# Obelisk Stands Sentry to Honor Heroes

*A 36-ft-tall welded stainless steel obelisk memorializes the Covington County, Ala., servicemen and women who made the ultimate sacrifice in service to their country*

BY MARY RUTH JOHNSEN

**When asked to construct a 36-ft-tall obelisk that would serve as the centerpiece of a memorial honoring the war dead from his hometown, William Merrill knew he wanted to take on the project. What he didn't know was how he was going to build it.**

*The completed monument is shown during the dedication ceremony on November 11, 2004. (Photo courtesy of the* Andalusia Star News.*)*

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"I had tons of experience on stainless steel pipe and almost none on stainless steel plate," Merrill recalled.

The obelisk, which was dedicated on Veterans' Day 2004 (November 11), stands in Veterans' Memorial Park next to City Hall in Andalusia, Ala., the seat of Covington County. It honors those county citizens who have given their lives in every war and military action since World War I. The obelisk's base is 4½ ft square. It rises to a height of 32 ft, narrowing to 32 in. at the top. The pyramid-shaped cap brings the total height to 36 ft. The obelisk's base is clad with granite on which is inscribed the names of those being honored. It sits on a 7-ft pedestal of reinforced concrete and that, in turn, is surrounded by a five-pointed concrete star representing the five branches of the U.S. military and a semicircle of 11 U.S. flags.

Merrill is an Andalusia native whose business, Wilco Welding, is located only a few blocks from where he was born. Although the company mainly works with ornamental iron for items such as handrails and gates, Merrill is no stranger to large projects. He got his start in welding working on aircraft carriers, then moved on to help construct chemical refineries and steam generator boilers before opening his own business about 15 years ago.

## Getting Help

When Merrill first got involved with the obelisk project in March 2004, the project had a design architect, Dale Fritz of Birmingham, Ala., but no engineer. It soon became apparent Merrill would have to serve as both engineer and builder. While he did have the design plans, he also had a lot of questions.

*Fig. 1 — Welding sides one and two together. Carbon steel bars were used to reinforce the corners.*

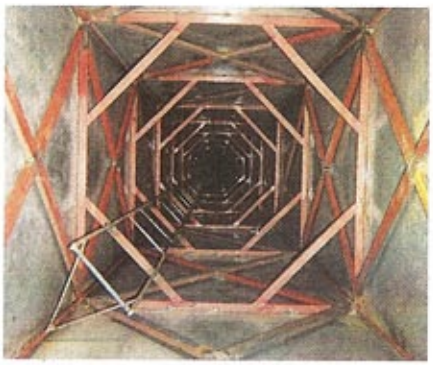

*Fig. 2 — The internal ladder for foundation anchor bolts and lightning rod attachment.*

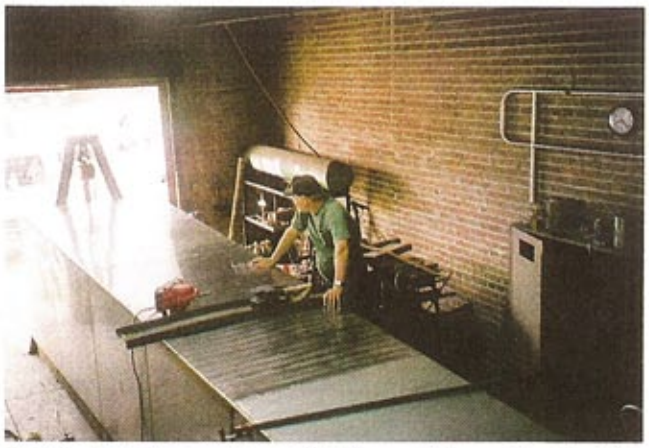

*Fig. 3 — It took many hours of tedious work to produce the "ribbon matte finish."*

*Fig. 4 — Applying the pickling gel to the weld joints.*

*Fig. 5 — Final washing of the obelisk following application of the pickling solution. Merrill called this "the spin cycle."*

*Fig. 6 — Placing the obelisk on site.*

One of his first calls was to the offices of the *Welding Journal*, to see if the magazine had run any articles about building obelisks. As it happens, a fellow named Art Cady several years ago had built an obelisk for AWS headquarters, and staff was able to put Merrill in touch with him. Although Cady had never built an obelisk as big as the one Merrill would be working on, he proved a valuable source of information.

