

Providence I-195 *Heads South*

RIDOT's \$550-million job shifts I-195/I-95 junction to cut congestion and boost safety

BY PAUL FOURNIER

Travelers on Providence interstate highways are surrounded by construction activity these days as work crews press forward on the \$550-million I-195/I-95 relocation and improvement project.

Billed as the largest and most complex single project that the Rhode Island Department of Transportation has ever undertaken, this 10-year construction job consists of 16 contracts,

with the first five completed, five more under construction and the remaining ones under design.

The I-195 project is moving the busy intersection of I-195 and I-95 south of its present location, and embraces some 2-1/2 miles of interstate highway construction. It was designed to improve safety and relieve the traffic bottlenecks that mark the interstates in the downtown Providence area.

Cardi Corporation of Warwick, R.I., has won the lion's share of the Rhode Island DOT's construction contracts, with some \$244-million worth of construction under way on Contracts 6, 6A, 7, 8, and 9 now in full swing. Two more contracts, 10 and 11, are currently under design and are expected to be advertised for bids early next year.

Cardi's Contract 7 involves the relocation of the I-95/I-195 interchange in Providence, said to be one of the most



With west abutment of river bridge in background, LJ Crane & Rigging's Manitowoc 999 lowers a section of extracted sheetpile on barge.

NEW ENGLAND Construction

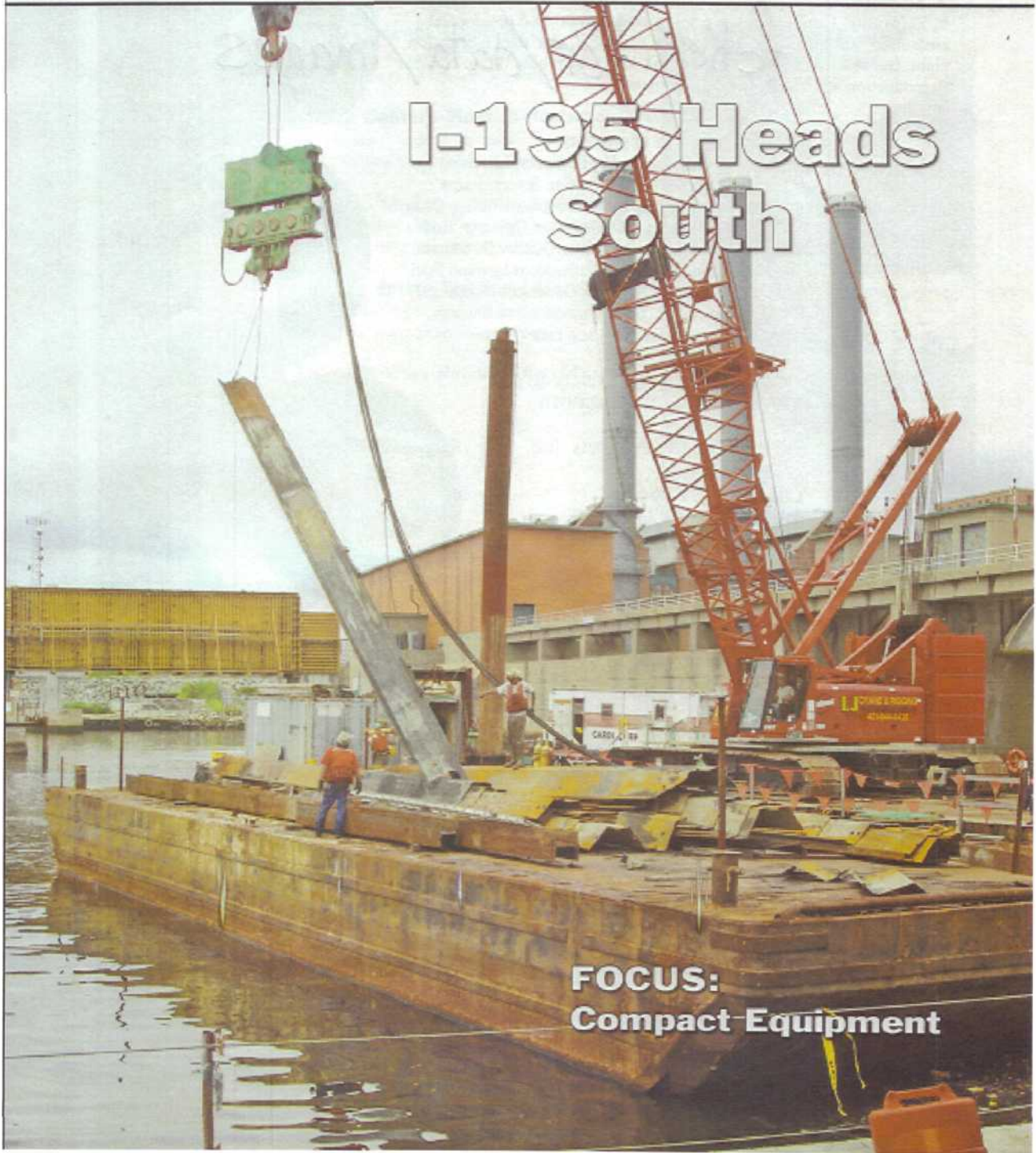
August 28, 2006

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congested sections of interstate in the Ocean State. Worth about \$85 million, this is the largest single contract of the massive project, and incorporates the seven-span Providence River Bridge, a structure unique not only in design but in the way it is being built.

