Indian River Inlet Bridge

SKANSKA USA CIVIL SOUTHEAST INC. AND
THE DELAWARE DEPARTMENT OF TRANSPORTATION

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SPECIAL POINTS OF INTEREST:

- **Unique Cable Stayed Bridge**
- **Remarkable Pedestrian Views of the Inlet**
- **Two Travel Lanes in Each Direction**
- **Clearance of 45 Feet Above the Inlet**

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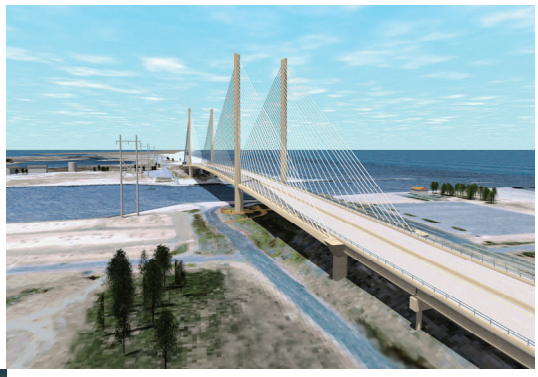
Towers Over the Inlet Reach New Heights

Today's progress is exciting to see as you drive across the old Inlet bridge.

The Pylon Towers are reaching higher each week, pier foundations are being constructed and the floor beams and girders are being placed into position.

The extreme winter months have challenged and tested the fortitude and resolve of the bridge building crews.



Mother Nature has thrown her best elements into the face of the workers only to find they keep coming back the next day.

With all of the pile foundations completed, the men and women of Skanska are working on the next phase of bridge construction—*Superstructure.*

This work will create the framework to support the final roadway and pedestrian decks.

How Do You Build a Bridge?

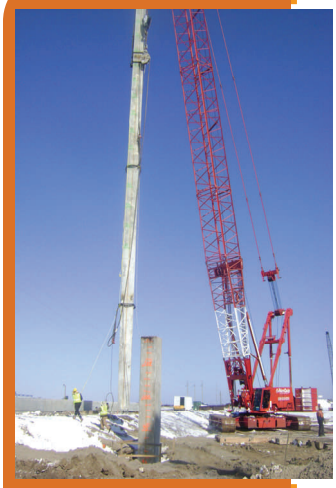
We have all engineered a sand castle or two along the water's edge of the Delaware shore line. We add features and designs that rivaled their real-life counterparts. But after the hours were spent and sun was setting we walked away without a second thought to the lifespan of our creation.

This is far from the reality of the way a Cable Stayed Bridge is built over the Indian River Inlet.

Many professional engineers, managers, and seasoned craftsman toil to produce a structure that will last a lifetime here in the middle of the Delaware Seashore State Park. The Skanska Design-Build team along with DelDOT, Federal Highway Administration, and DNREC are building a structure for Delawareans to enjoy for many decades.

To learn the many steps involved and processes that must be completed in order to build this bridge follow along the next few pages...

Grounding the Bridge



36" square concrete piles lifted into position

Good foundations are the key to many aspects of our life. The same is true when you want to build something to last a lifetime. Bridge foundations require engineers to analyze soils in order to determine how to support a complex bridge so it will last. This cable stay bridge required Skanska to drive 291 square concrete piles into the ground to over 100 ft deep. These 36 inch square piles weighed about 100,000 pounds each. Crews installed a short temporary steel pipe into the ground, drilled out a portion of sand from the casing, and then used a 250 Ton Crawler crane to lift the heavy pile into position. Next, a pile driving hammer was hoisted by the crane over the top of the pile and drove the pile to final depth.

Substructure

The new bridge is being designed to have a lifespan of 100 years!

Each concrete pile is connected to the foundation footing by a "spaghetti" of interconnecting reinforcing steel that unifies the structure into one solid mass to support the bridge.

Each Pylon tower is connected to its own foundation structure that is approximately 50 feet wide by 60 feet long and 10 feet tall.

All concrete is mixed and tested to insure proper strengths.

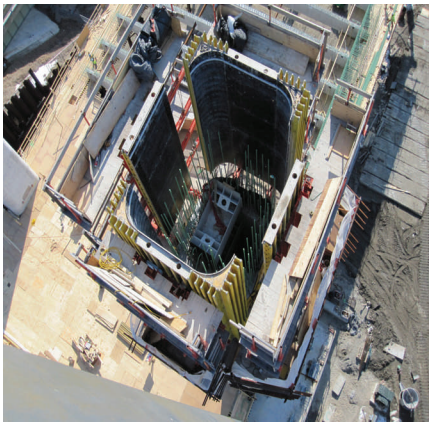
It will take up to 30 days for the concrete to cure to an acceptable level for the next phase of activity.

