



Florida Community Colleges Risk Management Consortium



Lightning Protection on Campus

Lightning Protection for Buildings

Installing lightning protection on your buildings can improve safety by decreasing the likelihood and intensity of lightning damage. There are two main forms of lightning protection:

- 1) Interception by lightning rods, air terminals (a network of one or more overhead wires), and
- 2) Surge protection.

Lightning Rods and Air Terminals

The function of lightning rods/air terminals is to establish a point of contact for lightning that was going to strike nearby. The intercepted lightning then follows a metal cable to the ground, where it goes in the soil. Lightning rods/air terminal installation is best left to professional contractors or electricians trained and experienced in these devices and the applicable standards.

Lightning protection can help guard against most of the hazardous and damaging electric current from lightning striking the building from entering. However, it provides no protection from lightning striking external conducting paths leading inside, such as telephone wires, power lines, and plumbing. Surge protection is required to help with some of those hazards.

Surge Protection

Surge protection against lightning is extremely challenging, given its very high current and very rapid power rise times. No single device can totally provide lightning surge protection, so a series of devices in the proper sequence is best.

Multi-level surge protection is especially important for delicate electronics, such as computer equipment. Modern electronics are extremely sensitive to electric surges. Don't forget to protect modems, which seem to be especially susceptible to electrical surge damage.



Power companies offer reliable lightning surge protection at a reasonable cost. However, most of these devices provide only the first-line protection for electromechanical devices and improved personnel safety. Further surge protection for delicate electronics will likely be needed. These devices only guard against incoming surges on power lines. They do not guard against surges from other paths, such as telephone wires and plumbing.

As with lightning protection, surge protection works only as well as its grounding systems. Grounding systems must ensure that a common ground is used, to avoid potentially destructive electrical voltages developing in the system. This means all the grounding systems, such as the lightning protection ground, electric power ground, phone and cable grounds, and plumbing must be electrically connected at some point. This is especially important in large facilities, like colleges. Unfortunately, many manufacturers market surge protectors as effective against lightning that cannot handle either its power and/or fast rise times. They may cite Underwriters Laboratory approval, but that just means the devices aren't dangerous, not that they are effective. As with lightning interceptor devices, buyers must beware.

Lightning Detectors and Notification Subscription Services

The Lightning Safety Group recommends the inexpensive hand-held detectors not be used, or at most be used as a supplement to the "30-30 Rule" (see back page). Professional grade lightning detectors are also available commercially. These devices perform well, but are too expensive for most organizations.

Automatic lightning notification subscription services are a reasonable alternative. The services use the data to automatically notify you when cloud-to-ground lightning is detected.

Lightning Safety Education

Colleges can play a vital role in reducing lightning casualties. Most important is to have a lightning safety plan to protect the students and staff during college activities. Next in importance is educating the

Lightning Protection on Campus (cont.)

students and staff in personal lightning safety, so they can maintain their safety when away from college. If all colleges were proactive and taught lightning safety to their students, we could drastically reduce lightning casualties by the next generation. Finally, colleges can facilitate public lightning safety education by sponsoring outreach events, perhaps in conjunction with the local National Weather Service office or other meteorologists.

Summary

Lightning is an extremely significant weather hazard, but far too often underrated. The vast majority of the lightning casualties are easily preventable by following simple guidelines. Since the most frequent impact of lightning is life-long severe injuries, it is especially important to protect the youth. Colleges can serve an essential lightning safety role by practicing good lightning safety for their students, faculty, coaches, and staff. This is especially true for campus outside events and activities as well as intramural sporting events, since adults must take responsibility for the safety of students in their care. Colleges can also serve a second role in lightning safety by educating their local communities.

The 30/30 Rule

- 1) When the flash is seen, count the number of seconds to the initial "bang" of its thunder.
- 2) Divide the number of seconds by 5 to get the strike distance (in miles).
- 3) Take shelter if the "Flash-to-Bang" delay is 30 seconds or less.
- 4) Stay undercover until 30 minutes past the last clap of thunder.
- 5) LIMITED EFFECT WITH STORMS BUILDING OVERHEAD



Building Lightning Protection

