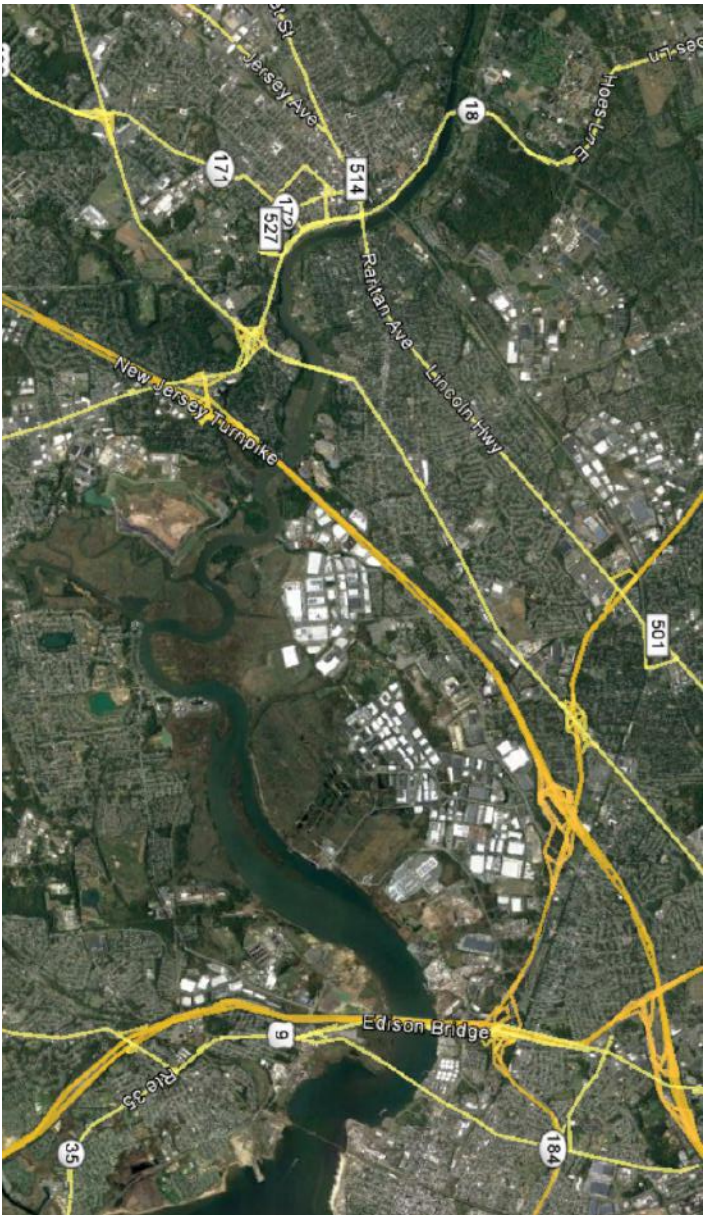
Bridges of the Lower Raritan

Ethan Benderly-Kremen

LRWP Edition



Satellite imagery of the Lower Raritan, with major roads and bridges highlighted. *Photo from Google Earth*

Contents

Victory Bridge

Transportation Information

- Routes Carried: New Jersey 35
- Sidewalk: Yes (only on southbound side)
- Bicycle lane: Yes
- Toll: None

Facts

- Year opened: 2005
- Length: 3,971 ft. (0.75mi)
- Lanes: 3 lanes in each direction (2 car + 1 bicycle)
- Structure: Concrete segmental
  - This type of structure allows for the concrete 'segments' of the bridge to be pre-cast and shipped to the site ready for installation. Contruction speed is then greatly accelerated since there is no time wasted waiting for the concrete to dry before being able to move on to the next section.

Interesting Information

The current Victory Bridge was opened to relieve congestion on the original Victory Bridge, which was built in 1926. Clearance beneath the old bridge was too low to let boats under, so engineers designed it as a 'swing span' - a bridge with a length that could be spun around a vertical axis to let boats through. However, as both boat and car traffic in the area increased, opening the swing span created significant backup on Route 35. After the new bridge was constructed, the old one was demolished to open up shipping passages into the Raritan.

