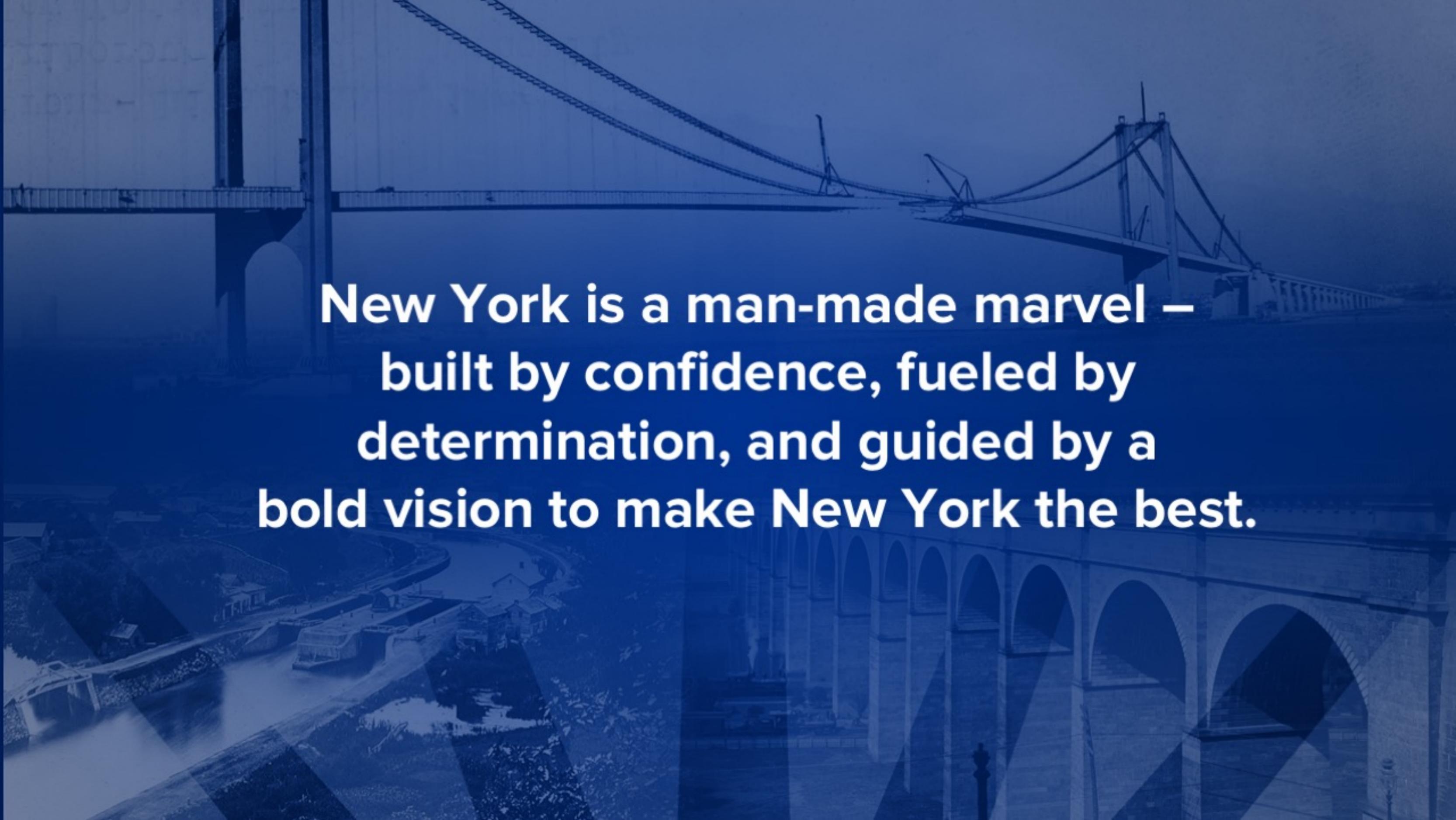




BUILDING TODAY FOR A BETTER TOMORROW

Reimagining New York's Crossings





**New York is a man-made marvel –
built by confidence, fueled by
determination, and guided by a
bold vision to make New York the best.**

These men and women
believed there was

Chrysler Building
Tallest building for 11 months
and tallest of its kind today
1932

No **height** they couldn't scale...

A black and white photograph of the George Washington Bridge, a suspension bridge with two large towers. The bridge spans across a wide river. The sky is overcast. In the foreground, there are some trees and a building on the right side. The bridge's structure is made of steel, and the cables are visible. The water is calm, and the overall scene is a classic view of the bridge.

George Washington Bridge

Longest suspension bridge at opening

1931

No **distance** they couldn't span.



These visionaries

built the greatest state in the nation.



