



# Indian River Inlet Bridge Questions and Answers



*October 24, 2007*

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## **What are the next steps?**

Request for Qualifications (RFQ) from design-build teams will be advertised on October 29, 2007. This will be followed by a Request for Proposals (RFP) from the shortlisted teams. We hope to award a contract for this project by spring 2008. Construction is expected to be complete by 2011.

## **What are the concerns with the approaches as built now?**

Due to the types of soils in this area, compaction was required in advance to prevent settlement from occurring once the roadway was opened. Projects with geotechnical issues such as this are difficult to predict even though estimates are based on soil samples from the site. As of August 2007, approximately 60 percent of the consolidation of subsurface soils had been achieved, however 95 percent is required. As a result we have the following issues:

- Based upon the consolidation rate, it will take an estimated seven years to achieve 95 percent consolidation.
- Wick drains are not performing properly. Excess pore water pressure is therefore not dissipating from the clay layer at the rate predicted.
- Current settlement has exceeded original predictions. Additional fill (more weight) would be needed to achieve the correct grade for the approaches to meet the proposed bridge elevation. This added weight would cause even more movement.
- Roadway embankments are drifting and leaning towards the west, and it has been difficult to estimate the magnitude of this problem.
- As result of the weight of the embankments and their unexpected westerly movement, nearby roads have been impacted, requiring Route 1 pavement repairs and Road 50A reconstruction.
- The permanent wall facings cannot be safely constructed while the soils continue moving.

## **What is the new plan?**

Given the issues discussed above, our recommendation is to build a longer bridge and remove a portion of the existing fill approaches. By building a longer bridge we will significantly reduce the impact the consolidation problem is having on starting the bridge design build contract. The bridge construction had assumed the availability of these approaches as an access way to building the structure from either side of the inlet. If these access ways are consolidating at an unpredictable rate, require more fill material and take several years to achieve final grades, the bridge construction will be at risk due to these issues. The best way to move forward with the bridge construction and a more timely completion is to increase the length of the structure.

**What had been proposed for the actual length of the bridge before this change?  
What is the expected length now?**

The actual length of the bridge previously was approximately 1,400 feet. The new design is proposed to have a bridge that is 2,600 feet long, including 900 feet for the actual clear span over the inlet (to accommodate the possible future widening of inlet to 800 feet) and 1,700 feet that would be part of the bridge over land. While the new bridge would be larger, the actual construction will not take any longer because the contractor could work on the main span simultaneously while working on the sections over land.

**What other options were considered and what were their drawbacks?**

- We had considered rebuilding the approaches with lightweight fill material to reduce the need for greater amount of consolidation. This option would require additional time to determine the appropriate embankment design and would also interfere with the bridge contractor's access to the inlet area. Additional consolidation is likely after the roadway is opened to traffic and the cost of this special fill material is significantly higher than traditional embankment soils.
- We considered adding a greater amount of fill material in anticipation of accelerating the settlement rate and reducing the seven-year estimate. As previously stated, secondary impacts are occurring as the current embankment is shifting. These concerns would remain as well as the risk of relying on the uncertainties of the rate of soil compaction.
- The costs of the above options are estimated to be similar to building a longer bridge due to the various issues associated with each. In addition, the construction of a longer bridge will reduce uncertainties with the approaches and enable the bridge construction to begin sooner.

**What will happen to the approaches now?**

Before the end of the year, we expect to begin removing the majority of the dirt approaches -- approximately 600 feet on each side. We will be exploring economical ways of disposing of this material either for use on other roadway projects or other public works initiatives.

**Was the original design flawed? Is someone at fault?**

Projects with geotechnical issues such as this are difficult to predict. Using proper assumptions and analysis methods usually provide reasonable results. We are reviewing the original design for a possible claim. As such, it would be premature to comment on any design flaws and associated responsibilities.

**Is there a bridge in Delaware that is an example of how this new design – with the extended bridge over land -- might look?**

The William V. Roth Jr. Bridge (formerly Chesapeake & Delaware Canal Bridge).

**How else is the design different than what was previously announced?**

The capacity and function of the bridge will not change. The minimum vertical clearance will remain at 45 feet over the navigational portion of the inlet. The bridge width will remain the same (two 12-foot lanes, a four-foot interior shoulder, a 10-foot exterior shoulder in each direction, and one 12-foot wide sidewalk accessed from the east side of the bridge). The reduced embankment limits will result in the elimination of the massive wall surface areas and will provide a more open view between the bay side and the ocean side.

**Will this alter how contractors bid on the project?** By removing the embankments, a risk is removed from the contractors because there would be a concern regarding whether the embankments would continue to move as they tried to connect the bridge to it. Additionally, the movement and settling of the approaches could restrict contractors' access in the approach area. Eliminating these uncertainties and the associated risks to the contractor reduces the potential for bids to be inflated, and allows us a better chance of a more timely completion of the bridge.

