.

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