**The foundation of their vision was
an unmatched transportation system.**



**They knew that growth and development
were driven by mobility and access...**



**And what they constructed
carried us for decades.**



**New York must
continue to grow to lead and
to meet the challenges of today.**

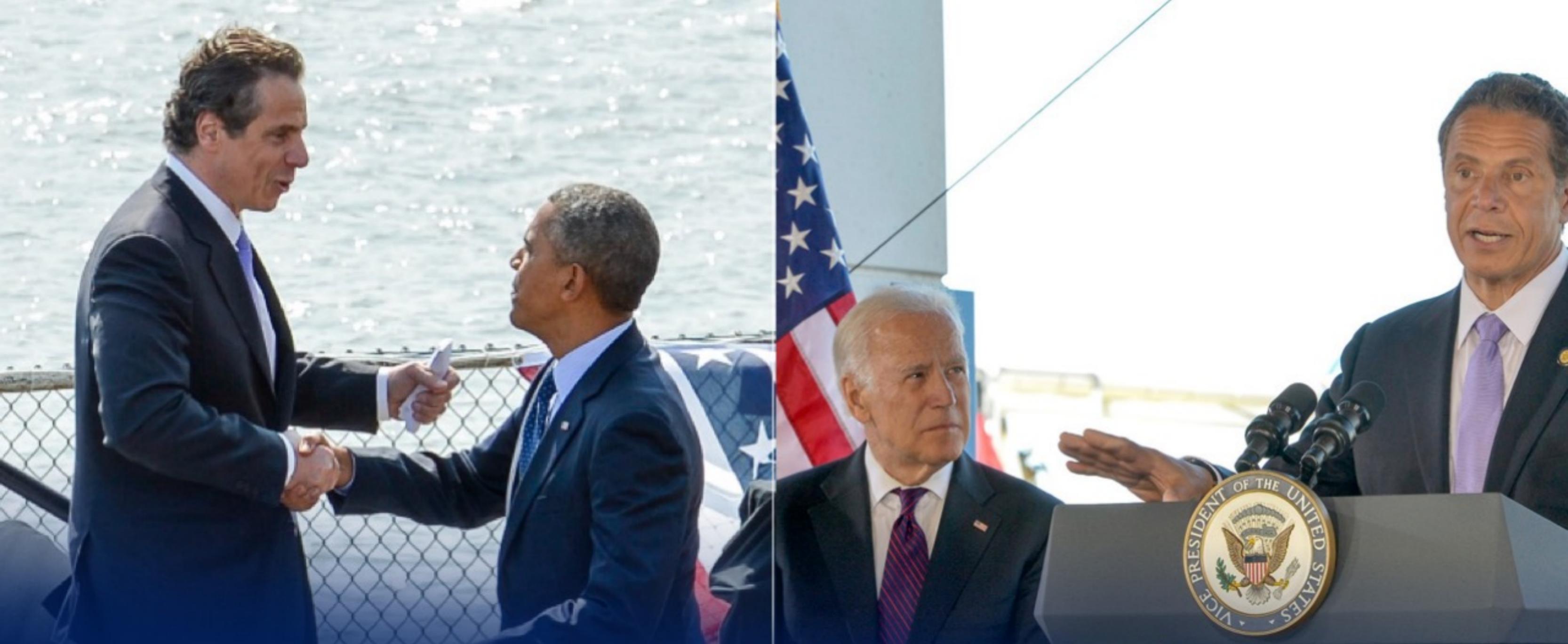
New Tappan Zee Bridge

On Time – On Budget

Completion 2018



**We are already on the way
with our plan to rebuild New York's
transportation system over five years.**



We do not intend to repair or refurbish.

**We intend to reimagine and transform
to meet today's new challenges.**



We have a \$100 billion
program to build a
“New New York”...

From the east...



**New Airport
at LGA**

LGA AirTrain

MacArthur Airport

**East Side
Access**

LIRR Third Track

LIRR Double Track

JFK

Republic Airport

From the north...



Upstate Roads
& Bridges

Upstate
Airports

Stewart
Airport

New Tappan Zee Bridge

Bronx Metro-
North Stations

New Airport
at LGA

2nd Avenue
Subway

LGA AirTrain

MacArthur Airport

East Side
Access

LIRR Third Track

LIRR Double Track

JFK

Republic Airport

From the west...



Upstate Roads
& Bridges

Upstate
Airports

Stewart
Airport

New Tappan Zee Bridge

Javits
Convention
Center

Bronx Metro-
North Stations

New Airport
at LGA

2nd Avenue
Subway

LGA AirTrain

MacArthur Airport

Gateway
Tunnel

Penn-Farley
Complex

East Side
Access

LIRR Third Track

LIRR Double Track

JFK

Republic Airport

BUILDING THE NEW NEW YORK





Today we're focusing on the
MTA bridges and tunnels.



BRIDGES

**SUBWAY, BUS &
COMMUTER RAIL**

TUNNELS

The MTA is known for running subway, bus and commuter rail service, but it also operates the TBTA – our bridges and tunnels.



