

The new Cooper River bridge

Construction process step-by-step

Step 1: In about 60 days, motorists will notice construction trailers near the bridge. Equipment laydown and staging areas will appear in Charleston and Mount Pleasant.

Step 2: Barges in the river will dredge the bottom to create a flat spot for rock islands. Construction begins on rock islands.

Step 3: Work begins on approaches in Charleston and Mount Pleasant.

Step 4: Causeway is built over marsh on the Charleston side of the river to allow heavy equipment access to the river.

Step 5: Work begins on foundations.

Step 6: Within a year, workers begin to pour concrete for the towers, which will literally rise out of the river. By this time, several hundred bridge design, engineering, and construction workers are expected to be on the job, many hired locally.

Step 7: After the first tower is complete, a cable will be attached to the tower and a section of roadbed hung from it. This process will be repeated from both towers until all cables are attached and the roadbed built.

Step 8: Roughly two years from now, the new bridge will be built over the "saddle" or lowest point of the existing bridges on Drum Island (see map at extreme right). The old bridges will not be shut down for the work, which will take place over the heads of motorists on the old bridges.

Step 9: At the same time, work will be underway on intersections tying the new bridge into existing roads in Charleston and Mount Pleasant. In Charleston, the bridge will connect to I-26 north of Huger Street.

Step 10: The approaches are now connected to the finished bridge over the main channel.

Step 11: Interchanges are completed at Meeting Street and Morrison Drive in Charleston.

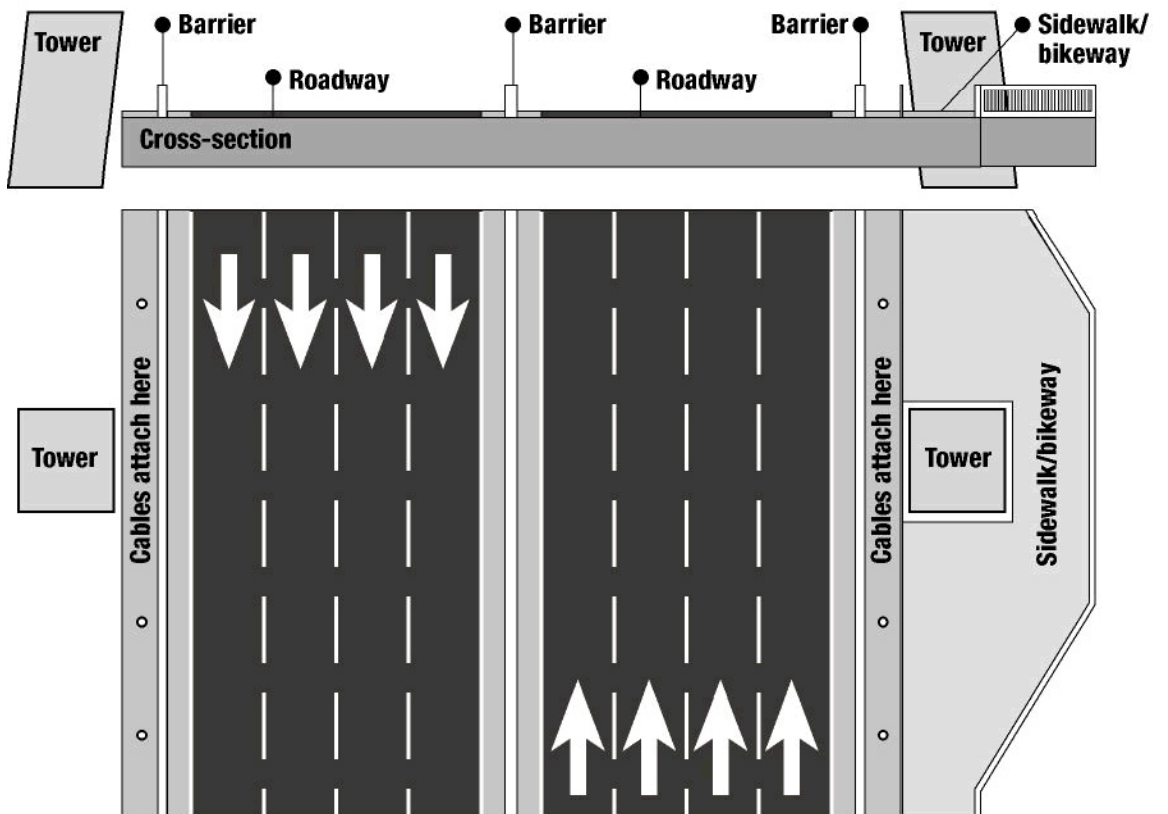
Step 12: Work is finished. The contract calls for work to be completed in five years, but some state officials believe it can be finished in four.



