

Loss Prevention News

Provided by the Texas Municipal League Intergovernmental Risk Pool

Preventing Lightning Losses



A bolt of lightning contains millions of volts of electricity and can destroy a building, start a fire, ruin electronic equipment, or kill a person. Protection against lightning damage is taken by using emergency precautions and installing surge protectors which are sophisticated over-current devices that detect leaks of power and then quickly disengage a circuit. Grounding rods and

lightning rods are other lightning protection devices.

In simple terms, lightning is a powerful version of static electricity sparks often experienced in dry weather. A thunderstorm is caused by the turbulence that results when masses of warm air meet. Lightning occurs when violent winds within a cloud produce an electrical field inside the cloud. As voltage increases, lightning arcs through the air looking for a ground. Lightning carries tremendous power with a charge of up to 200,000 amps and 100 million volts. Lightning follows the easiest path from the cloud to the ground, which means that it is attracted to tall objects or good conductors of electricity such as building roofs, antennas and trees. A conductor of electricity is a low-resistance material, such as copper wire, through which electricity flows easily. A grounding conductor is the wire (green or bare) in a cable that carries no current and is used as a safety measure to establish a ground.

A nearby lightning strike can send a power surge through electrical wires that can damage electronic equipment. It can completely knock out dispatch and computer systems, costing thousands of dollars in property losses and putting people's lives in danger. Lightning can also come into a building through windows and chimneys to a ground such as metal wires or pipes. Metal buildings can become dangerous if not grounded properly during initial construction. Often metal gutters are the culprits. Surge protector equipment guards against bursts of electricity caused by lightning striking a

nearby electrical line but does not help in direct hits. Grounded antennas, cables, telephone wire and even aluminum siding also offer some protection against lightning damage. Most codes (International Building Code, National Electrical Code, etc.) require that potential conductors be grounded.

It is a good idea to have surge protectors on all computer equipment and electronic devices, especially at dispatch centers. Each location or piece of equipment should be provided with a surge protector, along with a unit at the main electrical panel.



A spectacular storm descends upon Howard County, five miles north of Big Spring, Texas. Photo was taken by Ramon Holguin, Jr., son of Forsan Councilman Ramon Holguin, Sr.

If you are in a lightning-prone area, consider having a protection system professionally installed. This involves placing air terminals (lightning rods) on the roof of the building and running braided copper cable to buried grounding poles. The placement of air terminals must be calculated precisely to give full protection, and grounding poles must be matched to the soil and climate in the area. Installation of air terminals involves many complex factors and should be performed by a licensed installer or company.

Lightning protection systems are effective. The costs can be easily justified because one direct lightning strike can start a fire and destroy a building along with thousands of dollars of vital equipment, and it can cause death or injury to people.