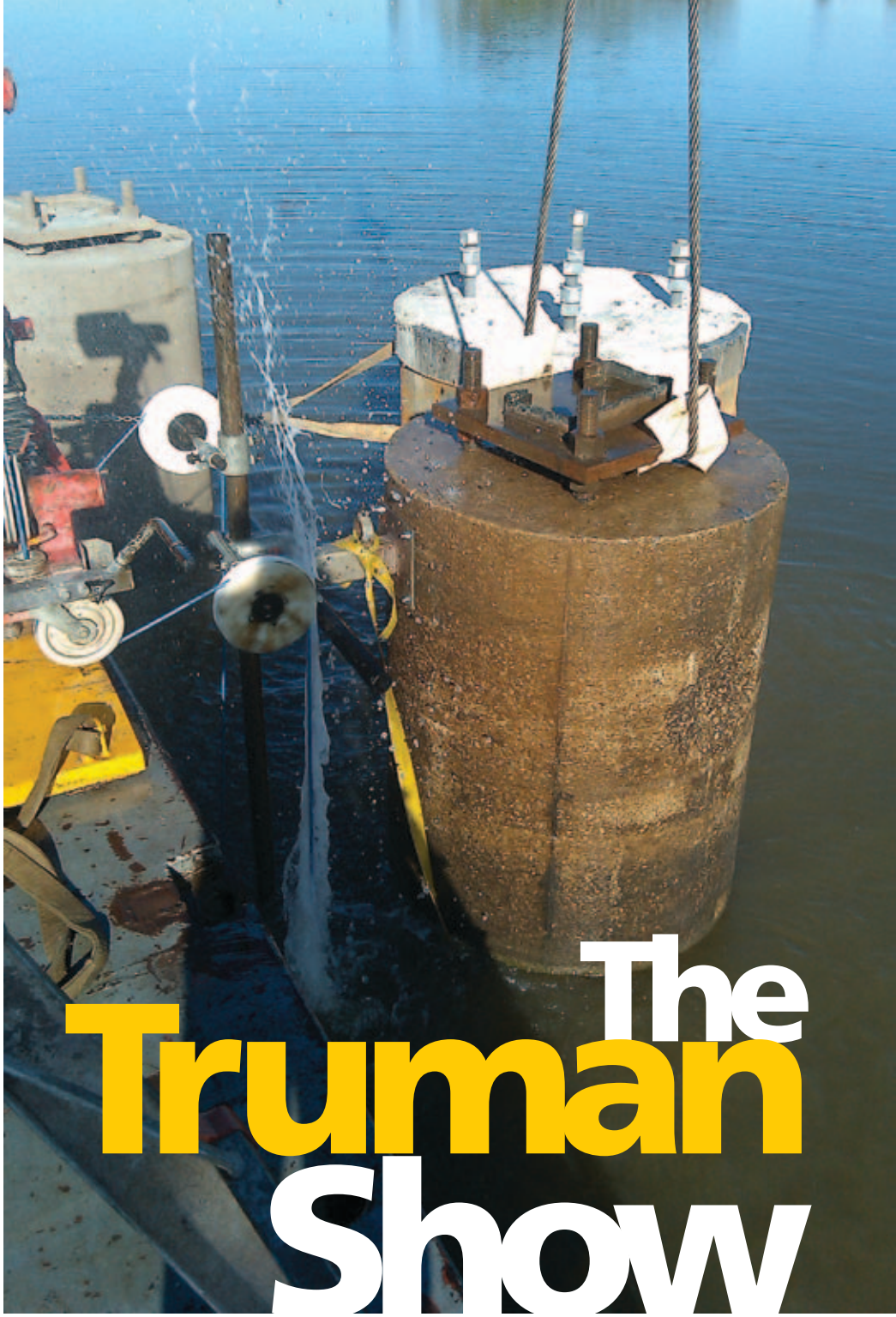
The cylindrical concrete pillars stood 12 feet tall and measured 4 feet in diameter.



The Truman Show

All Eyes on Contractor's Wire Saw During Pillar Removal

Using diamond wire to cut concrete is one of the most challenging applications for sawing and drilling contractors. This innovative technique originated in quarries to extract stone and is ideal for cutting thick concrete where access is limited. Careful planning and set-up procedures insure the work is completed quickly and safely. When a CSDA member was chosen to cut and remove 20-foot-tall concrete pillars from a lake in Missouri, wire sawing offered a safe and efficient solution.

The Harry S. Truman Dam and Reservoir, also known as Truman Lake, is located between the cities of Clinton and Warsaw in Missouri. The 56,000-acre lake is the largest man-made lake in the state and is surrounded by more than 100,000 acres of land for outdoor recreation activities such as hunting, hiking and horseback riding. The dam, located at the lake by the Osage River, sits about 1.5 miles northwest of Warsaw, Missouri, and regulates water flow to produce hydroelectric power while providing flood control for the Southwest Power Administration.