The Victory Bridge, seen from the north bank in Perth Amboy. *Photo courtesy of Dr. Hartmann*

A street level view of Route 35, the bicycle lane and sidewalk can be seen on the right. *Photo from Google Maps*

Edison Bridge

Transportation Information

- Routes Carried: US 9
- Sidewalk: No
- Bicycle lane: No
- Toll: None

Facts

- Year opened: 1940 (renovated in 2003)
- Length: 4,391 ft. (0.83 mi.)
- Lanes: 3 in each direction
- Structure: Deck Plate Girder
  - Chosen because engineers wanted to use a modern design to alleviate traffic from the already aging (original) Victory Bridge. Allows for longer bridges without the need for supports around the roadway, creating a more open driving experience.

Interesting Information

The bridge was the first over the Raritan to be built after federal jurisdiction was given to the US Army Corps of Engineers to keep navigable waterways open, requiring at least 135 ft. of clearance under the bridge.
The bridge was completely overhauled in 2003. A new bridge was built to carry southbound traffic allowing expansion from 2 lanes in either direction and no shoulder, to 3 lanes and a shoulder.

The Edison Bridge seen from the water facing upstream, the Driscoll Bridge visible behind it.

A street level view of US 9 on the northbound side. The new southbound bridge can be seen to the left, and the Driscoll Bridge to the left of that. *Photo from Google Maps*

Driscoll Bridge

Transportation Information

- Routes Carried: The Garden State Parkway
- Sidewalk: No
- Bicycle lane: No
- Toll: $1.50 (southbound only)
  - *As of November 2016*

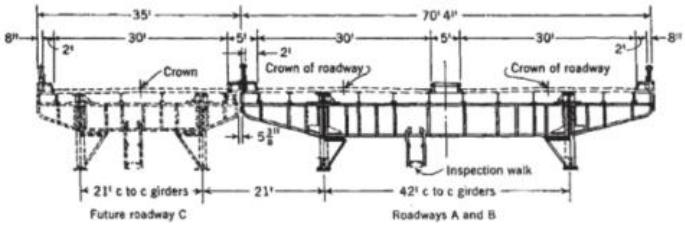
Facts

- Year opened: 1954 (renovated in 2006)
- Length: 4,392 ft. (0.83 mi.)
- Lanes: 15 (8 northbound, 7 southbound)
- Structure: Deck Plate Girder
  - Built using the same design and plans as the Edison Bridge (built 12 years earlier) as that design was already tested and proven to be succesful for the location.

Interesting Information

The Dirscoll Bridge was one of the first projects by the New Jersey Highway Authority, a newly created agency tasked with creating the Garden State Parkway. The most innovative part of its design was the ability to add a new roadway in the future should an increased capacity be needed. This was well planned as the Driscoll Bridge is now the widest bridge in the world by number of lanes. The original structure carries only the northbound lanes today.

Looking up towards the Driscoll Bridge, the newer spans visible on the left. It can be seen that the newer supports are built off of an old pier, designed to be expanded upon.



Plans for the original bridge from 1952. The dashed part was a planned future expansion, which can be seen completed above. *Plans courtesy of NJDOT*

Morris Goodkind Bridge

Transportation Information

- Routes Carried: US 1
- Sidewalk: Yes
- Bicycle lane: No
- Toll: None

Facts

- Year built: 1929 (renovated in 1971)
- Length: 1902 ft. (0.36 mi.)
- Lanes: 3
- Structure: Ribbed Arch
  - The bridge was built in the 1920s, during the height of the Art Deco period. The State Highway Department's Bridge Division says the bridge reflects its goal of "sound bridge design coupled with aesthetic." The most striking feature of the bridge's design are the 6 open arches, which create a 'sound bridge design' by reducing the weight of the bridge and create an open aesthetic across the Raritan.

Interesting Information

When opened, the bridge was named the College Bridge due to it's proximity to Rutgers University's Cook Campus. In 1969 it was renamed after Morris Goodkind, chief bridge engineer of New Jersey during its construction and its chief engineer. When the bridge was expanded in 1971, the new span was designed by his son, Donald Goodkind, for whom it is now named.

The arches of the Morris Goodkind bridge make it unique from all other highway bridges over the Raritan, including the Donald Goodkind bridge, seen in the background.

