



The Pulaski Skyway looking northeast over the Passaic River.

OVERVIEW

The Pulaski Skyway, dedicated on October 11, 1933, is a vital link in the northern New Jersey transportation network, linking Jersey City, South Kearny and Newark. Seventy-five years old, the elevated structure is composed of a series of different types of bridges that carry Route 1&9 over the Hackensack and Passaic Rivers, the New Jersey Turnpike, several railroads, and industrial facilities. It serves as an express link for car and bus traffic to and from the Holland Tunnel and destinations farther north on Route 1&9, carrying 67,000 or more vehicles a day.

The structure is in need of major repairs/rehabilitation due to deterioration that has occurred over its lifetime. The Skyway is also functionally obsolete due to several substandard geometric features (lane width, shoulder width etc.) that no longer conform to modern day design standards.

NJDOT has developed a strategy to keep the Pulaski Skyway open for the next several decades by first implementing prioritized short-term repairs to critically deteriorated sections of the bridge followed by a longer term rehabilitation of the entire structure.

BACKGROUND – THE SKYWAY, DEFINED

Starting at the Jersey City terminus in Hudson County, the Skyway—a steel structure more than three miles long, with two main river crossing spans of 550 feet each cantilevered Pratt trusses—crosses over the local street and railroad network. The typical roadway section of the Skyway consists of two 11-foot lanes with no shoulders in both directions. There is a center median barrier, and two-foot safety walks along both outer lanes.

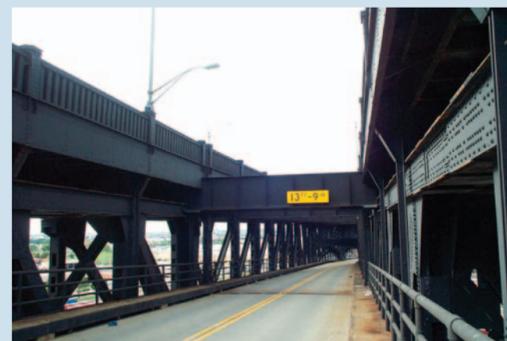
The Skyway rises high above the Meadowlands, reaching more than 135 feet above the Hackensack River before it passes over an industrial area in Kearny, Hudson County, on an elevated causeway. Then it rises 135 feet above the Passaic River and crosses the New Jersey Turnpike into Newark, Essex County as it descends. Access ramps provide connections from the Skyway and local streets in Jersey City, Kearny, and Newark.

Several alterations to the original structure have been made over the years, including the addition of new ramps to and from South Kearny. The last rehabilitation of the Skyway was performed in 1984.

SKYWAY ENTRANCES AND EXITS

Motorists can access the Skyway from both ends and at four locations mid-span. Two of the ramp interchanges rise into the middle of the Skyway, producing left entrances and exits. These four mid-span access locations are as follows:

- Entrance/Exit ramps to Tonnelle Avenue
- Westbound Entrance/Eastbound Exit ramps to Broadway Avenue in Jersey City
- Eastbound Entrance/Westbound Exit ramps to south Kearny
- Exit Ramp from Route 1&9 westbound to Raymond Boulevard



South Kearny Ramp, view looking west

HISTORY AND TRUCK BAN

The construction of the Pulaski Skyway began as part of a larger 13 mile Route 1& 9 Extension project in the 1920s. Its design improved traffic flow from Newark to Jersey City and reduced transportation costs. The Skyway is included in the National Register of Historic Places because of its age, length and unique design features.

Designed by NJDOT Engineer Sigvald Johannesson, it was named for General Casimir Pulaski, the Polish-born hero of the American Revolutionary War, on the anniversary of Pulaski's death. Pulaski, known as the "Father of the American Cavalry," formed an independent cavalry called the Pulaski Legion. The General fought in Haddonfield, Little Egg Harbor and New Jersey's Osborn Island. Severely wounded fighting the British, he died in 1779 at the age of 31.

When the Skyway opened in 1932, trucks traveled on the roadway. In November 1933, Jersey City passed an ordinance banning trucks from its section of the Skyway, effectively banning trucks from the whole road. The ordinance was passed because of the large numbers of accidents on the Skyway, many involving trucks. In January 1934, the New Jersey State Highway Commission approved the ban. The ban continues today, mainly due to the substandard design features (narrow lanes, no shoulders etc) and poor ramp merge and diverge conditions.



Skyway looking east



Roadway deck cracking and deterioration



Deterioration of structural steel



Deterioration on top of concrete column



CAPITAL IMPROVEMENTS

The existing bridge is in need of a major rehabilitation that is estimated to have a construction cost of upwards of one billion dollars. NJDOT has implemented the necessary short term repairs to keep the bridge functional. Short term repairs are being performed on critically deteriorated areas, while the long term rehabilitation is prioritized, sequenced and funded.

STRUCTURAL CONDITION

Based on the most recent inspection reports of September 2006, the deck and the structural steel support members were noted to be in poor condition and the concrete support columns, piers and abutments were in fair condition. There have been instances reported of concrete falling to the ground below from under deck spalls (fractured concrete). The latest inspection report recommended a complete deck replacement.

