Marking the Other Golf Course Hazard – Your Trees

By Brian C. Nettz, CGCS
Certified Arborist

On July 15, 2004 William Harrell was out on the golf course enjoying life and the company of a friend while playing at their country club in North Carolina. The wind was strong that day. In fact it was strong enough to have blown over a 35-foot tree onto the golf cart that was occupied by William and his partner. Tragically, a day's enjoyment and William's life were crushed under the weight of the tree, which had severe root-rot underground. This sad story was published as a blurb in the August 6 issue of Golfweek's SuperNEWS. Many would argue that it was an act of God. The reality is that the article probably does not detail a probable investigation into the contributing factors of the root-rot, and whether there was any negligence on the part of the club to remove the hazard.

In addition to the lateral and direct hazards that we mark on the golf course, it is important to remember and look up in order to assess tree hazards. Improper marking of a water hazard will get you a lecture from the Green Committee Chair, the GM, or the irate golfer that just lost his $ 50 bet. Improper marking or failure to mark a reasonably foreseeable tree hazard will get you subpoenaed and stuck in deposition and litigation purgatory. In today's litigious society, it is the responsibility of the superintendent as his/her employer's fiduciary to mitigate potential lawsuits.

You cannot eliminate tree hazards entirely. In theory every tree could be categorized as a hazard. What you want to accomplish is to take effective measures to reduce the failure potential of a tree. Identification and correction of structural defects significantly reduces the failure potential. Species, growth habit, soil conditions, history and environment are all factors as well.

There are three components in assessing tree hazards. First is the probability of failure. A large tree with an extreme structural defect, such as severe internal rot, could be a hazard. Second is the environment that may contribute to failure. A large tree with this internal rot in a wind corridor could be more hazardous than inside a large grove of trees. Third is a target. A large tree with severe internal rot in a wind corridor over the eighth tee is a severe hazard. If the same tree were off in the distant grove of trees 100 yards off the fairway, it would not be a hazard because there is no target. A hazard, by definition, must have the ability to harm people and/or property.

Not a Hazard

Evaluating tree hazards begins by developing a systematic process of evaluation and sticking with it. On a golf course, I stick with the areas of highest target value/density. If you have large trees at the end of their life-cycle like we have here, your annual tree hazard budget could run in to the many tens of thousands of dollars. Concentrate on tees, greens, bunkers, parking lots, roads, buildings, and neighbors. Any areas around tees and greens where golf carts park should be included. It is not a highly technical process to do an evaluation, but it does take some time and some effort. The International Society of Arboriculture has a systematic, standardized booklet explaining hazard identification and it also provides sample forms that can be used.

One should begin the process by examining the tree from a distance. Get a look at the tree as a whole. Then you should proceed to check the trunk and crown area of the tree. Lastly you need to examine the canopy of the tree.

Things to look for from a distance primarily are lean, location/environment, crown dieback, and branches that stick out further than the rest of the crown. Trees with severe lean are better off removed. If a period of saturated soil conditions arrives, its eventual fall-over will occur. Trees may lean due to growth form and environment. They naturally produce reaction wood to offset the different weight distribution associated with natural leaning. But a severe lean, as seen in the picture, is cause for concern and action. While you are examining the tree from a distance, you will also notice the environmental factors that act upon the tree. You should note the prevailing wind, location in relation to other trees, distance from roads and buildings and general vigor.

Closer examination is needed for the trunk and the root collar. At this stage of the game we want to see the taper of the trunk, the amount of internal decay and other important structural features. Also look for codominant stems, or trees with two major trunk portions. Ideally trees that have codominant stems should have the weaker of the two stems cut back, or subordinated, when the tree is juvenile. Codominant stems have included bark where the two stems grow against each

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other and this is a weak wood formation that will eventually end in failure. The failure potential of codominant stems can be lessened with the use of cables. Cables should be placed fl the distance from the crotch to the end of the stems and secured with special hardware. Check for internal decay. Signs of decay are holes, animal shelters, beehives, fruiting bodies and conks. If the decay is greater than 30-35% of the trunk's solid wood, removal is recommended. If there is a cavity in the tree that is greater than 25% of the total amount of wood, remove it. If the tree is leaning, look for signs of soil heaving or cracking where the trunk and soil meet. Trees with heaving soil require immediate removal. Proper trunk taper is also important. Good trunk structure has a nice taper from the root crown to the top. Long, slender trunks with no taper are candidates for blow-over in strong wind. Be especially aware of this if your course has "edge trees." Edge trees where trees were once in the middle of a grove and now are on the edge. Because the trees that were on the edge sheltered the ones inside, the inside trees tend to grow long and slender. Exposure to wind creates taper, and trees sheltered from wind have no taper. These trees are weak. They are prime candidates for blowing over. This is typical of courses that were carved out of large tree stands. Winds can be funneled by fairways, and the wind picks up speed as it moves into the open areas.

When you examine the tree scaffold be on the watch for

Condominant Stems

branches that rub other branches. Rubbing will eventually create decay and cause a failure. Check the branches where they attach to the trunk and parent branches (branch collar). Remove any branches that are larger in diameter than the parent stem. Remove any branches that stick out noticeably further from the trunk than the majority. Cut off any branches that are already

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dead and decaying (crown cleaning). Large branches with cracks along the lateral plane should also be removed before they break and create an exposure route for decay. Be aware that taper on branches is important and tree branches that have poor taper are best removed. Branches that contain galls and cankers should be cut. A good rule of thumb is not to remove more than 25% of the canopy of a healthy tree. Doing so could stress the tree and begin a mortality spiral that may take years to finally kill a tree. Be mindful of any history associated with your trees. Important things to remember are irrigation installation around trees, cart path construction, root pruning, large equipment movement, mechanical damage from equipment, chemical damage from runoff or drift, vandalism. It can take years for a stressor to show on a tree. Make sure all pruning cuts are done appropriately, without cutting into the woody collar that surrounds the branch where it attaches to the tree. Trees have a unique ability to compartmentalize decay, but the right conditions will favor the decay over the tree's defense mechanisms.

Another thing to consider is lightning. Trees of prominence or trees that golfers seek refuge under in rains should be considered for a lightning protection system. A set of air terminals and copper conducting wire is installed on the tree and grounded in the soil to transmit the bulk of the voltage into the ground. The air terminals need to be extended as the tree grows, but the system will function normally even as the tree growth surrounds the conducting wire. Lightning protection is expensive, but the cost may be worth installation on the proper tree.

Remember to appreciate the beauty of your trees and the value and character they add to your property. Do not take their health for granted. Take in to account the massive weight of a tree. As a tree or a branch falls, it picks up momentum continually until it hits ground. Even a small branch becomes potentially fatal from 25-30 feet. Keep your eyes peeled for hazardous trees and branches around your tees, greens and other areas where there are probable targets. The life and or injury you prevent could be your own.

Leaner removal

For more information about tree hazard identification go to www.isa-arbor.com, the website of the International Society of Arboriculture. I also recommend Golf Course Tree Management by Sharon Lilly for further turf/tree interrelationships.