

Lightning Protection for Churches

Highlights:

- All church buildings benefit from a lightning protection system
- A lightning protection system grounds and harmlessly routes the current from a lightning bolt into the earth
- Lightning does not discriminate between metal steeples and those made of other materials such as wood or fiberglass



Church buildings are often taller than other surrounding properties and frequently have steeples which extend many feet above the roof. While lightning can strike any building or tall object such as trees, churches are very susceptible to lightning strikes and their destructive force. According to the Lightning Protection Institute a bolt of lightning can pack up to 100 million volts of electricity. This force has the ability to rip through roofs, damage masonry walls, and ignite fires. It can also cause damage or destroy building utilities and electronics. Lightning is also a killer according to the National Weather Service, which reports that on average 58 people are killed each year by lightning strikes.

Facts about Lightning:

- According to sources such as Underwriters Laboratories (UL), the National Lightning Safety Institute, the Lightning Protection Institute (LPI), and the Insurance Information Institute (III) lightning strikes cause \$1 billion in damage per year in the U.S.
- The Lightning Protection Institute indicates that there are approximately 40 million lightning strikes per year.
- Over 30% of church fires in the U.S. are related to lightning strikes according to the Insurance Information Institute.
- The National Oceanic and Atmospheric Administration (NOAA) reports that the highest frequency of cloud to ground lightning strikes in the U.S. occurs between Tampa and Orlando. Meteorologists have dubbed the part of Florida stretching from Tampa to Titusville as “lightning alley”.

From interruption of communications, to loss of air conditioning on a hot summer day, and possibly loss of the building from a fire, damage from a lightning strike can be potentially devastating to a church and its ministry. Installation of a lightning protection system can reduce your exposure to the damaging effects of lightning. Contrary to a common myth lightning protection systems do not attract lightning; rather they provide a path of low resistance to dissipate the power of a lightning strike.

A Lightning Protection System and How it Works:

A lightning protection system is designed to harness, ground, and harmlessly route the current from a lightning bolt into the earth. A complete system is comprised of the following components according to the Lightning Protection Institute (LPI):

- Air terminals - Also referred to as grounding rods. These are copper or aluminum rods that are mounted at evenly spaced intervals along the roof of a structure. They intercept the lightning strike.
- Main conductors - braided cables that connect the air terminals to system components and grounds.
- Grounds - These are rods that are driven into the earth. The current will travel from the air terminal, along the conductors, to the ground rod and into the earth.
- Bonds - These materials connect roof components and grounded building systems to the main conductor to prevent side flashing, which occurs when lightning jumps between two objects.

The components listed above are designed to provide protection to the structure. Damage can also occur to appliances and electronics within a building if lightning strikes on or near a power line or utility. The current could travel along electrical, cable, or phone lines and enter your structure. A system of UL listed surge suppressors and arrestors with connected equipment guarantees can reduce the potential for this type of damage. This can help to protect vital and sensitive electronic equipment inside your church.

How to Protect Your Church:

Any church building can benefit from a lightning protection system, even those without tall steeples. Also be aware that lightning does not discriminate between metal steeples and those made of other materials such as wood or fiberglass. If it is tall it can be struck. The main difference between metallic and non-metallic steeples is that metal is a "conductor" while the non-metallic materials such as wood or fiberglass are "insulators". According to LPI, lightning will attach to an insulator and will either explode, splinter, and/or catch fire.

To adequately protect your structure and contents from lightning and its destructive force you should contact a professional that is certified with Underwriters Laboratories (UL) and the Lightning Protection Institute (LPI). A bad installation can do more harm than good and actually cause fires if improperly installed. Installation of lightning protection systems should always be done in accordance with local building codes and **National Fire Protection Association** standards (NFPA 780- Standard for Installation of Lightning Protection Systems). Materials should be UL listed and certified. UL provides a listing of UL certified installers on the **Underwriters Laboratories** website. The **Lighting Protection Institute** (LPI) offers a listing of certified installers on their website, www.lightning.org.

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