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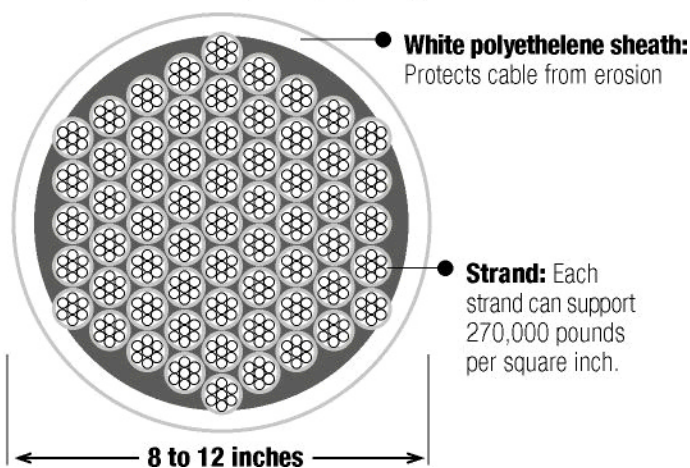
The roadway

Roadbed configuration: Six times the width of the two-lane John P. Grace Memorial bridge, the roadbed has eight lanes, four in each direction. It includes a center median and four-foot wide shoulders on each side. The sidewalk/bikeway, on the ocean side of the bridge, adds another 12 feet. Cable stays will be on the inside of the sidewalk/bikeway, giving a clear view of Charleston Harbor over a 4 foot, 6 inch high railing. Motorists will be able to see through the railing to the river below.