The Morris Goodkind bridge now carries all northbound lanes of US 1 while all southbound lanes are on the Donald Goodkind bridge (seen on the left). *Photo from Google Maps*

Albany Street Bridge

Transportation Information

- Routes Carried: New Jersey 27
- Sidewalk: Yes
- Bicycle lane: Yes (shared lane)
- Toll: None

Facts

- Year built: 1892 (renovated in 1924, 1929, 1945, 1985)
- Length: 595 ft. (0.11 mi.)
- Lanes: 4 (2 in each direction)
- Structure: Brick Arch
  - The brick arch design was the strongest and most economical before the advent of concrete (it is the same design used by the Romans in the aqueducts). When the bridge was expanded throughout its history, the same design was used to keep the bridge's look coherent, even though newer technologies and types were available.

Interesting Information

In 1686, a ferry route was established to cross the Raritan at this location, giving access to the growing community of Prigmore's Swamp (today New Brunswick). The ferry was replaced by a wooden bridge in 1776, but it was destroyed a few years later when Washington ordered it to be burned down during a retreat. A wooden replacement was built in 1790, only to be washed away by a flood, whose replacement was the current brick structure.

The Albany Street bridge seen from the toe path in Boyd Park, the original brick arch structure can still be seen, even after almost 150 years and multiple renovations and expansions.

The separated sidewalks can be seen on the left and the right, as well as the shared bike lane. *Photo from Google Maps*

Landing Lane Bridge

Transportation Information

- Routes Carried: Landing Lane
- Sidewalk: Yes
- Bicycle lane: No
- Toll: None

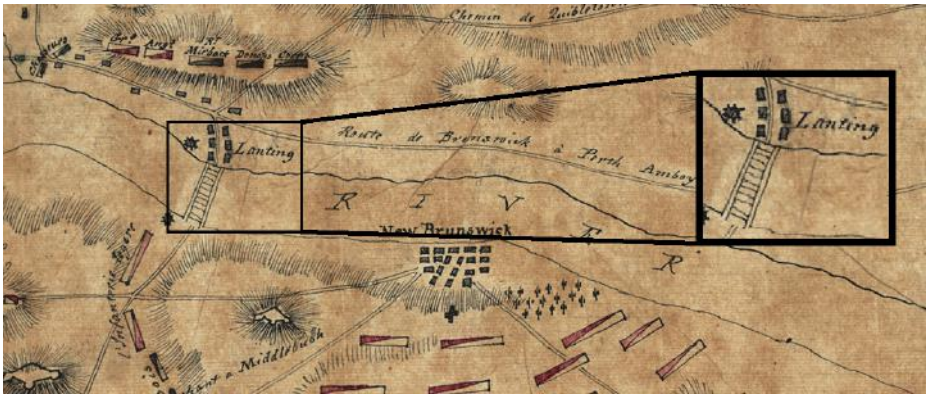
Facts

- Year built: 1920 (renovated in 1969, 1991)
- Length: 74 ft.
- Lanes: 2 (1 in each direction)
- Structure: Center bearing
  - The bridge still stands in the same location as the colonial era bridge, which was built at that specific location due to the Raritan reaching its narrowest point. Since the length needed to cross is so short, a simpler and cheaper design was used than the other bridges.

Interesting Information

The bridge in this location was the first to be built across the Raritan. This location was selected because a trade route already existed in the area, as the river is shallow enough to cross by horse at times. When the Delaware and Raritan Canal was built along the river, clearance beneath the bridge was not high enough, so a swing arm was installed to rotate part of the bridge when cargo needed to be moved through. The arm can still be seen today, but does not operate.

Right: The Landing Lane bridge seen from the entrance to the Delaware and Raritan (DNR) Canal State Park. *Left:* The now defunct swing arm over the DNR canal.



A 1777 French map from the Revolutionary War of the New Brunswick area, the Landing ('Lanting') Lane bridge is visible in the top left. *Map courtesy of the Rutgers University Special Collections*

Why We Should Care

Central New Jersey is one of the most densely populated regions in the most densely populated state in the entire country. The satellite image on the first page shows just how highly developed the region is, looking like a solid sheet of concrete with a river cutting through the middle. This view, that the Raritan is an obstacle to development and movement in Central New Jersey has been pervasive in the past, and has affected how the region interacted with the river. Physical impacts of this idea can still be seen today as high water pollution levels, but a mental impact also persists.