What made New York?

Our harbor – water



**A major component of our infrastructure
is our bridges and tunnels.**



**Our crossings present
challenges and opportunities –
Bottlenecks? Security? Danger?**

A blue-tinted photograph of a highway interchange. In the background, a suspension bridge with two tall towers and numerous cables is visible against a clear sky. The foreground shows a multi-level highway with several vehicles, including a white semi-trailer truck and several cars. The overall scene is captured in a monochromatic blue color scheme.

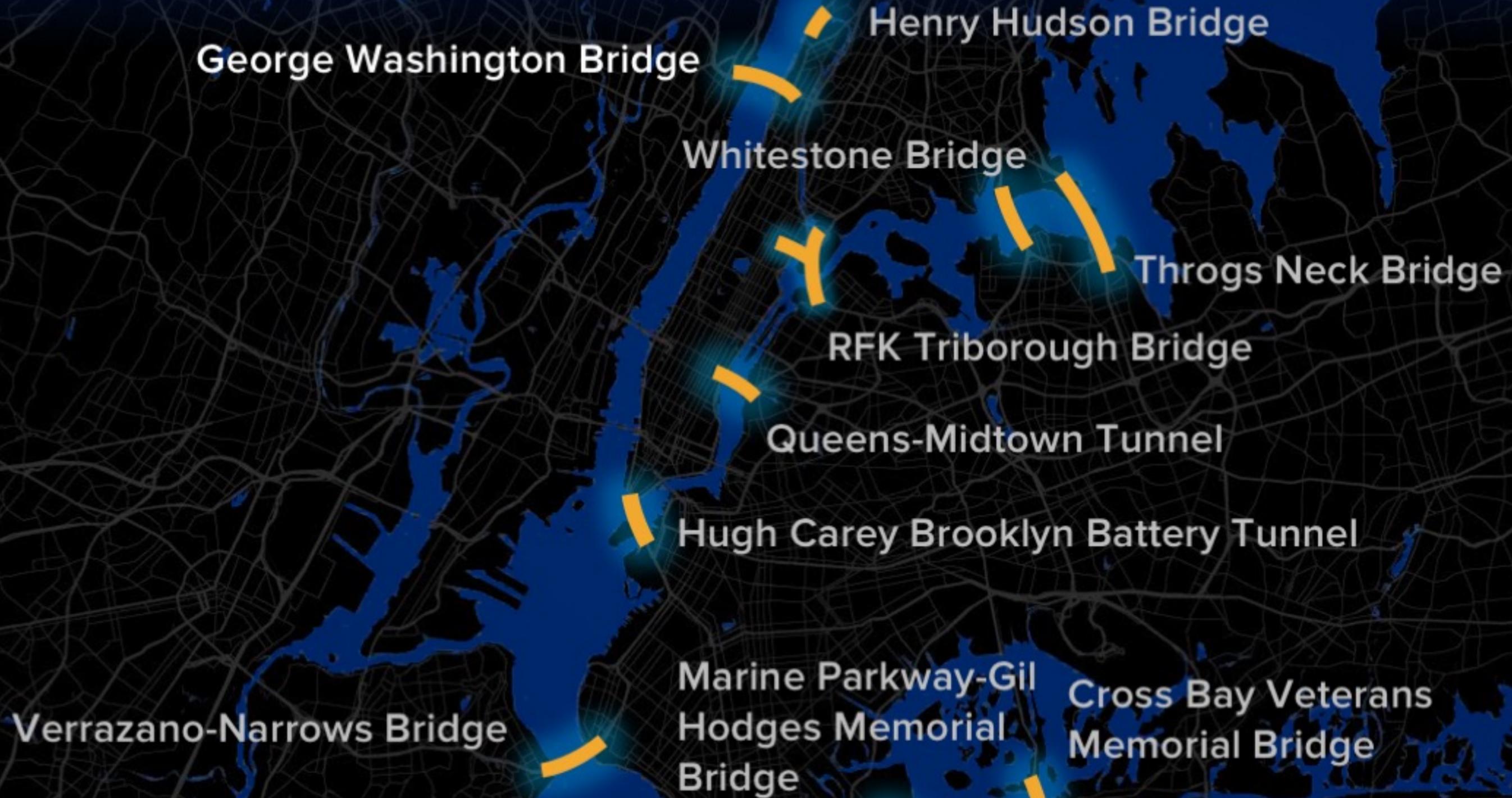
**They must be reimaged
for a new reality.**



We are calling it the

New York Crossings Project

New York Crossings Project



Today we will discuss 5 components

to

New York Crossings:

- 1. Reducing Traffic**
- 2. Enhancing Security**
- 3. Hardening and Remediation**
- 4. Conservation**
- 5. Design and Public Art**



1

**Today our roads are some of
the most congested in the nation...**

A close-up, blue-tinted photograph of a hand on a car's gear shift. The hand is positioned on the gear shift knob, which is part of a manual transmission. The background is blurred, showing other parts of the car's interior.

