



CASE STUDY #111: FLAMING STATUE

- Location:** Tallahassee, Florida
- Project type:** Bronze statue fitted with a gas flame
- Owner:** Florida State University
- Contractor:** Scott-Burnett Inc.
- Rep:** Spirit Group

"This was the most unusual gas piping project our company has ever done. Using any other product than Gastite CSST would have made it impossible."

– Ralph Scott, Scott-Burnett Inc.

The Challenges:

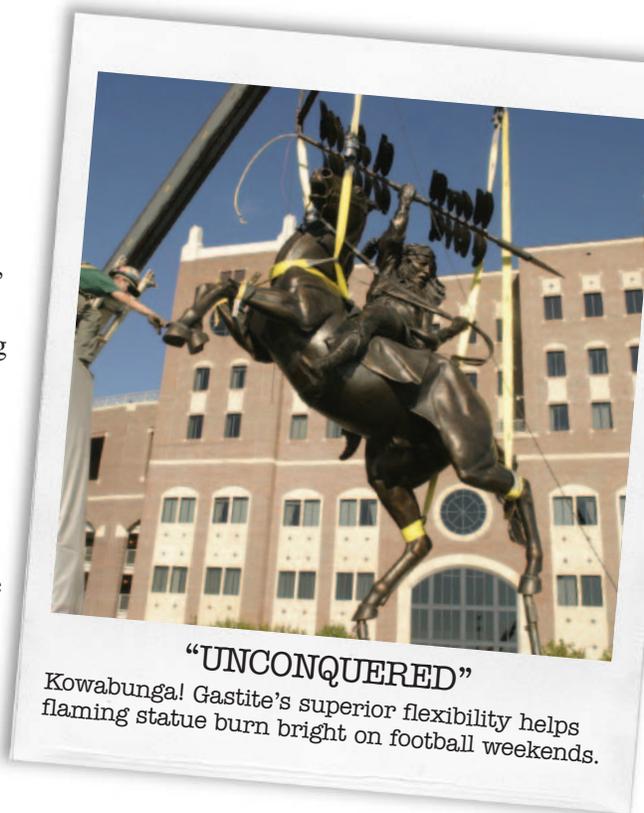
- Nineteen-foot-tall bronze statue, titled "Unconquered" and depicting a Seminole Indian warrior on horseback, must be fitted with an 80-foot natural gas pipe line to ignite its built-in "flaming spear."
- Conforming to the contours of the statue without disrupting its design, gas chase must take numerous bends and turns. Flexibility is critical.
- Flame must be large enough to be seen from a distance, while matching the color and intensity of the actual flaming spear that is part of a ceremony before every home football game at Florida State University.

The Solutions:

- After researching various potential solutions, mechanical contractor Ralph Scott chooses Gastite corrugated stainless steel tubing because of its superior flexibility and labor-friendliness.
- 3/4-inch CSST threads through aluminum conduit inside the statue in a matter of minutes without compromising integrity of the statue design, or the safety and performance of the installation.

The Benefits:

- Gastite's superior flexibility makes a difficult, if not impossible, engineering task doable and practical.
- Sitting at the entrance to Doak Campbell Stadium, the flaming "Unconquered" engenders an exciting new football tradition, inspiring FSU fans to even higher levels of enthusiasm for their team.



"UNCONQUERED"
Kowabunga! Gastite's superior flexibility helps flaming statue burn bright on football weekends.

Gastite
THE system
IS THE SOLUTION™

Contractor's Skillful Use Of CSST Ignites Florida State Fandom

Installers have successfully maneuvered thousands of feet of Gastite flexible gas piping through some pretty tight spots on a wide range of projects over the past decade. But few, if any, of these applications could match the engineering challenges that recently confronted mechanical contractor **Ralph Scott** in the form of a bronze, flame-spewing statue at the entrance to Doak Campbell Stadium on the campus of Florida State University in Tallahassee.

