

# Is There a Troll Under Your Bridge?

*I was conversing with a colleague at the Midwest Turf Clinic because I had heard that his club had just spent tens of thousands of dollars on tree removal. He told me that they had contracted for the removal of 35 mature trees throughout the course. I was impressed at the undertaking of such an ambitious project, especially with trees that no doubt had become fixtures on the golf course. When I asked him how he was able to sell the project, he responded, "Fred, I just told them that this kind of thing needs to be done every 100 years or so."*



*One torched pick-up truck next to a bridge.*

Every 100 years or so. Infrastructure is not a very exciting topic. Nobody likes to spend money on the stuff you can't see (especially my wife, but that's a story for another time), but as your site gets on in years you have to be aware of wear-and-tear in items that you may take for granted. How often do you inspect your lake intakes, bridges, rain shelters and security fences? If your golf course is over 10 years old it may be time to take a good, hard look at some of these structures.

A couple of things happened at my place this year that got us very interested in our infrastructure. On July 6, I was greeted upon my arrival at the course by the sight of three police squads and two fire trucks blocking my access to the coffee machine. A flickering glow coming from the general direction of the sixth hole was my first indication that it wasn't going to be a normal morning. That night a couple of vandals had stolen a pick-up truck, four-wheeled around the golf course over several greens and tees, parked the truck next to a bridge and set it on fire. The heat was so intense that the asphalt under the truck actually ignited and the deck and rails of the bridge were charred. As a side note, the culprits were apprehended; apparently they were a part of a larger group causing trouble that night when they broke off to steal the truck, etc. After the dirty deed was done, they called the rest of their companions on a cell phone to brag about their adventure. Unfortunately for them, the police had nabbed the larger group on a traffic violation, and they were actually in custody when the call came in. The police told the buddy to tell the arsonists that he needed a ride, and sure enough, they walked right into the trap.

But I digress. The second event that occurred was the discovery that a bridge that the park district plowed and salted in the winter had corroded to the point where it lost structural integrity and had to be closed and replaced. It was determined at that time that it might be a good idea to get a structural engineer in to inspect **all** of the bridges throughout the park district. I was fairly certain that our bridges at the golf course were okay. After all, we didn't salt them and we replaced the decking on a regular schedule. None of the bridges was more than 25 years old and we had kept records of any repairs.



What I neglected to consider were the parts of the bridges we couldn't see—the footings and foundations. The structural engineer's report revealed several golf course bridges to be in need of serious erosion control at the point where the running water passed along the stream banks. Several factors contribute to erosion: the speed of the water as it passes through the crossing, whether it is funneled or restricted in any way, and how much the stream meanders. Any combination of these conditions in excess causes the rate of erosion to grow exponentially. Once the foundation elements of a bridge are exposed to the moving water, the bridge loses its base and its supporting characteristics are compromised.

Erosion control can be accomplished in several ways, from interlocking sheet-piling in extremely unstable situations to simple rip-rap rock armor along fairly stable creek banks. Once the rate of potential deterioration is established, it

*(continued on page 8)*



*Exposed bridge footing —spalled concrete is caused by the foundation settling.*

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becomes fairly easy to determine the best method of remedy. The important thing is to be aware that any situation where moving water is involved is never static.

We were lucky. Our situation was discovered before repair costs became excessive or, more importantly, before anyone got hurt. This is a good time of the year to get down on your hands and knees and check out your infrastructure. You just might find a troll under your bridge.



Eroded bridge foundation.  
Note exposed roots of adjacent tree.



Cart path erosion.



The power of moving water.



Eroded creek bank caused by restricted flow upstream.