Peoples' commutes are among the longest in the world and cited as a reason for moving away from the region.

- **From Suffolk County: 2 hours 15 minutes**
- **White Plains: 1 hour 15 minutes**
- **North Jersey: 1 hour 25 minutes**
- **South Jersey: 1 hour 45 minutes**



**4 new Metro-North
stations in the Bronx**

2nd Avenue Subway

**East Side
Access**

LIRR Third Track

**Penn-Farley
Complex**

LIRR Double Track

**The best way to reduce traffic is
to increase mass transit – which we're doing.**



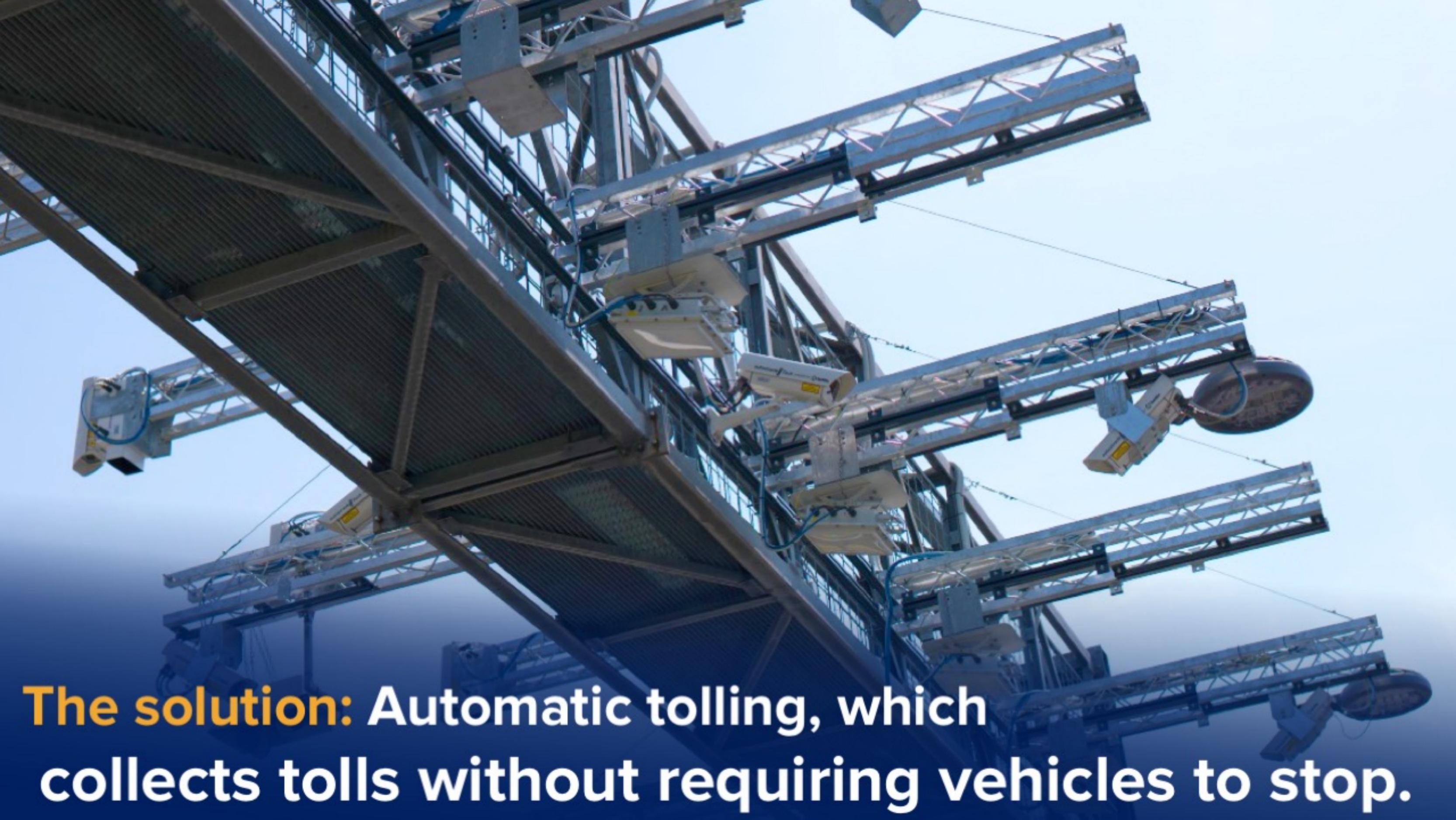
The second best way is
to make traffic flow faster.



On average, 800,000 vehicles cross MTA tunnels and bridges each day, and drivers can wait up to **1 hour and 45 minutes** in cash lanes every month.



