



**DELAWARE
DEPARTMENT OF TRANSPORTATION
COMMENTARY**

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Why a New Bridge is Needed over the Indian River Inlet

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Following up the recent announcement that we have selected three parties who will compete for the right to design and construct a new structure over the Indian River Inlet, I and others at the Delaware Department of Transportation thought it would be a good time to remind the public why we are replacing the bridge and to provide an update of the current status of the project. First, however, we encourage readers to go to the project Web site at www.irib.deldot.gov (go to "Why a New Bridge?") to view visual material and other reports that detail why a new bridge is needed.

The Inlet History

The reason for replacing the bridge is the severe scouring that has taken place over the years, resulting in an Inlet depth of approximately 28 feet when the current bridge was built in 1965, to an Inlet depth greater than 100 feet today.

Until 1928, the Inlet had functioned as a natural inlet, shifting up and down the coast over a 2-mile range. Between 1928 and 1937 the Inlet was kept open by dredging, and in 1938, the Army Corps of Engineers constructed the jetties.

The first bridge over the Inlet was a timber bridge constructed in 1934, followed by a concrete and steel movable swing bridge built in 1938. This lasted until 1948 when it was destroyed by ice flow and extreme tides. Another concrete and steel swing bridge built in 1952 lasted until the current bridge was built in 1965. Note the service life of each of these bridges in this severe environment.

The Army Corps first reported evidence of significant scouring in the 1980s after an underwater survey indicated that the bridge supports, also known as piers, in the Inlet were exposed and undermined. Expert divers performing a follow-up inspection could actually swim underneath the concrete footing of one of the piers. As a result, DelDOT had large stones placed around and between the piers to protect the streambed from further erosion and the foundations from further undermining.

Considered only a temporary fix when placed, these stones are in danger of falling into the areas of the channel

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that continue to erode to depths greater than 100 feet. DelDOT has spent several millions of dollars to stabilize and inspect the structure on frequent intervals.

Actual construction of a new bridge adjacent to the existing bridge will begin in 2007, with substantial completion by fall 2010. That timeframe is critical in that an analysis of the historical progression of the scour in the Inlet indicates that the holes will continue to expand such that the stone protection would be undermined and fall into the holes.

An additional concern related to the scour is the exposure of the steel H piles to salt water. H piles are the support piles for the piers. Water, especially salt water, is detrimental to steel. DelDOT attempted to control the exposure of the piles by installing a protection system. Unfortunately, this system has been problematic and the exposed steel support piles are continuing to corrode, losing strength.

To ensure the bridge remains stable before a new bridge is built, DelDOT performs underwater diver inspections on a regular basis and the Corps has continued to provide DelDOT with their periodic bathymetric surveys. The technology has improved over the years allowing the viewer to see an underwater picture of the site (go to the Web site to view). In addition, land survey equipment on the bridge monitors movement.

Progress Continues

Although seemingly quiet, much has been accomplished since DelDOT decided to call off accepting the bids for the signature arch bridge in October 2005. As you will recall, only one bidder expressed interest and that bid was coming in higher than DelDOT was willing to accept. Despite that setback the construction of the roadway approaches for the new bridge continues.

After the original bids for the bridge were cancelled, we chose to use a method called design-build in which a team of bridge design engineers and bridge construction contractors are selected and are responsible for both the design and construction, meeting predetermined design criteria. The three teams we have selected are very capable and experienced in long span cable stay bridge design and construction. Over the next several months the teams will develop proposals that will include a preliminary design of their proposed structure. The proposals will be reviewed and a team will be selected early next year.

To completely eliminate the concern over scouring, a requirement for the design-build bridge is to span the Inlet entirely, providing no supports in the Inlet. The supports will also be located to allow the Corps to widen the Inlet if they chose.

We believe that the current funding already in place for this bridge project should be adequate. The majority of the funds have come from federal funding through appropriations specifically for this bridge and specific bridge replacement funding.

The public can be assured we will continue to keep them updated as we move forward with this vital project.

--- Dennis O'Shea is the Assistant Director of Design for DelDOT. He has 22 years of experience in bridge design and management. He has been involved with the current Indian River Inlet bridge replacement project from its inception.

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