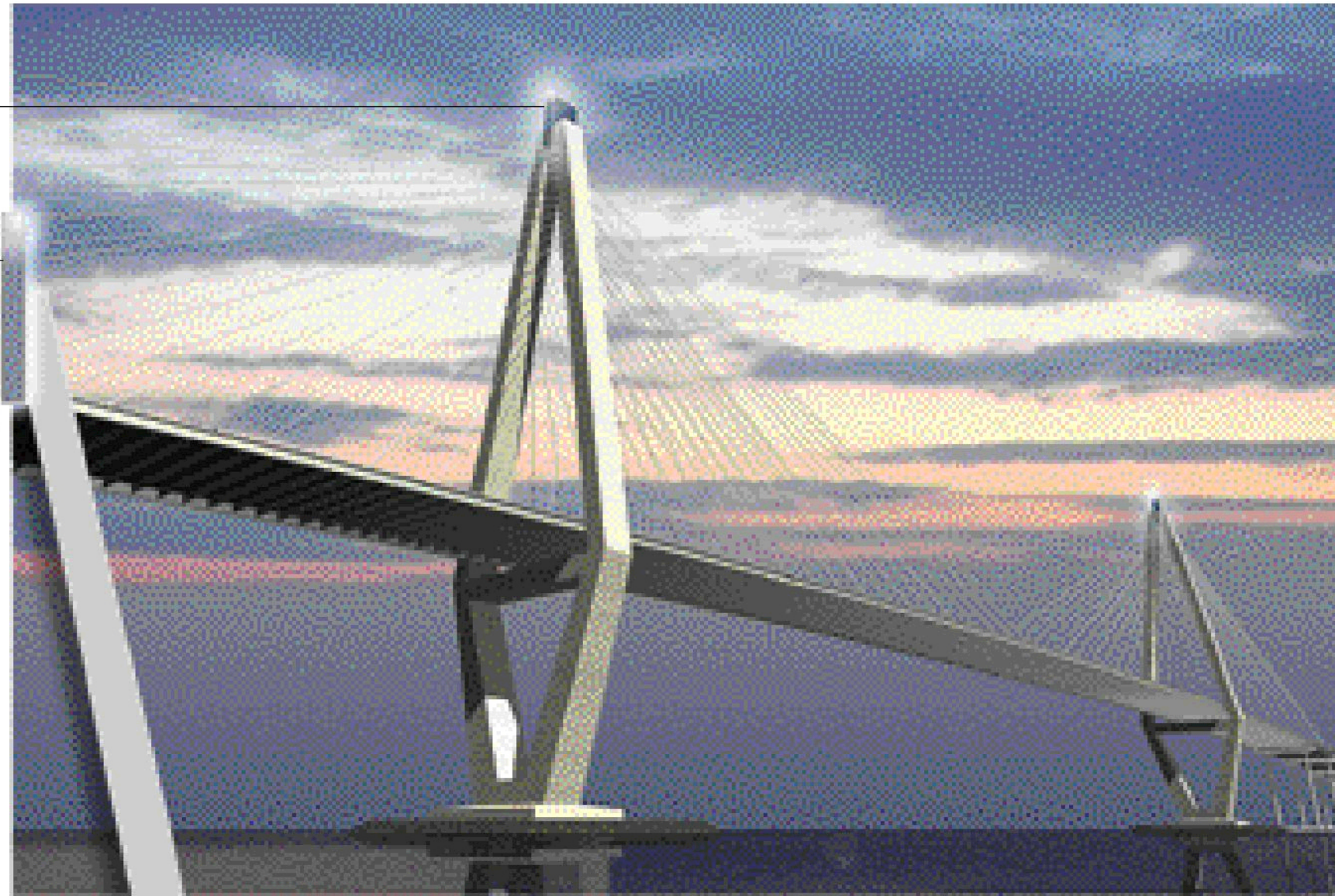
Stay cable cross-section

Each cable is composed of dozens of steel strands and will support from 600,000 to 3 million pounds, depending on its location.