Pylon Towers

Pylon Tower in progress

Here the work starts to erect the towers that will support the stay cables holding up the span across the water. These four towers will reach 250 feet high and will contain the anchor boxes that will terminate the stay cables.

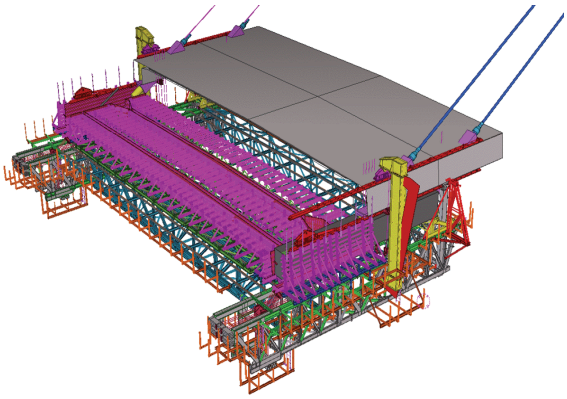
Tower crews use a specialized form system that allow a section of the tower to be fitted with resteel, poured with concrete and then removed. This cycle will be repeated until each tower is finished. After proper cure times have been reached, the installation of the Stay Cable system can begin.



Creating the Roadway Deck

Roadway decking is comprised of many bridge elements that all work together to create the surface we drive on. This bridge will have concrete floor beams connected to concrete Edge Girders which will be supported by the stay cables. To facilitate this work, the bridge structure and deck will be resting on steel falsework towers until the stay cables are completed.

In order to complete the deck over the water (with out any steel falsework), a specialized form system called a Traveler will be erected and "cycled" every 24 feet to complete the roadway deck . This massive steel assembly will be supported temporarily by stay cables so the re-steel components can be set and concrete placed and finished.



" We build too many walls and not enough bridges"

Isaac Newton

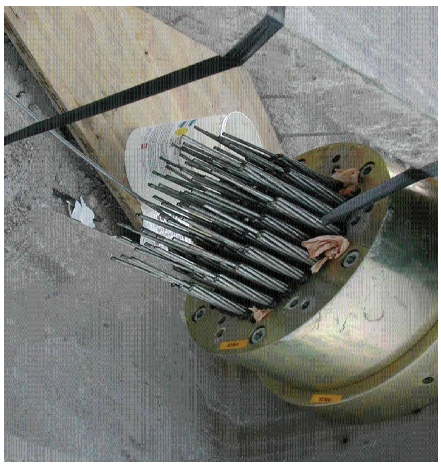
Connecting to the Bridge

"Approach Spans" are the bridge sections on land that join the roadway to the cable stay spans. These are constructed utilizing typical bridge components we see all across the world. Pier Structures assembled from piles, footings, columns and caps support concrete girders. These will be decked with forms, reinforcing steel installed and the concrete bridge deck will be placed.

Hanging the Bridge

Installation of 152 Stay Cables will support the deck spans going across the Inlet. Many strands of steel wire make up just one bundle or "Stay Cable."

These strands will be covered or encased with a Blue Cable Stay Pipe reaching from the roadway level to the Pylon Towers. To protect the steel cables from the harsh, salty environment, each cable assembly will be capped and sealed with hot liquid wax for the ultimate corrosion protection.



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Keep in touch with the progress...

We invite you to visit the Official Delaware Department of Transportation's website often to catch the latest progress pictures and stories about the construction of the bridge.

http://www.IRIB.deldot.gov

INDIAN RIVER INLET BRIDGE

Schedule:

Design Bridge: 2008 - 2010
Foundations/Concrete Piles: Winter 2008 - Summer 2009
Footings: Summer 2009 - Fall 2009
Substructure Abutments / Piers For Bridge Approaches: Summer 2009 - Spring 2010
Pylons: Summer 2009 - Summer 2010
Bridge Approach Spans: Winter 2009 - Summer 2010
Superstructure / Cable Stay: Spring 2010 - Winter 2010
Bridge Open to Traffic: Summer 2011