Created by sculptor Fritz White, "Unconquered" depicts a Seminole warrior in full battle regalia astride his rearing horse. The figure holds aloft a 12½-foot, bronze-plated spear with actual flames enveloping one end. The 19-foot-tall statue sits atop a 12-foot pedestal, so the tip of the spear extends roughly 31 feet in the air – the equivalent of a three-story building. Lit at sunset on Friday nights before Saturday home games, the statue and its flaming spear exhorts FSU alumni and fans to join the football battle inside the stadium.

Scott's task was to devise a way to generate a flame in the fire element, located toward the end of the spear and measuring 25 inches long and six inches in diameter. The chosen fuel was natural gas, and the method of delivery was Gastite corrugated stainless steel tubing.

BENDS & CURVES: Scott's Tallahassee-based firm, Scott-Burnett Inc., threaded approximately 80 feet of ¾" CSST through an equivalent amount of aluminum conduit placed inside the statue by the foundry that forged its stainless steel armature and the 150 pieces of molded bronze covering it. To maintain proper, lifelike proportions between the rider, his mount and spear without creating engineering problems,



Installers thread Gastite flexible gas piping into the spear of "Unconquered."

the spaces inside the armature had to be extremely tight.

Particularly tricky were the horse's slender back hooves, the only parts of the statue actually in touch with its pedestal. They also form the point of entry for the gas piping. Equally difficult was the juncture of the warrior's wrist and the spear, requiring the piping to take a hard 45° turn to enter the shaft itself.

The challenge was to build a gas chase that could navigate "innumerable bends and curves at constricted radiuses," says Scott. His research of code-approved gas delivery piping eventually led him to Gastite's local sales agent, **Scott Heacox** of the Spirit Group, who introduced him to CSST. Scott quickly concluded: "Using any other product than Gastite would have made the job impossible."

UNIQUE CHALLENGES: Scott confronted other hurdles as well, many of them concerning the color and intensity of the flame in the spear:

- Scott conducted experiments in his own backyard to measure the impact of wind and rain on a gas flame. By varying the regulator size and flow rates, he got the flame intensity he was after.
- Scott also worked hard at turning the blue gas flame a dirty orange. Why? To replicate the oil-soaked torch that an FSU student, dressed as a Seminole warrior on horseback, defiantly spikes into the ground at midfield before every home game to rev up the crowd. Scott achieved the look he wanted by starving the air being admitted to the gas flowing to the fire element.

The pursuit of authenticity also required Scott to do much more than create a simple, shooting flame. The business end of the actual spear the student-warrior slams into the gridiron is wrapped in cloth, bound with twine and soaked in kerosene, so that the fire fully envelops the casing. How then could Scott's crew create that enveloped look?

"By trial and error," says Scott, who drilled numerous holes and slices into the



"The project called for an imaginative application of engineering knowledge and infinite patience."

– Ralph Scott

bronze fire element, testing the strength and appearance of the flame after each cut. If too many orifices made the flame too large, he called upon a metal shop with bronze welding tips to close up some of the holes. Did he hesitate drilling the sculpture? "Absolutely. It's a one-of-a-kind work of art. You don't just drill into that without having second thoughts."

ONE OF A KIND: Eighteen months of painstaking labor and resourceful improvisation later, the project was finally done. "This was the most unusual gas piping project our company has ever done," says Scott.

"The design and dimensions of the statue were already set by the artist, so I had to design the gas system and coordinate the chase conduit through the horse to achieve the artistic goal, as well as ensure the system's safety and serviceability. Gastite was the only material that could achieve all those objectives."

"No one deserves more credit bringing this idea to life than Ralph Scott, with all the innovative work he did resolving one-of-a-kind technical problems," says Tallahassee attorney **Steve Reilly**, an FSU graduate and chairman of the statue committee. "We wanted to 'hit a home run' with Florida State alumni and fans, and, thanks to Ralph, we did." 