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*Cover Story*

# CHANGING THE FACE OF CHARLESTON

Flat Sawing Helps Demolish Two Bridges Spanning the Cooper River

*The face of Charleston is changing dramatically with the completion of the Arthur J. Ravenel Jr. Bridge. The city's new face continues to take shape as demolition continues on two original bridges that crossed the Cooper River.*

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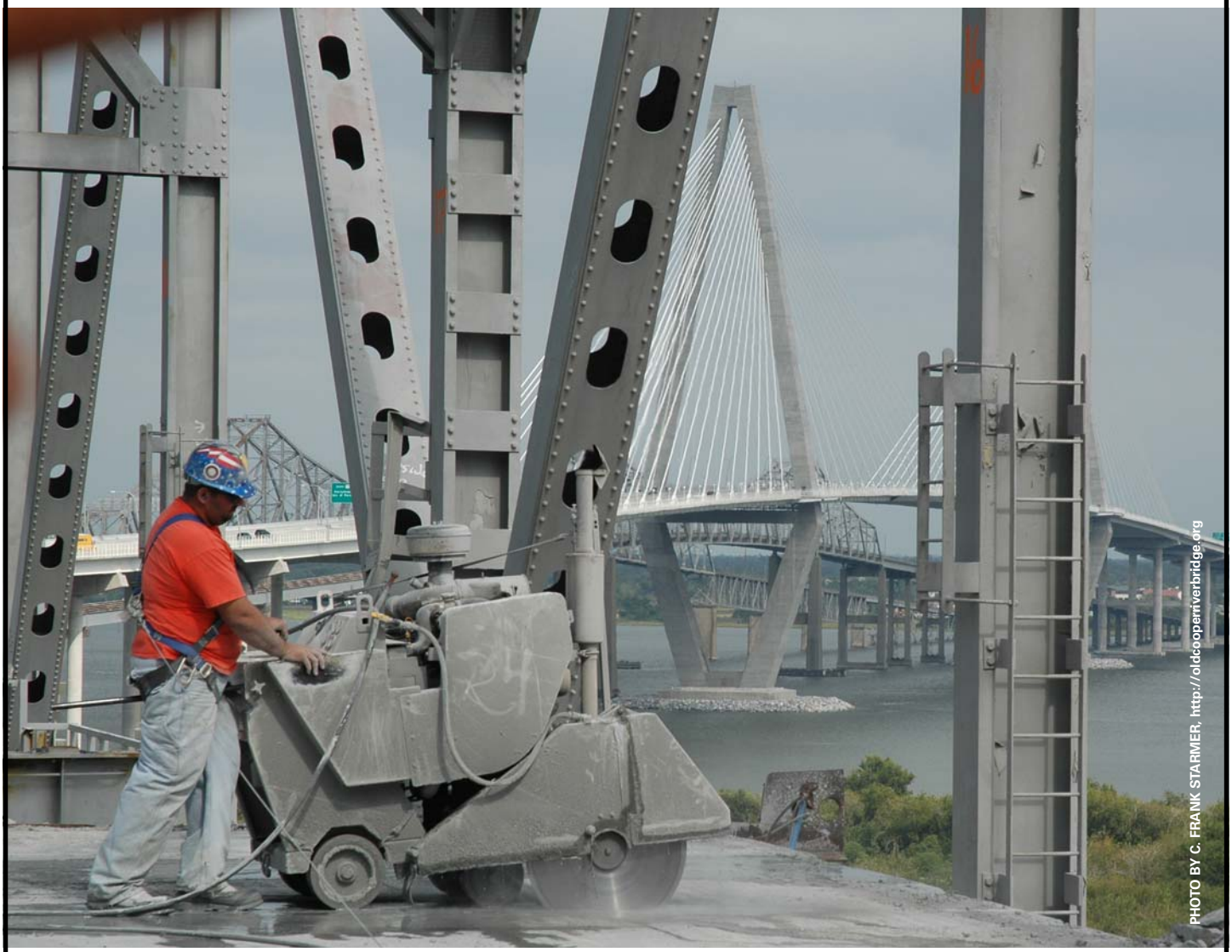
**The Grace Memorial and Pearman bridges stand in the shadow of the new Ravenel Bridge over the Cooper River.**

For decades, the Grace Memorial and Pearman bridges served as the main link between Charleston and Mount Pleasant, South Carolina. The Grace Memorial Bridge was completed in 1929 as a cantilever steel structure with a total length of 3.6 miles. The Pearman Bridge, a parallel bridge with a similar design, was built in 1966 and allowed the Grace Bridge to be converted to one-way traffic. In recent years, however, maintenance of the aging bridges has been an ongoing problem. The frequent and costly repairs, narrow lanes, steep grades, lack of emergency shoulders, limited weight capacity and inadequate clearance for large ships traveling the Cooper River rendered the bridges functionally obsolete.

