

By James Denton

*With the diminutive form of the historic older bridge extending parallel in the background, the new Ravenel Bridge spans the Cooper River between Charleston and Mount Pleasant.*



# The COOPER RIVER

She is the crowning jewel in the skyline of the Queen of the South. Visible from as far away as Summerville, her towers stand 575 feet over the Cooper River, like the ancient Colossus of Rhodes, welcoming ships of the world to Charleston.

The longest cable-stay bridge in North America, Charleston's new Ravenel Bridge reached a milestone in its construction in March, when the final platform was wedged into place, connecting her two towers. Orange-vested, hard-hatted workers with Palmetto Bridge Constructors carefully guided the last segment of concrete and rebar, lowered gently by a massive crane, into the deck during a special ceremony.

"A city that is about beauty will now have a piece of infrastructure that will be marveled at and studied throughout the world," said Charleston Mayor

Joe Riley as he stood on the windswept main span during the ceremony.

The event marked an end to one major phase of the project. In May—a year ahead of schedule—traffic began to flow across the three-and-a-half-mile span, which hangs 200 feet above the river. "People in the area are thrilled with the rate and quality of construction," said Bobby Clair, director of special projects for the South Carolina Department of Transportation (DOT). "It's a new, beautiful feature to the Charleston skyline."

Besides easing traffic congestion in the area, sending four total lanes of traffic from I-26 directly into the Mount Pleasant district, the bridge is expected to become something of a tourist attraction not unlike the Golden Gate Bridge in San Francisco.



# COLOSSUS

It features bike and pedestrian lanes, offering a stellar view at a leisurely pace.

The vision for the new bridge has been in the works for some 15 years, Clair said. However, the expense was so great that funding was simply unavailable. But the need was obvious, if Charleston was going to accommodate larger, modern cargo freighters. It was a stark choice: Would Charleston take a bold leap into the future or fade into its ante-bellum past while larger ports lured shipping traffic away?

In the late 1990s, the state legislature created the State Infrastructure Bank (SIB) specifically to deal with urgent but expensive DOT projects that exceed \$100 million. The SIB came up with \$325 million for the project; another \$215 million came from a low-interest federal loan. The DOT agreed to pay

back the majority, Clair said, while Charleston County and the State Ports Authority agreed to handle the remainder over the next 15 years. "This project amounts to two-and-a-half times all DOT projects for the entire state," Clair said. "It would not have been built in our lifetime had it not been for the SIB."

Henry E. Brown, now U.S. congressman from the 1st District, wrote the SIB legislation while chairing the State House Ways and Means Committee in 1997, making projects such as the Ravenel Bridge possible. "I'm pleased to see the fruition of it all happen," Brown said. "We all recognized the need 30 years ago. Spending some \$35 million on the bridge is going to create an avenue for traffic, and it may spawn improvements down the line."



Such improvements will be required in Mount Pleasant, if it is to properly accommodate the new traffic flow created by the bridge. Clair observed that there is no money for Mount Pleasant improvements at the moment. “We need to be thinking seriously about funding.”

A project the magnitude of the Ravenel Bridge easily can take more than two years just to design, with the cost rising as time passes. Clair said the decision was made to move forward at once with the designer, Parsons Brinckerhoff of New York City, and the contractor, Palmetto Bridge Construction (PBC—a partnership of Tidewater Skanska Inc. and Flatiron Constructors, Inc.). Thus, construction began be-

fore the actual design was complete, something Wade Watson, project manager for Palmetto Bridge Constructors, said is always a risk. “Things change all the time—loads, wind testing,” Watson said. “We had some problems along the way, but no major problems. We never took any work out of place.”

One hurdle sprang up when the cable supplier abruptly went out of business. The cables had been unavailable in the United States before the defunct supplier had learned how to make them specifically for this project. Happily, Northstar, a company in Texas, was able to fulfill the remainder of the order.

“This has been a model job,” Watson said. “Every state in the Union, and many foreign countries,

## Ravenel Bridge Facts

**Total length:** 3.5 miles; 30 total lane-miles of decking.

**Lanes:** Four 12-foot lanes of traffic in each direction.

**Cables:** The Ravenel Bridge is supported by 128 cables, each able to support more than 500 tons. A single cable is composed of as many as 90 seven-wire strands, woven together. The cables are enclosed in a high-density polyethylene pipe, 12 to 20 inches in diameter. The piping will be illuminated at night.

**Interchanges:** The Charleston interchange provides access from I-26 east, the Crosstown Route, Meeting Street and Morrison Drive. From Mount Pleasant, drivers can exit onto Morrison, Meeting, or I-26. The Mount Pleasant interchange provides access from U.S. 17/Johnnie Dobbs Boulevard, Coleman Boulevard and Wingo Way. Drivers can drive straight onto U.S. 17/Johnnie Dobbs or Coleman. The bike/pedestrian lane is accessible from Morrison and Coleman.



are looking at this job. We were under a microscope here. This is a good example of how a design-build project can work.”

