

Superintendent Uses Steel Piling To Solve Muskrat, Erosion Problems

When the grounds crew at Bay Pointe Golf Club in West Bloomfield, Michigan, declared war on an army of muskrats burrowing under the fairways and greens they found they solved erosion and mowing problems, and developed a new type golf cart bridge at the same time.

Don La Fond, superintendent for the 18 hole private course, began last fall driving lightweight steel sheet piling with a self-modified backhoe to completely encircle the course's four ponds.

The ponds had been stagnant and marshy, inhabited by muskrats often burrowing as much as 20 feet into a fairway or green, annually causing significant damage.

"A person could break his leg stepping into a soft spot over a burrow," La Fond said, "And there were plenty of burrows. We had to collapse entire areas, then re-sod. Considering the time and expense, we decided to do something preventative before the place turned into a muskrat ranch."

Opting for the ounce of prevention, Bay Pointe ordered 75 tons of lightweight steel sheet piling from L. B. Foster Co.'s Detroit office. The seven gauge piling was delivered in 4, 10, 12, and 14 foot lengths, uncoated and ready for driving.

To put down the sheets, La Fond used a highly

mobile pile driver he had devised from backhoe and a flatbed truck. He bolted a heavy steel plate to the backhoe's bucket to serve as a durable battering head.

"It sounded feasible, so we did it and it worked," he said. "First we'd break the frost line with the bucket's teeth, then drive the piling with the plate until it hit solid ground.

"We used a combination of lengths, some as little as four feet, some as much as fourteen, depending on the condition of the soil. It was mostly a stiff, sandy loam, but we did hit pockets of quicksand where we had to use the longer lengths."

La Fond said the sheets were driven to an even head level in most cases, and required very little trimming in spite of the force of driving on the heads. Lightweight piling can also be driven with a jackhammer, drop hammer or any of several light pile drivers.

La Fond noted that seven gauge steel sheets are one of the few types of lightweight piling that will drive easily through soil containing buried tree stumps, roots or rocks.

"Corrugated metal bends and wood splits," La Fond said. He had installed a corrugated erosion



Corrugated sheets (lower left) show more wear even though they were installed after the piling (center).

Steel Piling

barrier along the course's Middle Straits Lake shore, but after backfilling, the weight of the soil began to bend the corrugated outward. La Fond said he plans to reinstall lightweight sheet piling at the corrugated locations.



Bay Pointe superintendent Don La Fond Explains use of heavy steel plate on backhoe bucket to drive piling around ponds.

Using the backhoe driver system, La Fond's three man crew was able to install 120 feet of piling to grade in about six hours. As the sheets are 17.73 inches from interlock to interlock, the crew was driving more than one sheet every five minutes.

Setting The Sheets By Eye

La Fond did most of the pile setting by eye, but in places where a perfectly straight line was necessary, at a pumping station for example, the pile would be guided in along a railroad tie.

La Fond said Bay Pointe's Owner and President, Ernie Fuller, wanted as few straight lines as possible along the ponds, to make them more natural looking.

"Lightweight sheets are well suited to curves," according to La Fond. "We found we could flex the piles 16° relative to each other at the interlocks."

When the driving job is finished, steel piling caps will be installed along the top rims, and the area behind the pilings backfilled to ground level. The result, La Fond said, will be smooth, muskrat-proof shorelines, safe from erosion and easy to mow along.

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largest pond to the highest, and then on by gravity to the other two. The gravity flow was guided by a five foot wide stream bed cutting through several fairways. It was well planned and added a new feature to the course, but it necessitated construction of two new cart bridges.

"A good wooden cart bridge with railings will cost about \$900 and have to be replanked each year as golf cleats wear out the walking surface," La Fond said. "Also the railings create an unnatural, unwanted obstruction on the course."

Looking again to lightweight steel sheet piling, La Fond found that four sheets, interlocked and laid across the stream, had the qualities of a reasonably sturdy cart bridge. He then discovered that the three lengthwise channels created by the piling's shape were a perfect fit for the three wheel track of the course's golf cart fleet. The three inch deep channels eliminated the need for the obtrusive railing.

"You can actually drive the carts across the bridges with your hands off the wheel," La Fond said.

To accommodate walkers, a 1½ inch layer of cart path slag was applied to the channel bottoms, preventing metal to metal contact between cleats and bridge.

Cost of the two sheet piling bridges came to about \$250, or \$650 less than the cost of one good wooden span, he said.

La Fond also used lightweight piling to construct the pumping station screen gate frame. He welded two sheets back to back, and added L-



Golf cart tires fit the grooves created by four sheets of piling. Gravel placed in grooves allows golfers to avoid the grinding of cleats on the metal sheeting.

shaped steel caps along their lengths to form tracks guiding a sliding screen to keep debris out of the pump. The screen slides out of the water for cleaning.

Right now, La Fond is considering lining the course's stream banks with lightweight steel piling to help prevent erosion and facilitate mowing. **WTT**

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