The U.S. Army Corps of Engineers completed construction of the dam and reservoir in 1979 and still manage the site today. In the early 1960s, a series of concrete pillars was installed close to the water's edge to run electrical and utility services across part of the lake. Since the pillars were installed, severe weather and corrosion had caused many of the pillars to tilt. This rendered the pillars structurally unsound so the decision was made to have them removed. The task facing the chosen contractor was to cut and remove the 12 cylindrical reinforced concrete pillars that were each 4 feet in diameter. The pillars stood 20 feet tall from the bottom of the lake, and it was specified by the U.S. Army Corps of Engineers that they be cut as close to the bed of the lake as possible.

Concrete cutting in Truman Lake, Missouri, from floating work platforms.

A diver assessed the base of the pillars and set up 50-foot-long wire saw runs.

Each 4-foot-diameter pier took three hours to cut.

Massman Construction Co. of Kansas City, Missouri, was selected as the general contractor for the planned work. The company then needed to find a cutting specialist that had the right equipment and experience to perform the underwater demolition aspects of the project. Massman chose CSDA member Coring and Cutting of Springfield, part of The Coring and Cutting Group, to complete the work. "We could set up the wire saw close to the bottom of the lake to make the cuts. We were also able to minimize debris in the water and make a really clean cut," said Kenney Robling, branch manager at the Coring and Cutting of Springfield office.

The first task for the cutting contractor was to assess the environment in which the cutting would take place. The lake varied in depth from 4 to 9 feet at the locations of the 12 pier structures, so a diver was required to enter the water and set up the pulley systems to the concrete surface. A floating work barge was employed to carry a crane and the sawing equipment. Pulleys were positioned to run the 50-foot length of 0.375-inch-diameter diamond wire from Husqvarna that was used to make the planned cuts. It was the diver's job to run the wire through the pulley system and connect it around the wire saw and pillar. Operators then ran a two to three-minute test of the system to check that it worked properly. Then divers went back into the water to make sure all pulleys remained intact and the wire was still running its intended route.

As soon as the setup had been tested, sawing commenced. On average, it took three hours to saw through the 4-foot-diameter concrete pillars. Two pillars were cut each day.

Cut sections weighed an average of 21,000 pounds.

Rigging was set up to attach the cut sections to the crane for removal before each pier was cut free from its base. When the cutting of each pier was completed, the crane removed the 21,000-pound cut section from the water. The sections were held on the platform until being loaded onto a truck for removal from the work area. Cutting work was completed in five shifts by five operators and a diver.

Underwater wire sawing is not without its challenges. Working in the 60-degree waters of Truman Lake during October 2010 was one thing, but the windy weather conditions above the water and the little-to-no visibility in the water made the wire saw set-up difficult as well. Unable to see very far ahead under the water, the diver relied on his sense of touch to run the wire through the pulley system. The two to three-minute test runs of the saw were very important, as the run had to be accurate from the start of cutting before speed could be increased.

The use of a diver was a necessity for the job, so The Coring and Cutting Group took steps to make sure that the Springfield office had a qualified diver. The chosen diver took several classes and was certified in this discipline before completing the dives in the lake. Operators and laborers on the floating work barge wore all necessary personal protective equipment and life vests at all times.

To cut the 12 concrete pier structures free and remove them, operators used a 26-horsepower CS2512 wire saw from Husqvarna together with a hydraulic power pack from Diamond Products. A 50-foot length of 0.375-diameter wire was also supplied by Husqvarna.

It took the team from Coring and Cutting of Springfield five days to cut through all 12 of the 4-foot-diameter, 21,000-pound pier sections and safely remove them from the lake. This totaled 252,000 pounds of cut concrete. The job was completed without any delays, and was on time and within budget. "This was a challenging but great job for the Springfield office to perform," said Carl Jones, safety director for The Coring and Cutting Group. "The potential safety risks were reviewed and managed well which made for a highly-successful job," Jones added.

The cutting contractor credits the company's success in winning the project to a couple of important points, as Robling explains, "The Coring and Cutting of Springfield office has built a solid reputation over the years, and has a large customer base to show for it. In addition, we had the required expertise in wire sawing. Our reputation helped us to win the bid for the job at Truman Lake and our expertise made sure the job was a success."

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COMPANY PROFILE

The Coring and Cutting Group has been a CSDA member since the year 2000. The group's headquarters are in Kansas City, Missouri, and there are an additional 20 branch locations across nine states in the U.S. The Coring and Cutting of Springfield branch has been in business for 32 years, has 12 operators and 12 trucks and offers the services of core drilling, wall sawing, wire sawing, flat sawing and selective demolition.

RESOURCES

General Contractor:
Massman Construction Co.

Sawing and Drilling Contractor:
Coring and Cutting of Springfield
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Methods Used: Wire Sawing