Merrill then found the answer to his main concern about the project — welding distortion of the 304L stainless steel plate that would be used — in a 1991 *Welding Journal* article about construction of a 26-ft-high stainless steel sculpture at the headquarters of Black & Veatch Architects-Engineers in Kansas City, Mo. The key to the problem, Merrill decided, was in the following sentences: "The weld sequence was specified to be a back-step block sequence on all areas except the cover passes. This sequence allows welding to be completed in a manner that causes welding distortion to be directed toward the previous weld metal, with minimum warpage of the surrounding plate" (Ref. 1).

## Building the Obelisk

Merrill and employee David Geohagan performed all welding, finishing, and other work on the obelisk — Fig. 1.

Originally, Merrill intended to use gas metal arc welding (GMAW) with a tri-mix shielding gas, but ended up switching to the shielded metal arc welding process (SMAW). "On the little samples we welded in the shop, MIG (GMAW) worked fine, but not on the obelisk itself," he said. "We couldn't get a solid seam." Merrill believes windy conditions inside the shop diminished the effectiveness of the shielding gas, resulting in poor weld quality.

Besides welding the sections of plate together to form each side and the 32-ft-long joints to connect the four sides, the two men had to weld a carbon steel internal structure. The internal structure not only helped brace the obelisk, but served as a ladder — Fig. 2.

Once the obelisk was put in place, workers needed to be able to climb inside to tighten or loosen the anchor bolts that attached it to the base and that would keep it plumb, Merrill explained. Once that was done and the workers had exited, then the pyramid-shaped cap could be welded on.

Architect Fritz wanted them to use angle iron in the corners inside the obelisk, but Merrill was certain that would not work.

"The slope of the obelisk is 1.641 deg off of being true vertical," he explained. "The angle iron has a true vertical, but when you tilt it, you no longer have a true horizontal 90 deg in the vertical plane."

Instead, he used ½- x 2½-in. carbon steel bars to reinforce the corners. They were welded with the SMAW process and E309-16 electrodes for the first pass and then

*Fig. 7 — Welding on the final piece, the pyramid cap.*

*Fig. 8 — The obelisk in place with the granite cladding on which is inscribed the names of those being honored.*

E308-16 for the final two passes. All the stainless-to-stainless joints were welded with SMAW and E308-16 electrodes.

"I engineered the internal structure to be ⅛-in. larger than the external," Merrill said, "so when we tack welded, we had lots of distortion. But when we stich welded it out, it tightened up. It worked much like stretching a skin over a drum."

## Inventing a Finish

Once Merrill and Geohagan completed construction of the obelisk body, a decision had to be made on what type of finish the stainless steel should have. No one involved with the project seemed to know what to do, so Merrill invented a finish that, from a distance, makes the obelisk look like it is made of granite.

They marked off each inch of the panels, then sanded the stainless using a 4-in. belt sander with a coarse grit abrasive — Fig. 3. "We started off skipping every three inches going in one direction, then when we were finished, we'd reverse the process in the other direction," Merrill explained. He calls it a ribbon matte finish.

"I made up the name, but I'd talk to people in the art world and they'd act like they knew what it was," he said. "I made up a lot of stuff on this obelisk."

## Clean and Place

Once the ribbon matte finish was completed, the obelisk was moved across the street to undergo a pickling and passivating process. Since they had used carbon steel for the internal structure, Merrill knew tiny bits of carbon steel and other materials had touched the stainless on the outside of the obelisk. That contamination could potentially lead to corrosion if not properly removed.

Once the obelisk was out of the shop and out in the open, it drew plenty of attention from passersby. "We had to explain to every farmer driving down the street what we were doing," Merrill said with a laugh. "We told some people it was ductwork and others it was a rocketship."

To remove any impurities on the stainless steel that could rust or corrode, they applied two products from Bradford Derustit® Corp. The first, called Wonder Gel, they put on all the weld joints; the second, SS-3, was applied over the entire surface of the obelisk — Figs. 4, 5.

Following cleaning, the obelisk was moved to the park and a crane placed it on the concrete foundation — Fig. 6. Once the workers completed adjusting all the anchor bolts and climbed out again, the pyramid cap was welded into place — Fig. 7. Eventually the granite was wrapped around the base, the rest of the memorial put into place, and it was ready for the November 11 dedication ceremony — Fig. 8.

Merrill feels it was a once-in-a-lifetime project and is pleased with the results.

"Some people wanted it in the town square," he said, "but when we explained it was a memorial and needed a more quiet setting, they seemed to understand."

Merrill explained that the obelisk and the flags surrounding it are lit by spotlights. "It's beautiful at night." ◆

*References*

1. Anniversary sculpture reflects company's talents. 1991. *Welding Journal* 70(1): 69–70.