

# Lightning: Protection, A Club Responsibility

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Sometimes golf and lightning can become a dangerous mix. That last hurried drive before the pelting rain may prove to be one that should have been forgotten. Yet, though the danger is by now well known, golfers will stubbornly ignore it, once again address the ball, and tempt the thunderbolt.

Golf course owners and managers, knowing golfers, worry about these questions: Just when is it prudent to insist that players beat a retreat from an approaching thunderstorm? How can golfers be influenced to take personal safety precautions? How far does management's responsibility reach? What is a "prudent and reasonable" safety program — of warning, of protection?

A recent, painful experience shared by Lee Trevino, Jerry Heard, and Bobby Nichols demonstrated the effects of this dangerous combination of popular sport and powerful phenomenon. The three were stunned and burned as lightning struck near them at Butler National Golf Course, Oak Park, Ill., during the Western Open.

Trevino, Heard and Nichols were far luckier than have been a number of other golfers severely hurt and even killed by lightning this year. Ending without lasting harm, the incident can be used to dramatize critical points:

- Lightning does not have to strike a person directly to cause injury or severe discomfort. Trevino, Heard and Nichols were victims of lightning's peripheral effects — a high ground potential over a considerable area around the main path of the bolt.

- Lightning casualties are not rare and uncommon. It was the fame of the golfers, not rarity of the event, that widely publicized this particular lightning strike incident. The odds for this kind of painful but non-fatal casualty were great enough to embrace three men from

the top echelon of professionals; many similar unreported incidents occur every year.

- Prudence varies: Mike Fetchick, fourth party in the Trevino-Heard group, took a look at the darkening skies and decided that danger lurked there. He headed for the clubhouse and safety.

- Fallacies reign. In the aftermath of the incident at Butler National, interviews with experts on weather phenomena quenched some fallacies about lightning and lightning safety, but unintentionally created others. For example, an electrophysicist correctly stated that the kind of umbrella one carries is only incidental to lightning danger, but then went on to minimize the importance of avoiding tall objects and seeking a low profile.

Today, the roll of legal thunder in courts is signalling a new era of liability for public lightning safety by property owners, including golf courses. Under law, lightning always was an unavoidable "act of God". It still is, but protection against its harm, being possible and available, has become man's responsibility.

There is a case pending at this time, for instance, of a person severely injured by lightning while standing on a structure maintained by a municipality. The individual suffered temporary disability, substantial scarring due to first, second and third degree burns, and a permanent hearing loss in the right ear.

The claim is that failure of the municipality to provide adequate lightning protection amounted to negligence. The contention is that if the property had been equipped with a complete and properly installed lightning protection system, this misfortune may have been prevented.

The LPI recently conducted a study of 1,000 lightning casualties, of which various recreational areas were the sites for 329. Of that 329, 52 of the cases occurred on golf courses with 41 casualties and 11 deaths.

Of the 329 casualties, many

could have been prevented if (1) adequate lightning protection had been provided and (2) warnings about the hazards of lightning had been posted.

A "Duty to Warn" theory is also emerging in the legal area of public liability. In addition to providing adequate shelter against lightning, a property owner may be required to post warnings for the public to seek shelter during an electrical storm.

Here are five steps golf course owners or managers can take to provide "practicable and reasonable" protection against lightning.

1. Protect open areas distant from the clubhouse by either erecting rain shelters equipped with protection systems, or erect overhead protective wires.

2. Equip lone trees under which people are likely to seek rain shelter, with special tree protection systems.

3. Install standard lightning protection systems on the clubhouse, pro shop and other buildings.

4. Protect and/or ground if metal, flagpoles, towers and similar structures.

5. Prominently post personal lightning safety rules.

Erecting a rain shelter without lightning protection relieves people of a thunderstorm's damp discomforts, but gathers them as a body to face what may be the storm's only real danger.

Such structures, whether open or closed, should be provided with a standard lightning protection system which has air terminals at specified roof locations, conductors forming a closed roof loop and leading down to at least 10-ft. deep ground rods at opposite corners of the structure; and at least two such groundings.

Down conductors should be shielded to a height of 8-ft. with non-conductive material, to protect anyone leaning against the pole or wall. A dry, non-conductive floor is important. If the shelter has a dirt floor, grounding should include a bare, buried lightning conductor encircling the building, at least 10-ft.

out from the walls.

An alternative way to protect people congregated in open areas is to erect poles on opposite sides of an area, with wires strung between them, about 20-ft. high.

This method has some disadvantages. It is less attractive. It does not offer any rain protection. It does not have a dry floor. But it will lead the bolt deep into ground and offer greatly increased safety to a lot of people inexpensively.

Wires should be at least No. 4 copper, poles properly grounded, and the system should be extensive enough to bring the entire field under the cone of protection. Designing and installing such a system calls for the same experience, specialized materials, and expertise as standard lightning protection. Only a specialized lightning protection installation firm should be entrusted with it.

Lone trees, tallest trees in groves, and trees within 10-ft. of buildings should be equipped with special copper lightning protection systems which are installed loosely so that as a tree grows, the system will "grow" with it.

An air terminal is placed at the highest reachable point, and the main conductor leads from it to ground. Miniature branch air terminals are placed as needed at extremities of main branches, and connected to the down conductor. Ground rods are driven into the ground at opposite sides of the trunk, outside the root system, which usually extends to outermost branches. Trees over 3-ft. in diameter at the lower trunk require two down conductors and grounds.

The clubhouse and other buildings, whether with open or closed sides, should be protected with standard systems as described for rain shelters.

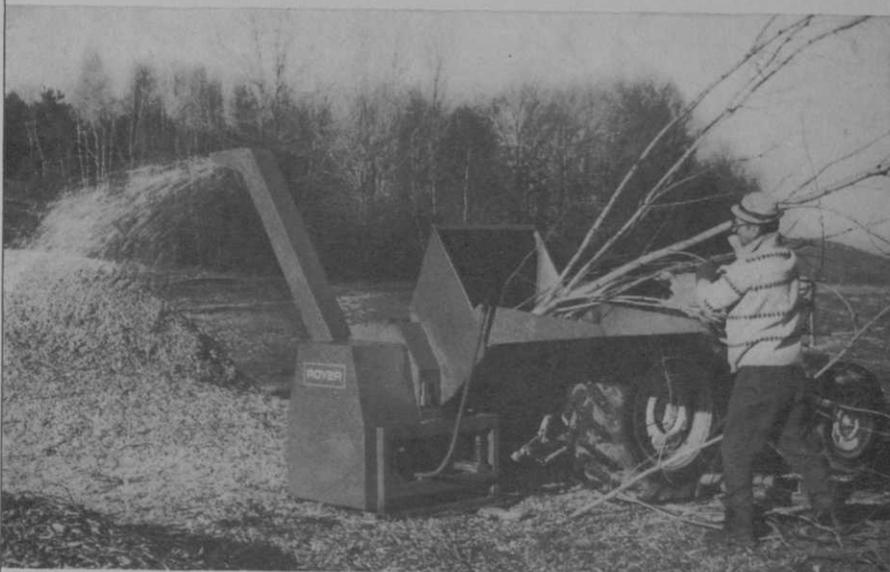
In addition, larger structures need to have plumbing vents, air conditioner, or other metal body of inductance or conductance tied into the main conducting system. Air terminals are needed on chimneys, dormers, and other high points.

Lightning protection on the course is becoming a growing problem for facilities, as members become more aware of the dangers that can occur during a storm. The responsibility for safety will ultimately lie with the course. □

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