Overall deficiencies include the low load-carrying capacity, poor geometrics at ramp entrances and exits, the lack of auxiliary lanes, substandard vertical and horizontal clearances, no shoulders, substandard roadway cross slopes, and substandard stopping sight distance.

SHORT-TERM HIGH PRIORITY IMPROVEMENTS

NJDOT has identified a prioritized list of high priority improvements that needs to be implemented in order to preserve the structural integrity of the bridge, until a long-term solution (replacement or rehabilitation) is decided upon. The department will be investing at least \$35 million a year for the next five years to address all of the identified high priority improvements. Where possible, these high priority improvements will be designed to be permanent improvements.

The high priority improvements identified include: repairing the deteriorated concrete railings at the east end of the structure; deck patching and surface treatment; Structural steel repairs with spot painting and substructure repairs; Drainage repairs; Structural steel repairs and spot painting of all steel connections; Sub-structure repairs and safety improvements; ramp – deck replacement and total painting of ramp structural steel.

CURRENT STATUS:

NJDOT is conducting the initial project planning stage of Concept Development (CD), in which feasible concepts are developed. Potential concepts will include replacement alternatives as well as rehabilitation alternatives that would address structural deficiencies of the existing bridge, and which would include alternatives to potentially widen the bridge and/or relocate some of the center ramps to the outside of the structure.

The Concept Development phase is expected to take approximately one year, and will be followed by the Feasibility Assessment (FA) Phase, in which concepts from the CD Phase are further developed into potential alternatives. These alternatives will be evaluated based on the effectiveness of satisfying the project needs and impacts to the surrounding communities and environment. The end result of the FA process is to select an initially preferred alternative to advance to design. Some of the issues to be evaluated in the selection process include: design standards, safety and security, traffic operations, structural capacity and integrity, environmental issues, Right of way, historical implications and cost. The FA phase will take 18 months to complete.

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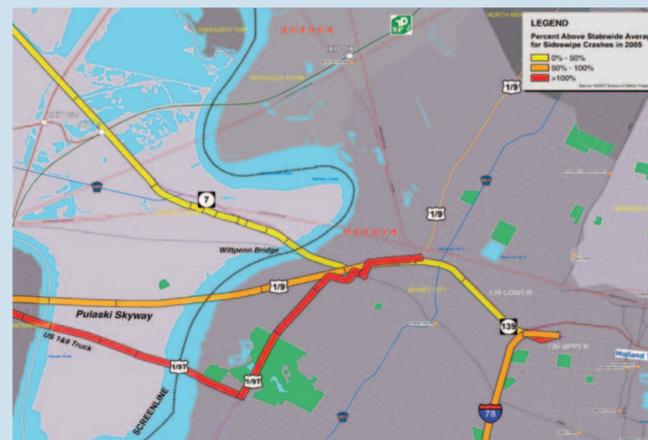
Map showing the distribution of vehicle trips via the Pulaski Skyway during the AM period. Blue lines indicate westbound destinations, while purple lines indicate eastbound destinations.

VOLUME AND DESTINATION DATA

The Skyway is part of a larger transportation system serving Essex, Hudson, and Trans-Hudson trips. In both directions it currently carries 9,000 vehicles in the Morning peak period (6:30-8:30 a.m.) and 11,800 vehicles in the Evening peak period (3:30-6:00 p.m.). Analysis from the North Jersey Regional Travel Model (NJRTM) indicates that the Skyway operates at over capacity conditions during both peak hours in the peak direction, and at capacity in the off-peak direction.

Almost three of 10 drivers using the Pulaski Skyway are Trans-Hudson bound, while more than seven of 10 drivers are more local to northern New Jersey. The distribution of the morning peak period trips is shown in the map. Key traffic problems on the Skyway include:

- Accidents: Crash data for the year 2005 indicates that sideswipe accidents on the Pulaski Skyway and on the surrounding roads are well above the statewide average.
- Truck traffic: Trucks must use the adjacent roadway network as alternate routes, primarily Truck Route 1&9T through Newark and Jersey City, Communipaw Avenue, and Route 1. Ramps at the south end of the Skyway provide easy access to the truck route, and trucks use ramps from Tonnelle Circle to rejoin the main route to the Holland Tunnel. The Route 1&9T truck route includes two movable vertical lift bridges over the Hackensack and Passaic Rivers, and is subject to road closures for navigational traffic.



Map showing the incidence of sideswipe crashes in the study area during 2005.



Overhead view of the Pulaski Skyway looking east towards Jersey City and New York.

LONG-TERM CAPITAL IMPROVEMENTS:

A more extensive rehabilitation that applies to the entire length of the bridge to extend its useful life is being studied, and is currently in the Concept Development Phase. This phase will recommend capital improvements, that need to be completed through a series of capital improvement contracts in the future. The capital improvements will include

- rehabilitation/replacement of the deck for the full length (including new bridge railings and deck joints),
- structural steel repairs and repairs to the concrete columns, piers and abutments for the full length of the bridge (including seismic retrofit),
- lighting and electrical improvements,
- drainage improvements,
- removal and disposal of existing lead paint, and
- painting the steel for the full length of the bridge.