**As a whole, New York drivers spend
more than 6,400 hours every day
waiting to pay tolls at MTA crossings.**



The solution: Automatic tolling, which collects tolls without requiring vehicles to stop.

How Automatic, or “Open Road Tolling” Works: 3 Simple Steps

- 1. Sensors and cameras are suspended over the highway on a structure called a “gantry.” Sensors can read cars speeding in excess of 90 MPH.**
- 2. Each time a vehicle with E-ZPass travels under the sensors, it is automatically charged.**
- 3. For non-E-ZPass vehicles, a camera records the license plate and a bill is mailed to the registered owner of the vehicle.**



Automatic tolling is a proven system.



**The Thruway uses it
on the Tappan Zee Bridge...**

All Electronic Tolling at the Henry Hudson Bridge has been a success.

- **94% of vehicles use E-ZPass.**
- **6% are billed by mail and while 2/3 pay, fees from violations and late payments offset the loss of unpaid tolls.**
- **Collisions have been reduced from 32 prior to automatic tolling to 7 so far this year.**



Building on this accomplishment and to save drivers time and money, we will now bring automatic tolling to every MTA crossing.

No more MTA toll booths.



**We project that commuters will save
up to 21 hours of drive time every year.**



1993 World Trade Center

2001 September 11th

2016 San Bernardino

2016 Orlando

2016 Chelsea

2

Our nation is facing
a growing threat to its security.

71



New York is a target.



Our crossings are

both an opportunity and challenge:

Challenge: structural vulnerability

Opportunity: security checkpoint



We need to recognize the threat and **integrate emerging technologies** into our security design.



At each crossing, we will install advanced cameras and sensors to read license plates and test state-of-the-art facial recognition software and equipment.

9:54:02 08/09/17

Visualization – facial recognition software



These technologies will be applied at our airports and transit hubs, including Penn-Farley – ultimately becoming one system-wide plan.



Sensors and cameras will be installed at structurally sensitive points on bridges and tunnels.



We will combine anti-terrorism teams with traffic enforcement at our crossings while developing new operating protocols across agencies.

New Equipment + New Personnel

- **525 TBTA officers will provide security and traffic management at bridges and tunnels and collaborate with State Police on toll enforcement.**
- **150 members of State Police Troop NYC will be assigned to crossings to handle security and anti-terror activities.**
- **150 National Guardsmen will reinforce troopers on security and anti-terror initiatives.**



Law enforcement will be staged at **both ends of the tunnel or bridge** – and prepared to intercept the suspect or toll evader or scofflaw.



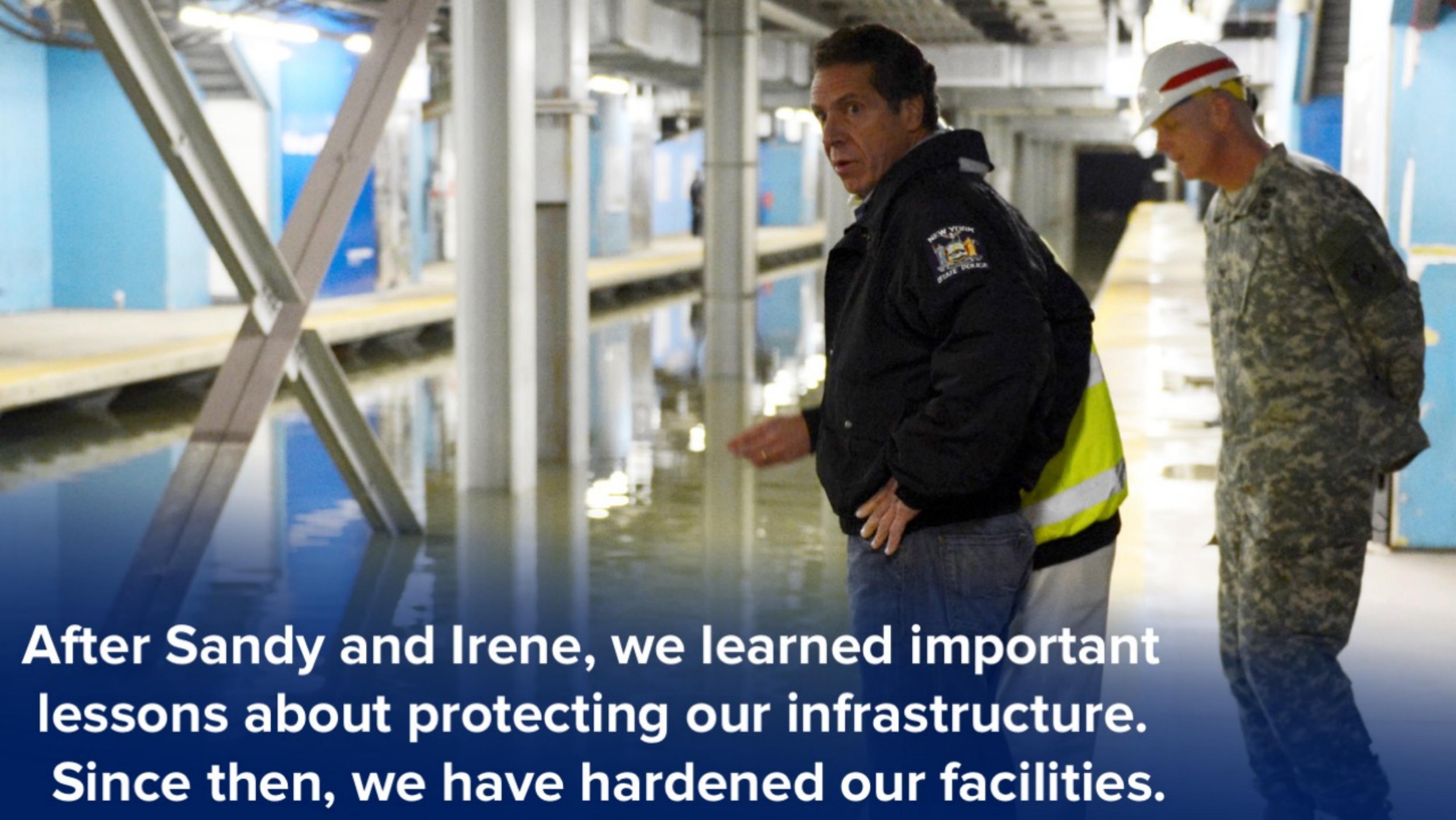
We are also positioning special barricade trucks at both sides of each crossing to serve as intercept vehicles and mobile barriers in the event of an emergency.

