Golf and lightning are a hazardous combination. Lightning injuries and fatalities on golf courses are common and well documented. During a thunderstorm, lightning can strike from up to ten miles away, making it difficult to even tell that a storm is approaching.

Adequate lightning protection can not only save lives but also protect buildings and equipment from significant damage. A number of risk management steps can be taken to prevent or mitigate losses from lightning exposures. These practices should be reviewed regularly to ensure that proper controls are in place to protect people, property, and equipment.

✔️ PROTECTING THE PEOPLE
Club members, guests, employees, and other personnel are at risk during a thunderstorm and conditions suitable for lightning.

☐ Provide Weather Shelters with protective, grounded air terminals at the farthest points of the course. There should be at least one such shelter for each nine-hole course.

☐ Consider Installing an Alert System
Early warning of lightning in the area is a key to personal safety and prevention of injuries. Golf course management commonly relies on local weather reports and visual identification to determine lightning conditions. However, these methods often do not give adequate advance warning. Recent technological advances have spurred the development of early detection devices. These systems detect cloud-to-cloud lightning that is a precursor to cloud-to-earth lightning strikes. Such devices can be purchased for several hundred dollars.

Once lightning is detected, the alert system in place can play a significant part in limiting problems. An audible signal capable of being heard at the farthest point of the course is a desirable option. The use of a starter’s horn is discouraged because the sound could go undetected in thunderstorms. Confusion can also occur due to the horn’s use for shotgun events. The practice of using course employees to drive around the course to alert golfers is also discouraged, because this would also expose them to possible lightning strikes.
☐ Post Adequate Warning Signs
Clubs that are not equipped with early warning systems should post a warning to players in the pro shop, starter area, golf cart, etc.

- This club has no lightning detection or alarm system
- In the event of inclement weather, leave the course & seek shelter
- If returning to the clubhouse is impractical, golfers should know to go to the nearest protected shelter
- Golfers play at their own risk
- Lightning strikes may cause serious injury

They should stress that golfers should drive back to the clubhouse when the alarm sounds. If it is not possible to drive that far, golfers should go to the provided shelters. If golfers cannot reach either, they can be instructed to remove their golf spikes, not carry any clubs or umbrellas, and proceed to the nearest low-lying area, away from trees. An “All Clear” siren can be sounded once the storm passes. Return passes should be considered in case the round or event is cancelled.

✔ EQUIP EMPLOYEES WITH NECESSARY TRAINING
Employees should be trained in emergency response procedures and should be well versed in your course’s safety procedures. For example:

☐ Warning Systems – Employees should understand warning systems and adhere to club policies to seek safe shelter.

☐ Seeking Safe Shelter – Employees seeking safe shelter should remind golfers to drive back to the clubhouse if the notification system has activated. If returning to the clubhouse is impractical, golfers should know to go to the nearest protected shelter.

☐ Weather App - Allow a few employees who have access to the alarm system to download a weather/lightning application, such as “Spark” by WeatherBug for their cell phone.

☐ Shelter Alternative – if golfers cannot reach either, they should be instructed to remove their golf spikes, not carry any clubs or umbrellas, and proceed to the nearest low-lying area, away from trees, until an “all clear” siren is heard.

☐ Emergency Medical Response Training – It is also important that employees be trained in emergency medical response procedures and know how to access and operate an AED.

✔ PROTECTING STRUCTURES
Lightning protection for key structures can help limit potential property losses.

☐ Clubhouse – Generally, for aesthetic reasons, the clubhouse is at the highest point of the course and thus would be more susceptible to a lightning strike.

☐ Grounds Keeping Building -- The grounds keeping building is usually located away from the clubhouse. These structures house expensive grounds keeping equipment.

☐ Cart Storage -- Another consideration regarding structures involves golf cart storage arrangements. This especially pertains to battery operated golf carts. When connected to their charging stations, carts are extremely sensitive to lightning damage.

☐ Install a Lightning Protection System A lightning protection system should be designed and installed by a qualified contractor in accordance with appropriate standards. A lightning protection system intercepts the lightning along a known, controlled pathway between the air and moist earth. Such systems generally consist of the following:
• Air terminals are metal rods that are installed at strategic points of a building or tree. These terminals should be spaced no more than 20 feet apart to provide adequate protection.

• Ground connectors provide contact with the earth for dissipation of the lightning charge. At least two ground connectors should be used for each building and extend into moist subsurface earth. Code requirements and standards in the lightning protection field state that a newly driven ground should be near the 50 OHMS mark. The lower the OHMS resistance reading, the better the ground. Check your state specific requirements.

• Bonding is the interconnecting of metal parts to prevent side flash.

• Surge protection guards against damage that might occur by way of the power lines entering the building.

✔️ PROTECTING SPRINKLER SYSTEMS

In-ground course sprinkler systems are increasingly becoming more sophisticated. These systems involve more and more electrical circuitry and are even controlled by computer from the grounds keeping building. This increased sophistication can also make them more susceptible to lightning damage.

☐ Follow Manufacturer’s Instructions – the manufacturer should provide detailed information on electrical protection for these systems. If computers are used, additional safeguards should be applied. This can include the use of surge protectors and the regular back-up and off-site storage of computer data.

☐ Consult with an Electrical Contractor – choose a contactor who specializes in lightning protection to provide valuable insight in protecting new and/or existing irrigation systems.

☐ Educate Personnel – employees should be alerted to the problems that could be encountered.

✔️ PROTECTING TREES

Since they are usually the tallest attraction in any golf course, trees are most likely to be directly struck by lightning.

☐ Install Protection on Key Trees – Lightning protection should be installed on those trees that are considered key trees on a golf course. Air terminals can be installed at the four extremities of the tree creating an umbrella effect. Grounding requirements are the same as those for a building. The main difference is that copper air terminals and cables are recommended because of their tensile strength; aluminum conductors when in contact with moisture from decaying leaves, moss, or moist tree bark may cause corrosion and eventual deterioration of the lightning protection system.

✔️ INSPECTION AND MAINTENANCE

☐ Implement Procedures – Develop and implement written inspection and maintenance procedures for lightning protection systems. Maintain records of all maintenance and inspection/testing reports.

☐ Schedule Regular Maintenance – All lightning protection systems should be visually inspected at least annually. Semi-annual inspections are advised in areas with severe climatic conditions. Complete in-depth inspections are recommended every three to five years.

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