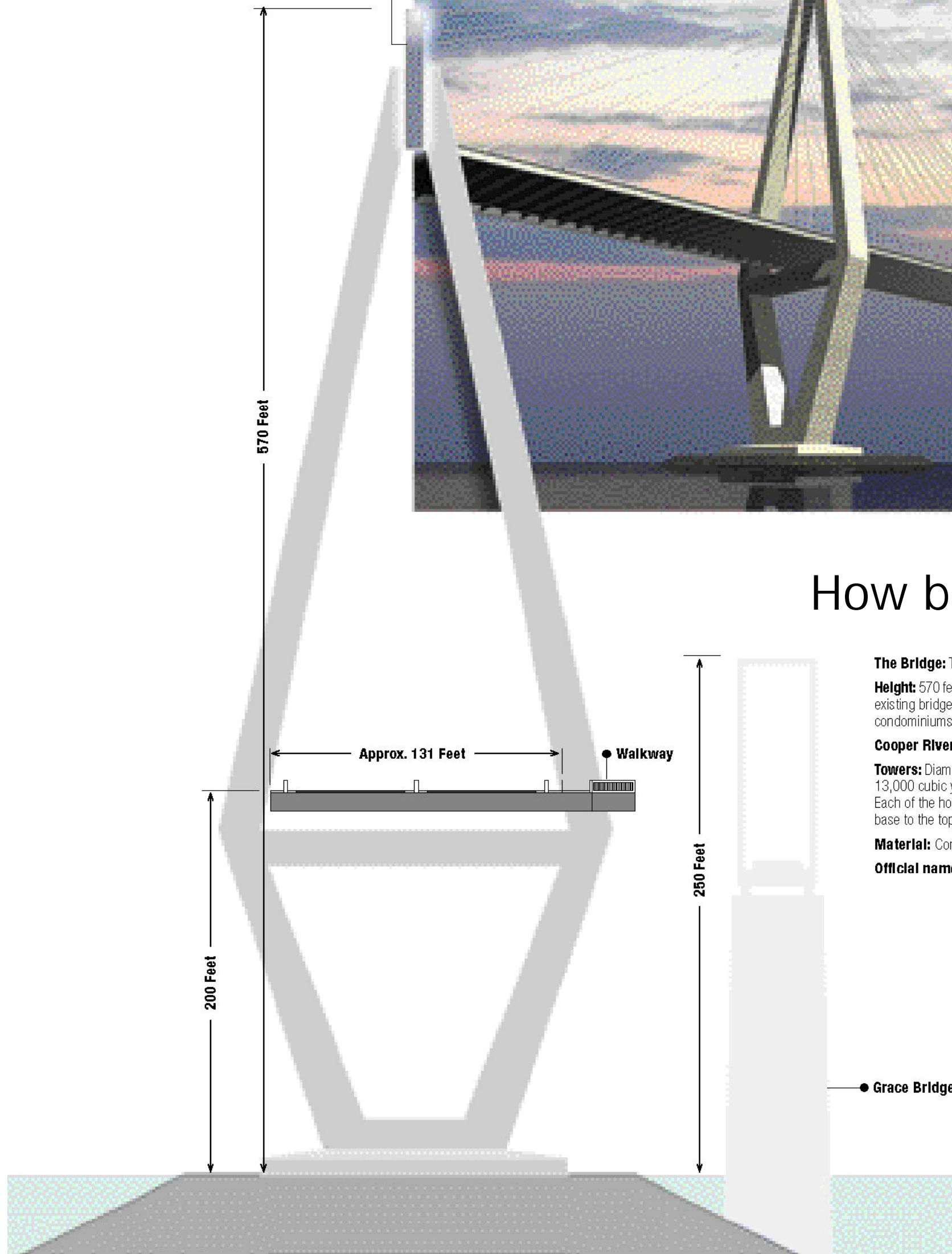


The new Cooper River bridge

● **Lighting feature:** Still conceptual, but architects imagine this light as a gem – the dominating, landmark feature on the bridge. Made of Plexiglass or high impact plastic, the light would glow from within with LED, (light emitting diodes). It would appear as shining glass during the day and might turn different colors at night. Dimensions: 56 feet tall, 30 feet wide and five feet thick.



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How big is it?

- **The Bridge:** The largest cable-stayed bridge in North America.
- **Height:** 570 feet above water, more than twice as high as Charleston's existing bridges, or nearly three times higher than Dockside condominiums on the Cooper River.
- **Cooper River span:** 1,546 feet
- **Towers:** Diamond-shaped, with center strut, each tower will contain 13,000 cubic yards of concrete, enough to fill 813 cement trucks. Each of the hollow towers will have two service elevators from the base to the top.
- **Material:** Concrete and steel
- **Official name:** Arthur Ravenel Jr. Bridge

Who's building the bridge?

Of three companies competing to design and build a new bridge, Palmetto Bridge Constructors submitted a low bid of \$531 million for a single, eight-lane bridge with two diamond shaped towers. The S.C. Department of Transportation Commission approved the contract last week.

Here's a look at Palmetto Bridge's team:

Skanska USA: The American division of Skanska A.B., based in Stockholm, Sweden, is the parent company of Tidewater Construction Corp., of Virginia Beach, Va., which is a primary contractor.

HBG Constructors Inc.: Owned by HBG of the Netherlands, this is the parent company of Flatiron Structures Co., of Denver, Colo., which is co-managing the project with Tidewater.

Parsons Brinckerhoff Quade & Douglas: This New York City firm is the lead bridge designer.

Other members and their responsibilities include: Buckland and Taylor, of Vancouver, Canada, bridge design; Ben C. Gerwick, of San Francisco, foundation and rock island design; The LPA Group, a civil engineering firm from Columbia, interchange design; Donald McDonald, of San Francisco, the bridge architect.

Also, Joe Jefferson, a former state transportation commissioner and St. Stephen resident, community involvement; Rawle-Murdy, of Charleston, public relations; Soil Consultants Inc., Charleston, geotechnical work; Tuhin Basu and Associates, civil design.

The costs

\$100 million: More than 10 years of preliminary studies, including for alignment, environmental permits and preliminary engineering. Money also used to purchase property for right of way.

\$531 million: Design/construction. Includes entire length of bridge from Mount Pleasant to I-26 in Charleston and all interchanges.

Total cost: \$631 million (Does not include \$25 million estimated cost to tear down existing bridges).

Who pays

\$325 million: From State Infrastructure Bank, funded by a portion of proceeds from one-cent gas tax, truck registration fees and local taxes or tolls.

\$96.6 million: Federal Highway Administration.

\$215 million: Federal loan, to be repaid with \$15 million annual payments for 25 years. Of the \$15 million, Charleston County is contributing \$3 million, the S.C. Department of Transportation \$8 million, the State Ports Authority \$3 million and the Infrastructure Bank \$1 million.

Total raised: \$631.6 million

Economic impact

Jobs: Contractors estimate that about 400 people will be working each day on the new bridge once work is well underway, within a year. Among jobs that will be available: pile drivers, equipment operators, laborers, concrete finishers, steel workers, rebar placers, carpenters and electricians.

"It will pretty much cover the gamut of construction skills," said Dave Bortorff, a spokesman for Tidewater Construction Corp.

Palmetto Bridge has yet to determine how many jobs will be created locally. The company is discussing job training programs with Charleston County, Bortorff said.

"The \$3 million county share could come from a county-wide half-cent sales tax, likely to be voted on in a referendum next November. The sales tax increase would also pay for other road and bridge projects, the purchase of green space and to run the Charleston Area Rapid Transit Authority (CARTA), which will need major funding in 2003. Most County Council members support the half-cent sales tax, but some have not ruled out asking the state to impose tolls.

Alignment

Bridge will actually consist of two spans, the cable-stayed bridge over the Cooper River and a lower span over Town Creek. The Town Creek span will probably resemble the James Island connector bridge.