In 2001, construction began on a new bridge that would increase traffic capacity, improve safety, reduce maintenance costs and bring a modern look to the city. Completed in July of this year, the Arthur J. Ravenel Jr. Bridge, the longest cable stayed span in North America, hangs from two diamond-shaped towers at each end of the bridge. A signature icon for the Charleston region, these towers reach more than 575 feet high and support a road deck almost 200 feet above the median high-tide mark.




**Operators used 120-HP gas flat saws to cut the concrete bridge deck into 12-foot by 10-foot by 8-inch-thick sections for removal.**

With the new bridge open to traffic, the old Cooper River bridges were ready to be demolished. Part of the demolition plan called for imploding the structural steel spans above the shipping channel so they could fall into the water below and be removed. The demolition plan required partial selective demolition of critical channel spans prior to implosion. All of the concrete on the spans would need to be removed prior to implosion. In August 2005, the general contractors, a joint venture between Jay Cashman, Inc. and Testa Corp., selected CSDA member Concrete Cutting & Breaking, Inc. (CCB) of Grand Rapids, Michigan to cut and remove the concrete decks of the Grace Memorial and Pearman bridges. Concrete cutting was selected for removal as it would expedite removal of the large concrete decks, prevent concrete debris from falling into the channel and allow the greatest measure of control and precision.

CCB operators began by using 120-HP, V-6 gas flat saws to make longitudinal cuts over the beam flanges and sever the Nelson stud and deck connections. Next, they began flat sawing the side walls and barrier walls, making traverse cuts to section the deck into 12-foot by 10-foot by 8-inch pieces for removal. The barrier walls contained asbestos pipe and the beams were coated with lead-based paint, so CCB had to be careful to not cut through those layers. Operators then used 120-HP, V-6 parapet deep-cut saws to make 20-inch-deep plunge cuts along the sidewalk and barrier stem wall at the deck's edge to make smaller pieces for removal. All removal was performed by the general contractors.

The height and fragile condition of the aging bridges complicated the job. Operators also found that the bridge flexed and swayed more than usual when equipment was moving across it. Fall protection was mandatory as the crest of the bridge was 163 feet above water and cutting was required along the edge of the bridge. Operators were also on guard as they worked with and in close proximity to extremely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large excavators, shears and grapples that posed a danger of flying debris.

By the Fall of 2005, CCB operators had cut 60,000 lineal feet of 8-inch-thick concrete and made 400 plunge cuts along the edge of the bridge deck. Louie Bosma, branch manager of CCB's highway division, said the job was within budget and progressing well. "The large deck sections are being removed safely and efficiently, and we expect the rest of the job to unfold smoothly as well," he said.

In February, CCB's Southeast division is planning to wire saw 650 square feet of concrete piers on this project. The piers will be cut at the waterline. CCB's portion of the bridge demolition is expected to be fully completed in the second quarter of 2006.

According to Bosma, Concrete Cutting & Breaking, Inc. was selected for the project based on their reputation with highway and bridge saw cutting, experienced crew, familiarity with high horsepower equipment and low bid. They have also worked with general contractor Testa in the past.

Many residents of this area look upon the demolition of the Grace Memorial and Pearman bridges with nostalgia but the improvements in safety and design are sure to make them happy. When the old structures are completely gone, Charleston's new Arthur J. Ravenel Jr. Bridge will stand as a strong symbol of modern technology in this historic city. ●

COMPANY PROFILE

Concrete Cutting & Breaking, Inc. has been in business since 1974. The company is headquartered in Grand Rapids, Michigan and has 18 offices across the U.S. The Grand Rapids office, home of CCB's highway division, performed the deck removal of the old Cooper River Bridge. CCB has been a member of CSDA since 1985 and company owner Dan Vander Mey is a CSDA past president.

**RESOURCES**
**General Contractor:**
**Jay Cashman, Inc. / Testa Corp. Joint Venture**
**Quincy, MA / Lynnfield, MA**
**Sawing & Drilling Contractor:**
**Concrete Cutting & Breaking, Inc.**
**Grand Rapids, MI**
**Methods Used: Flat Sawing, Plunge Cutting**
**Tel: 407-257-0274**
**Fax: 352-394-3691**
**Web: www.concut.com**