Today, many view the bridges over the Raritan as a way to separate it from us. They consider the bridges to be tools which allow the river to be bypassed as easily as possible by commuters. This inaccurate idea, that the bridges only impact us, is harmful to the health of the river's ecosystem. By focusing only on the human impact, we forget that in the middle of this highly populated area, with thoroughfares connecting New York to Philadelphia and the entire east coast, lies a historically and ecologically important river.

Through this booklet I hope to change this view of the bridges. By providing technical information, I aim to expand people's knowledge on what each bridge was designed for. By providing recreational information, such as whether there is a sidewalk, I hope to increase the number of people that cross the bridge on foot. When a bridge is crossed on foot, the slower pace allows someone to look down on to the river, rather than focusing on the road ahead, showcasing the connection each bridge has with its surroundings. Additionally, on foot it is easier to access the river after crossing the bridge, such as Boyd Park near the Albany Street bridge and the DNR Canal State Park near the Landing Lane bridge, increasing awareness of recreational activities by the river. In order to provide motivation to go down to the river, I included pictures I took from water level, showcasing each bridge in its environment and hinting at the spectacular views available at the many recreation points along the Lower Raritan.

In summary, the bridges of the Lower Raritan are a misunderstood feature, used by almost all but noticed by almost none. By showing how the bridges are different from an ordinary road, and how each bridge is different from another, I hope to demonstrate to the reader that by crossing a bridge, they are directly interacting with a major river, a feature unique to this area, hopefully spurring them to continue learning and interacting with the Raritan.

A rendering from *Rutgers 2030* of the proposed footbridge. *Photo courtesy of Rutgers University Capital Planning*

Looking to the Future

The capacity of the bridges spanning the Raritan is adequate for current needs and future projections, especially after the expansion of the Driscoll Bridge. In the future, any new bridges built across the Lower Raritan will be for the purpose of recreation rather than transportation. They will be designed to increase the community's connection to the river by providing recreational opportunities.

An example of this new philosophy is demonstrated in *Rutgers 2030*, a document planning the future expansion of the New Brunswick campus. It proposes a footbridge, accessible by only pedestrians and bicycles to link the College Avenue and Livingston campuses. The bridge will also provide access to a boardwalk built along the waterfront, strengthening the connection students will have to the Raritan.

This is kind of outcome I am hoping this booklet can help achieve. Combining useful infrastructure with recreation on the Raritan is how public awareness is built, and once the public eye is on the Raritan River, fixing its pollution problems can begin.

Works Cited

Old New Brunswick. (1777). Retrieved November 2016, from Rutgers University Historical Maps: `http://oldnewbrunswick.rutgers.edu/HISTORICALMAP NewBrunsTroops1777.gif`

ABBI Awards. (October 2005). Victory Bridge - New Jersey. Concrete Products, 31.

New Jersey Department of Transportation. (2002). *NJ 35 (Victory Bridge)*. Trenton: Bureau of Environmental Services.

New Jersey Department of Transportation. (2002). *Landing Lane over Delaware & Raritan*. Trenton: Bureau of Environmental Services.

New Jersey Department of Transportation. (2002). *NJ 27 (Albany Street)*. Trenton: Bureau of Environmental Services.

New Jersey Department of Transportation. (2002). *US 1 NB over Raritan River*. Trenton: Bureau of Environmental Services.

New Jersey Department of Transportation. (2002). *US 9 (Edison Bridge)*. Trenton: Bureau of Environmental Services.

Richman, S. M. (2005). The Bridges of New Jersey: Portraits of Garden State Crossings. *The Morris Goodkind Bridge* (pp. 47-48). New Brunswick: Rutgers University Press.

Richman, S. M. (2005). The Bridges of New Jersey: Portraits of Garden State Crossings. *The Albany Street Bridge* (pp. 34-35). New Brunswick: Rutgers University Press.

The Lousic Berger Group. (2005). *The History & Technology of the Edison Bridge & Driscoll Bridge over the Raritan River*, New Jersey. Trenton: NJ DOT.

Rutgers University. (2015).*Rutgers 2030-Volume 1*: New Brunswick. New Brunswick: Rutgers University.

All uncredited pictures by Ethan Benderly-Kremen