The Providence River Bridge is approximately 1,250 feet long and will span both the Providence River and a portion of the east side. It consists of three distinct structural types: a 400-foot main span that utilizes a network arch; two west spans totaling 500 feet with steel box girders 8 feet deep; and four east spans over land totaling 350 feet that use prestressed concrete box beams.

The substructure of the arched main span consists of shafts drilled to bedrock and filled with concrete, and cast-in-place concrete abutments and piers. According to the designers, drilled shafts were called for because they avoided the use of cofferdams in the river, saving money and reducing the risk of damaging a major brick sewer siphon beneath the bed of the river.

The span to be supported by the concrete-filled casings is a network arch, or Neilson-Lohse bridge. Characterized by arch and tie connected by inclined hangers that intersect at least twice, the bridge is used widely in Japan and to some extent in Europe. According to engineers, the Providence River span is structurally significant because it is the first skewed network arch bridge. Moreover, it is said to be unique since it uses three arches rather than two due to its 160-foot width.

Unusual, too, is the fact this unique structure is being constructed miles from its final resting place.



Bridge superstructure components – except for the concrete decks – were fabricated in Plainville, Conn., by National Eastern Corp. They were delivered by trucks to the former Naval Base at Quonset Point in Rhode Island, where workers of Northeast

Above: Concrete Placement Inc.'s Schwing concrete pump fills EFCO form for architectural portion of Providence River Bridge Pier #3 on Cardi Corporation's Contract 7.

Bottom, left: A Cat M318 loads excavated material on a Cat 769C off-highway hauler. Bottom, right: Work crew installs rebar for wall at off-ramp from I-195 to India Point.



Providence I-195



Above, left: Hoisted by a Genie boom lift, a worker adds finishing touches to the parapet of a new I-195 East.

Above, right: Photo shows 8-foot-deep steel box beam girders of one of the west spans of the Providence River Bridge.

Left: James Caroselli, P.E., left, RIDOT chief civil engineer of construction operations, stands with John McAvoy, P.E., design and construction engineer for the FHWA.

Steel Co. are assembling them. Once the bridge is completed, The Mammoet Co., a worldwide company specializing in heavy lifting and transporting equipment, will raise and move the bridge onto a barge, using its self-propelled modular transporters. The company will then barge the bridge upriver to the job site. There, barge crews will guide the bridge into position at high tide, and allow the receding tide to lower the span to its final position on the piers and abutment.

When the bridge is opened, sometime around September 2007, it will carry four lanes of traffic in each direction but it is wide enough to allow RIDOT to re-stripe the lanes producing five lanes each way.

As lead design consultant and program manager for the project, Maguire Group Inc. is responsible for the design of several major elements in addition to directing design activities of 12 sub-consultants. The I-195 improvements will relocate away from the city a freeway designed in the 1950s to carry 75,000 vehicles per day that now sees twice that amount of traffic (see related story in

accompanying box). It will also vacate over 35 acres of land, which will be used to enhance the downtown business district.

Other special features of the project are a new 50-foot-wide landscaped pedestrian overpass crossing I-195 overlooking an expanded India Point Park and Narragansett Bay. Additional improvements will consist of river walks on both sides of the Providence River, together with enhanced landscaping and ornamental street lighting.

According to the project's chief civil engineer James Caroselli, the I-195 project is "on schedule and on budget."

RIDOT says the relocated I-195 should be partially open to traffic in 2007, and fully operational by 2009. By 2012, demolition of the old interstate intersection and reconstruction of city streets should be finished.

(Key field personnel for this project include: for RIDOT, James Caroselli, P.E., chief civil engineer for construction operations; for Federal Highway Administration's Rhode Island Division, John McAvoy, P.E., design and construction engineer; and for Cardi Corporation, Lou Colapietro, general superintendent, Tony Almeida, senior project manager, Paul Grimaldi, and Bob Leone, project superintendents, and Bob Kunz, safety director.) ■

Rhode Island's First Interstate

As America celebrates the 50th anniversary of the birth of the Interstate System, historians are calling attention to the origins of the 46,000-mile system in the individual states. In Rhode Island, there are slightly more than 72 miles of interstate. The state's first piece of interstate was the Providence section of I-195, which ran from the Washington Bridge East to Watchemoket Square in East Providence, and was originally part of Route 6. In 1959, it became part of I-195.

Rhode Island's limited access highways in use prior to June 29, 1956, when President Eisenhower signed legislation creating the Interstate System, included Route 146, which was completed in 1947. Route 146 at that time contained the first cloverleaf intersection built in the state, at routes 146 and 116. Rhode Island's first and only circumferential interstate was I-295. The first portion of I-95 is today's section running from exits 27 to 29 in Pawtucket. And the last original interstate contract in Rhode Island, part of I-295, was completed in 1973.

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