A night-time photograph of the Hugh Carey Tunnel under construction. The tunnel is a large, curved structure with a concrete lining, partially filled with water. The surrounding area is a city street with tall buildings, some of which are illuminated. Streetlights and construction lights are visible, creating a mix of warm and cool tones. The water in the tunnel reflects the lights, and there are some construction barriers and equipment visible on the right side.

Hugh Carey Tunnel
Filling with water – Superstorm Sandy

3

Along with fortifying anti-terror efforts, we must ensure our region is prepared to confront devastating impacts from Mother Nature.



After Sandy and Irene, we learned important lessons about protecting our infrastructure. Since then, we have hardened our facilities.



World Trade Center
Construction site – Superstorm Sandy

Up until now, we built our assets to protect
against a 100-year flood. **That was clearly not enough.**



Queens-Midtown Tunnel
Superstorm Sandy

**We will now enhance our
protections to withstand a 500-year flood...**

Open – Traffic Flowing



AT OUR TUNNELS

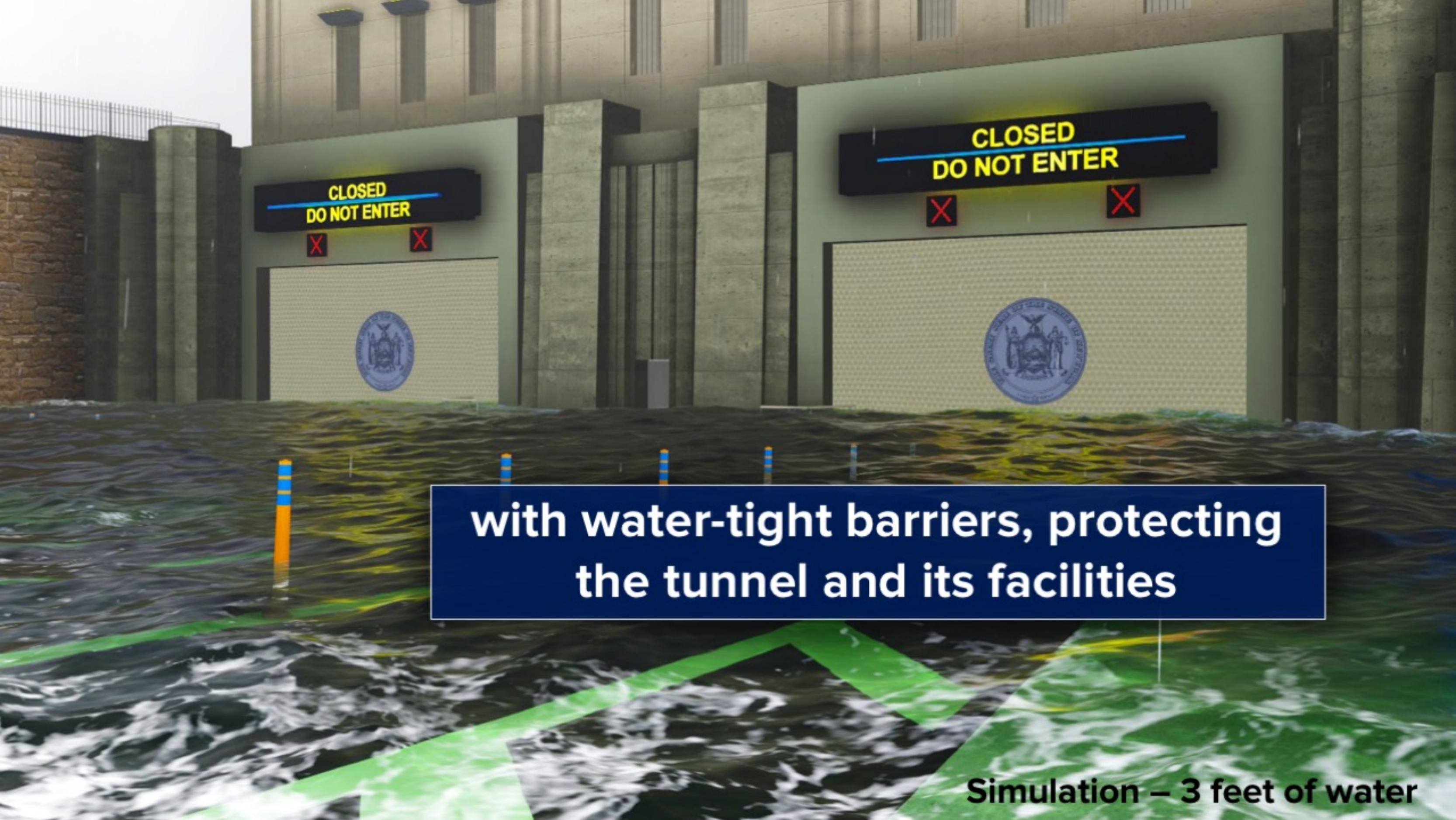
We are installing barriers to block flood water from entering and increasing our submersible pumping capacity.

