

# The Bayonne Bridge – plans to raise the roadway and lift the economy

**Joann Papageorgis**, program director of the Bayonne Bridge Navigational Clearance Program, The Port Authority of New York & New Jersey, New Jersey, US

## Background

The Bayonne Bridge opened to traffic in 1931, and for more than 80 years has provided vehicular access between Bayonne, New Jersey and Staten Island, New York. Designed by Othmar Ammann, the 1,675 foot steel arch span was the longest in the world at the time and remained so for 46 years. In 1985, the American Society of Civil Engineers designated it a National Historic Civil Engineering Landmark. The Bayonne Bridge spans the Kill Van Kull, a critical shipping channel servicing Port Newark, Elizabeth Port Authority Marine Terminal and Howland Hook Marine Terminal. These terminals contribute to the Port of New York and New Jersey's designation as the busiest port on the eastern seaboard, with 40 percent of east coast container imports, serving the robust consumer market of the Northeast, as well as the industrial Midwest and eastern Canada. Annually, The Port of New York supports more than 280,000 jobs, \$11.2 billion in personal income and more than \$36 billion in business income in the region.

Recently, the Bayonne Bridge's navigational clearance of 151 feet has raised concerns among maritime, shipping and industry representatives about the clearance limitation, future planning and introduction of larger vessels, due to the planned expansion of the Panama Canal scheduled for completion in 2014. An additional increase in trade is also expected from South East Asia and the Indian subcontinent through the Suez Canal. The Panama Canal expansion will allow for larger ships to access the region, most of which currently cannot pass under the Bridge.

This clearance limitation is likely to cause a reduction of port competitiveness and diversion of cargo to other East Coast ports. The future use of larger, newer post-Panamax vessels is expected to reduce environmental impacts, lower shipping costs, provide economies of scale, and offer potential benefits in overall transportation costs to regional, and to national and international customers. Removal of the existing clearance restriction is crucial to maintaining the port's position as the third largest port in the country, and assuring continued regional economic growth and development.

## Finding solutions

To address these concerns, the Port Authority of New York and New Jersey authorized \$1 billion dollars and fast tracked the planning, regulatory review, preliminary and final engineering design, and ultimately construction of a solution to resolve the existing clearance restriction. In August 2009, the Port Authority initiated preliminary environmental alternatives analysis and conceptual engineering studies to evaluate a wide range of alternatives to address the clearance restriction. These alternatives included bridge modifications, such as raising the roadway, jacking the arch and conversion of the main span into a lift bridge operation, as well as a new bridge or tunnel replacement alternatives, and removal of the bridge in its entirety and replacement with either ferry service or alternate site expansion.

In December 2010, the Port Authority announced 'Raise the Roadway' as the best alternative to expedite the removal of the clearance restriction, control costs, and minimize environmental, neighborhood, and navigational impacts. Raise the Roadway will not necessitate any property acquisition or displacements, it will preserve the iconic, historic arch, maintain the navigational channel operations, and improve vehicular conditions by providing 12 foot lanes, a median safety divider, shoulders, widened walkway and bikeway, and the potential for a future transit corridor.

The Port Authority's innovative engineering design approach will also allow the higher suspended roadway to be constructed within the structure of the arch, while the lower, existing suspended roadway deck remains open to traffic, and will not necessitate a full bridge closure. This unique approach will expedite construction and minimize impacts to our customers, the community, and the traveling public. Rather than demolishing and replacing the Bayonne Bridge, we are expediting our efforts to rehabilitate, retrofit, and reuse the historic bridge arch structure and incorporate functional and design improvements for the future.

## Raising the bridge

The proposed construction staging is designed to fast track achievement of the navigational clearance, without negatively



Bayonne Bridge conceptual schematic – arch elevation.



Left: Existing clearance. Right: Proposed clearance.

impacting vehicular customers or operation of the Kill Van Kull shipping channel below. At the start of construction, the existing four lanes of vehicular traffic will be restricted to two lanes of traffic, one in each direction, on one side of the bridge. On the other side of the bridge, two lanes of traffic will be reconstructed at the higher 215 foot (mean high water) elevation.

When construction of the two travel lanes at the higher (215 foot) elevation are complete, traffic will be shifted to the new lanes. Instead of a traditional construction staging sequence that would complete the construction of the remaining two lanes at the newer higher 215 foot elevation, main span construction activities will be placed on hold, while the focus shifts to the expedited demolition of the existing 151 foot deck. When the deck over the channel is removed, the construction activities for the remaining two lanes of traffic will resume. The reprioritization of the construction staging will expedite the removal of the clearance restriction by as much as two years, without negatively impacting vehicular customers, or resulting in additional environmental, community, maritime, or navigational channel impacts [1].

The required regulatory review process is now the critical path and The National Environmental Policy Act (NEPA) Federal review process is well underway, with the US Coast Guard as the Lead Federal Agency. Conceptual engineering and alternatives analysis was completed in 2010, preliminary engineering in 2011, and the program remains on schedule for the completion of our final engineering design, environmental, and regulatory process in late 2012. The Port Authority anticipates the scheduled

completion of our federal environmental review process in late 2012, with state, local, and construction permits immediately thereafter, leading to the award of a Design – Bid – Build construction contract for Raise the Roadway anticipated in 2013.

### Importance of the project

The Bayonne Bridge program is a regional economic priority with continued strong support from New York governor Andrew Cuomo and New Jersey governor Chris Christie. The program also recently received the endorsement of the combined New York and New Jersey senate delegation and unanimous recommendation for inclusion in President Obama's March 2012 Executive Order to expedite infrastructure projects. During Bayonne Bridge construction, short-term economic activity is expected to result in more than 6,300 job years, \$380 million in wages, and \$1.6 billion in economic activity. In the long-term, the Raise the Roadway program will assure the Port of New and New Jersey maintains its position as an important economic engine for the region, and provides continued, sustainable regional economic growth and development for the foreseeable future.

#### ANIMATION LINK

[1] View a brief video animation of the proposed construction on the Port Authority of New York and New Jersey Bayonne Bridge program website: <http://www.panynj.gov/bayonnebridge>.

#### ABOUT THE AUTHOR



**Joann Papageorgis** joined the Port Authority of New York and New Jersey in 1985, and is program director of the Bayonne Bridge Navigational Clearance Program.

Ms. Papageorgis is responsible for expediting the planning, environmental review, and preliminary and final engineering design for the Raise the Roadway alternative as the best solution to address the existing 151 foot Bayonne Bridge navigational clearance restriction.

#### ABOUT THE ORGANIZATION

**The Port Authority of New York & New Jersey** conceives, builds, operates and maintains infrastructure critical to the New York and New Jersey region's trade and transportation network. These facilities include America's busiest airport system, marine terminals and ports, the PATH rail transit system, six tunnels and bridges between New York and New Jersey, the Port Authority Bus Terminal in Manhattan, and the World Trade Center.

#### ENQUIRIES

Joann Papageorgis  
Email: [jpapageorgis@panynj.gov](mailto:jpapageorgis@panynj.gov)