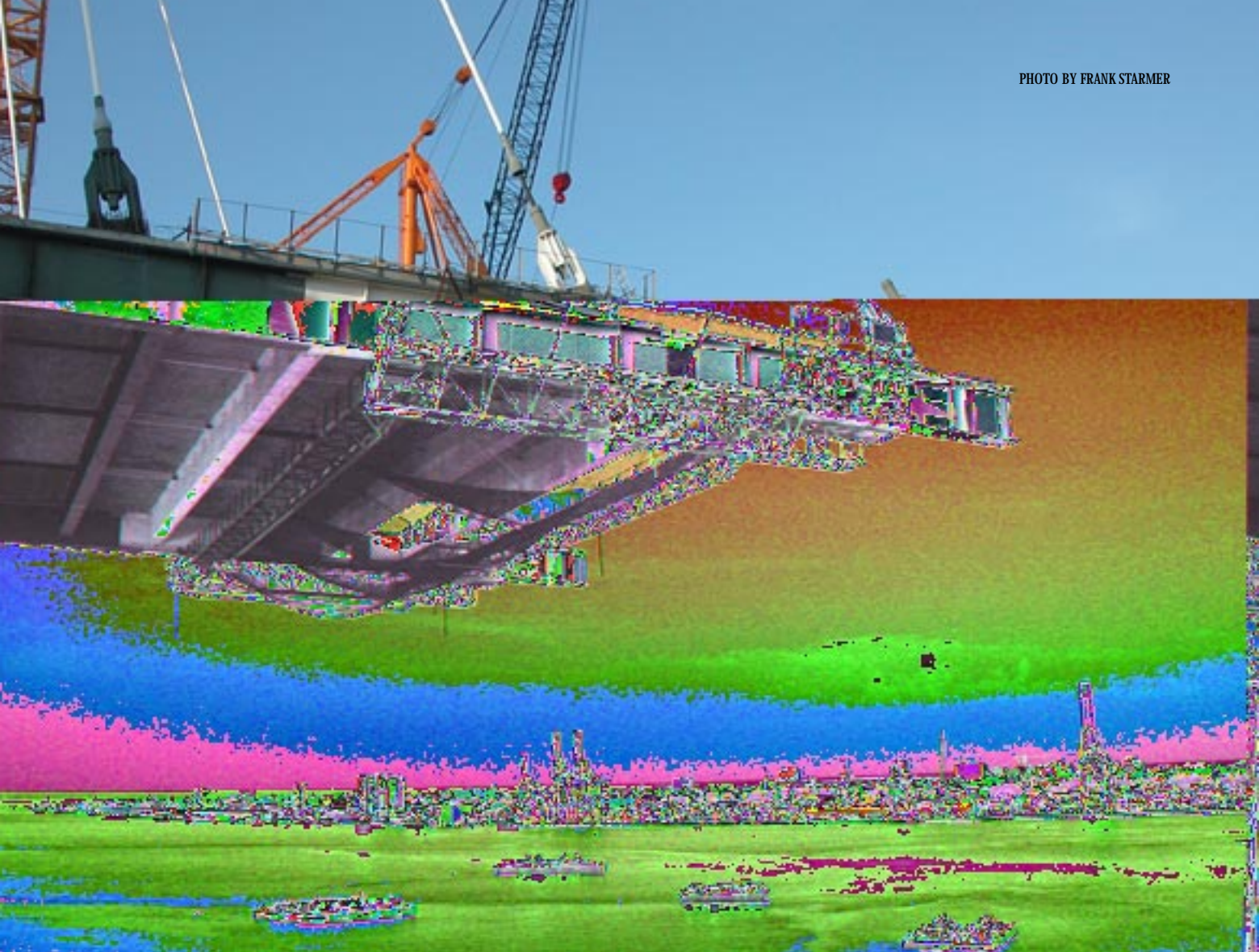
The project has flowed smoothly, he observed, in part because of the way it was managed—not as a single large project, but divided into several smaller projects with separate crews working simultaneously on the main span, the approaches and the interchanges. “If people knew the detail and effort that goes into every little piece,” Watson said, “they would be amazed that anything ever gets done.”

Watson said PBC rented property at the old Charleston Naval Base to use as a staging area for construction, running 45 barges to and from the bridge at the peak of construction. The project employed as many as 42 large cranes, some on barges, others on land. Approximately 600 employees worked on the bridge, plus some 300 subcontractors and vendors. The majority of them, Watson said, were locals who went through a special training program provided by the company.

The impact on the local economy has been palpable. Employees coming into the area have either purchased or rented homes. They buy their goods here. They eat in local restaurants. Materials, whenever possible, were purchased locally, creating a trickle-down effect.

Of course, with so much personnel and heavy equipment moving around hundreds of feet above a body of moving water, there is always the ominous potential for danger. Indeed, the Ravenel Bridge did claim one life in its construction, an incident Clair said was tragic yet preventable. He explained that a worker who had the required safety training decided to remove his safety equipment during a lunch break, slipped off a beam, plunged into the river and





*Bridge construction workers had a perpetual bird's-eye view of Charleston shipping activity.*

drowned. Afterward, a policy was put into effect calling for the immediate termination of anyone violating safety regulations.

The project has come full circle, from securing funds to the first ribbon of traffic gliding across the river. It is a sight at which the community, the nation and the world can stand in awe. Retired state Sen. Arthur Ravenel Jr., standing March 11 on the bridge that bears his name, said that from the be-

ginning, the hard part was raising the money and getting all the right people in place. After that, he said, everything else would be “a piece of cake.”

“And what we have here today,” Ravenel quipped, “is one beautiful piece of cake.”

The cake is expected to last at least 100 years. ❖

*Columbia writer James Denton contributes frequently to Sandlapper.*

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