**What is different about the procurement process approach as compared to the last time DelDOT bid the bridge project?**

Price is being weighed more than in the previous process but is still not based on the lowest bid. Technical qualifications remain a significant part in the final decision. The previous ambiguity of the design-build authorization legislation and epilogue was addressed during the last legislative session.

**What do you anticipate the response from the contracting community to be given two other attempts to award have been put off?**

We are cautiously optimistic that we will continue to have interest in this project. We have heard from various sources that contractors and design firms are already teaming up waiting for advertisement of the project. Although some teams may be put off due to the number of procurements we've done so far, we are doing everything we can to minimize risk for the design-build teams, making it attractive for them to participate. It is the ideal contract for the teams as it consists mainly of bridgework.

**Why can't DelDOT dictate that local or union workers construct the bridge?**

Delaware's procurement laws do not require state contractors to be either unionized or non-unionized. As a department, we do not track, maintain, nor require that contractors identify whether they are union shop firms or not. There is no law that requires this. Additionally, since this is a federally participating project, we are not permitted to specify laborers to be used on the project; if we do so, the federal government will not fund the project. However, the "prevailing" wage rates we are required to use are basically union-scale for bridge projects such as this one.

**How much does DelDOT anticipate the new bridge construction to cost?**

Our estimates indicate that the design-build of the new bridge structure will cost approximately \$150 million. The previous estimate in the last procurement process was \$130 million. The increased cost is due to inflation and the longer bridge length.

**Does DelDOT have all the funding needed to proceed with this path forward?**

The needed federal funds could come from a mixture of federal reallocations, additional earmark/discretionary funds, and some releasing of unused funds in projects completed or almost complete. Given the high priority of this project, we will work diligently to seek opportunities for additional bridge funds by 2011.

**How will this impact access to the park now? and later?** Access to the park is intended to proceed as originally designed. Proceeding with the bridge project as currently planned will actually allow the project to be completed sooner than if we had to allow time for the settlement. Currently, the park access is restricted by allowing no vehicle access under the bridge. Access to the south campground is only available from south bound Route 1 and the south bath house beach area is only accessible from north bound Route 1. U-turns are permitted on Route 1 away from the project site. After the new bridge is constructed, vehicle access will be permitted to both south side locations from either northbound or southbound Route 1, as the access roads will loop under the bridge. The access to all north side locations will not change from what is there today. We will continue to coordinate issues with the state Department of Natural Resources and Environmental Control (DNREC) and determine if there are any additional measures we can take to reduce the impacts on access.

**Is the bridge safe now?**

Yes. The need for replacing the bridge is due to the severe scouring in the Inlet adjacent to the bridge substructure that has taken place over the decades. The velocity of current in the inlet is very high and unique. However, the existing bridge is in no immediate danger of failing, and in fact it is the most monitored bridge in the state.

The bridge deck is made up of five spans of steel girder beams, each approximately 250 feet long. This is considered a redundant system (not fracture-critical), meaning that if one span failed, other spans would be able to carry the load allowing the bridge to remain standing. In the department's most recent bridge inspection (August 2007), the deck and superstructure are rated in fair and satisfactory condition. More significantly, our yearly (most recently took place September 2007) dive inspection of piers under the water show the piers are stable, that the rip-rap placed in 1989 is intact.

To ensure the existing bridge remains stable while a new bridge is built, the regular inspections will continue, the U.S. Army Corps of Engineers has continued to provide DelDOT with their periodic bathymetric survey and land survey equipment is used to monitor the existing bridge on a monthly basis. Most recently, DelDOT worked with the University of Delaware to install tilt sensors on the piers of the bridge. This latest effort will further enhance the Department's current bridge monitoring program. These sensors

will offer the department added confirmation that the bridge piers are stable. Should any change occur, the sensors would provide DelDOT an opportunity to promptly respond.

The public can be assured that if a natural disaster or other event were to occur, we would immediately inspect the bridge to ensure it is stable. If it were a danger to travelers, we would not hesitate to close it.

**What about this widely publicized report of a bridge failure by 2008-2012?**

This document was prepared in 2005, based on U.S. Army Corps of Engineers inlet depth data from 1938 to 1999. In general, many factors come into play in trying to predict how the scour will propagate, including frequency and severity of storm events, which may cause actual results to vary. At the time this document was developed, this simplistic approach was provided to gauge an approximate service life for the existing bridge and how it compared with the completion date of the bridge. We do not believe this information is an accurate compilation of what is now occurring in the inlet, and, more importantly, since 1999, we have undertaken a variety of measures to monitor the bridge. More recently, the department has procured additional structural expertise to review the current situation and to further evaluate the slope stability of the existing streambed and riprap protection.

**When can the public expect to hear from DelDOT again on this project?**

We will continue to be visible on this project and will regularly update the public as we move forward. We will also discuss the re-establishment of regular meetings of the Construction Working Group, but will continue to notify the group via e-mail and mail of items of interest as they are available. The latest updates will also be posted on the IRIB Web site at [www.trib.deldot.gov](http://www.trib.deldot.gov).

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