Closed – Tunnel Sealed

**CLOSED
DO NOT ENTER**

**CLOSED
DO NOT ENTER**

When storm surge or flooding is forecasted, the tunnel is sealed...

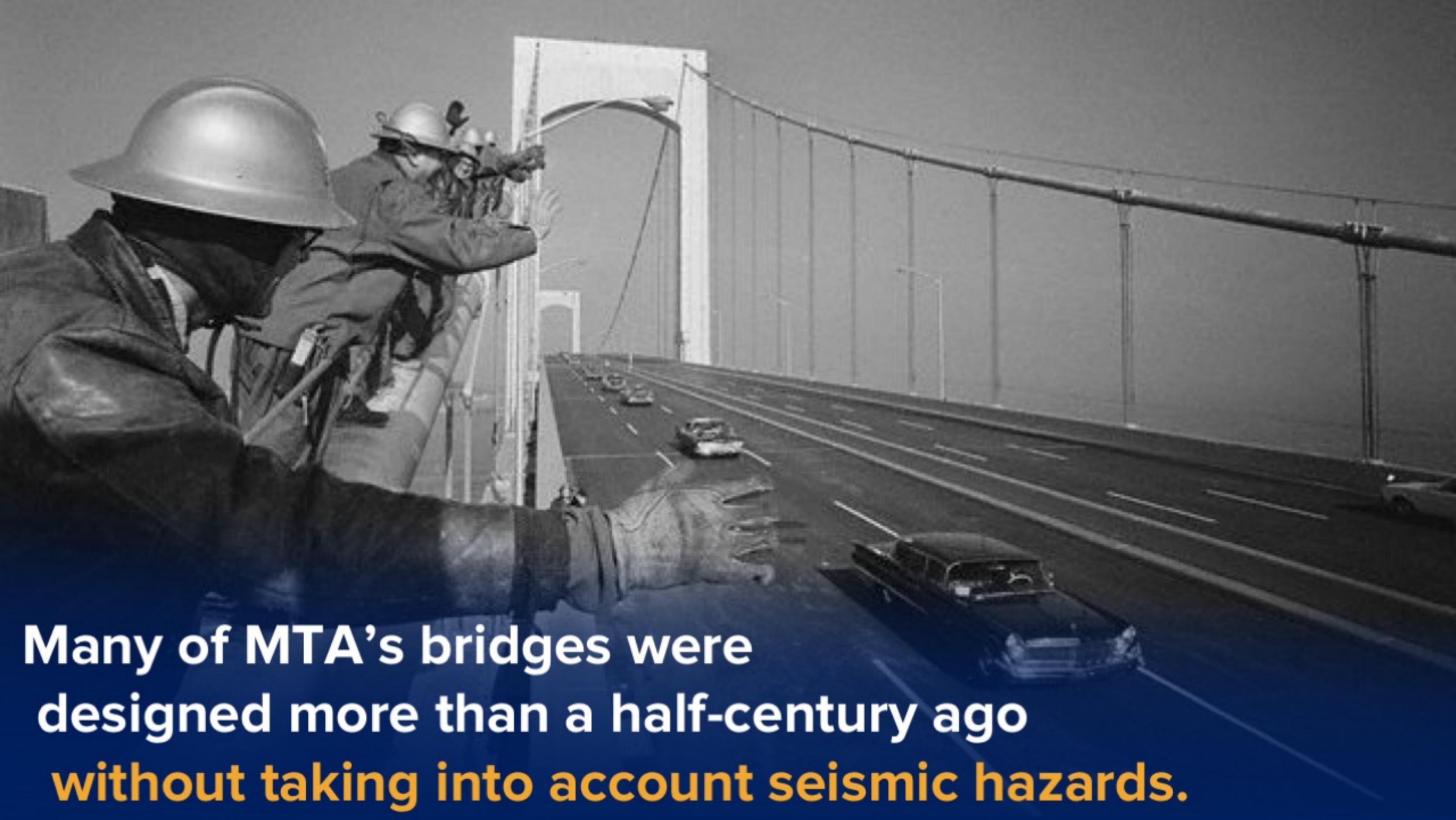


**CLOSED
DO NOT ENTER**

**CLOSED
DO NOT ENTER**

**with water-tight barriers, protecting
the tunnel and its facilities**

Simulation – 3 feet of water

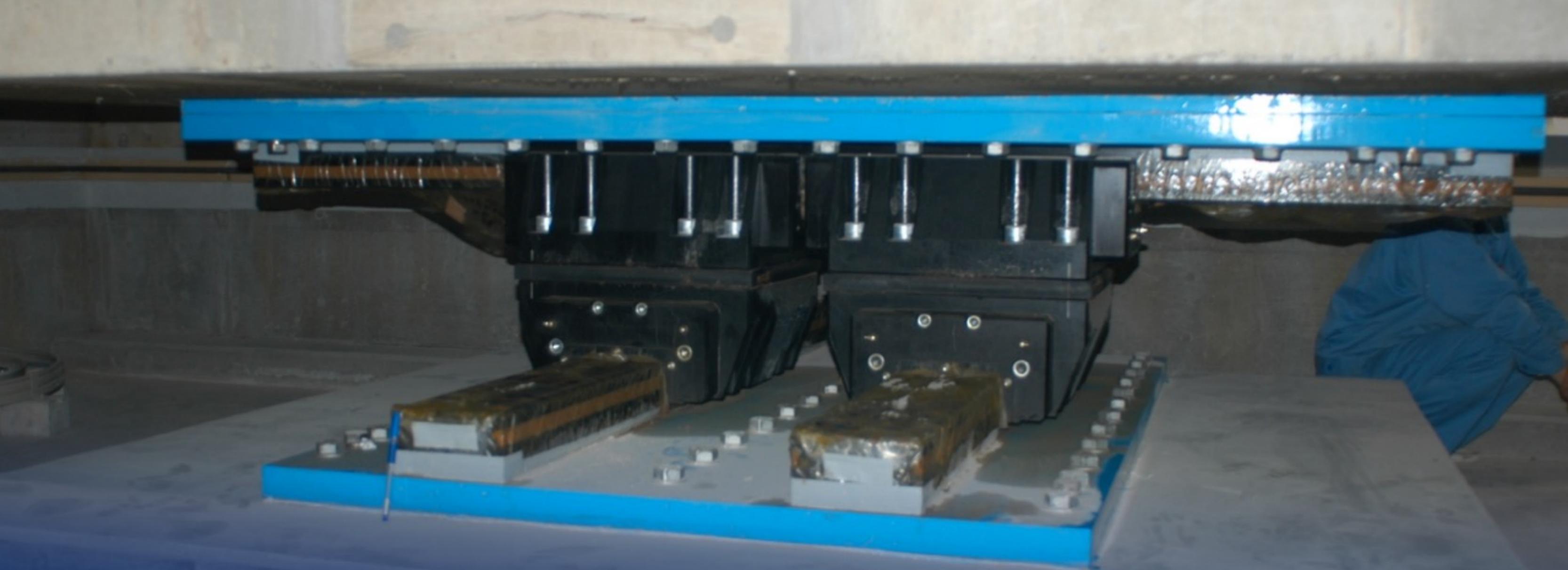


**Many of MTA's bridges were
designed more than a half-century ago
without taking into account seismic hazards.**



ON OUR BRIDGES

To make MTA bridges more flexible in the devastating event of an earthquake – thus limiting damage – we are launching a comprehensive seismic upgrade plan.



First, we are replacing all existing bridge bearings with “**seismic isolation bearings**” that allow for rotation, thereby reducing the transfer of seismic forces and mitigating damage.



Second, we are adding reinforcement to bridge columns and piers to provide greater resistance to seismic forces.

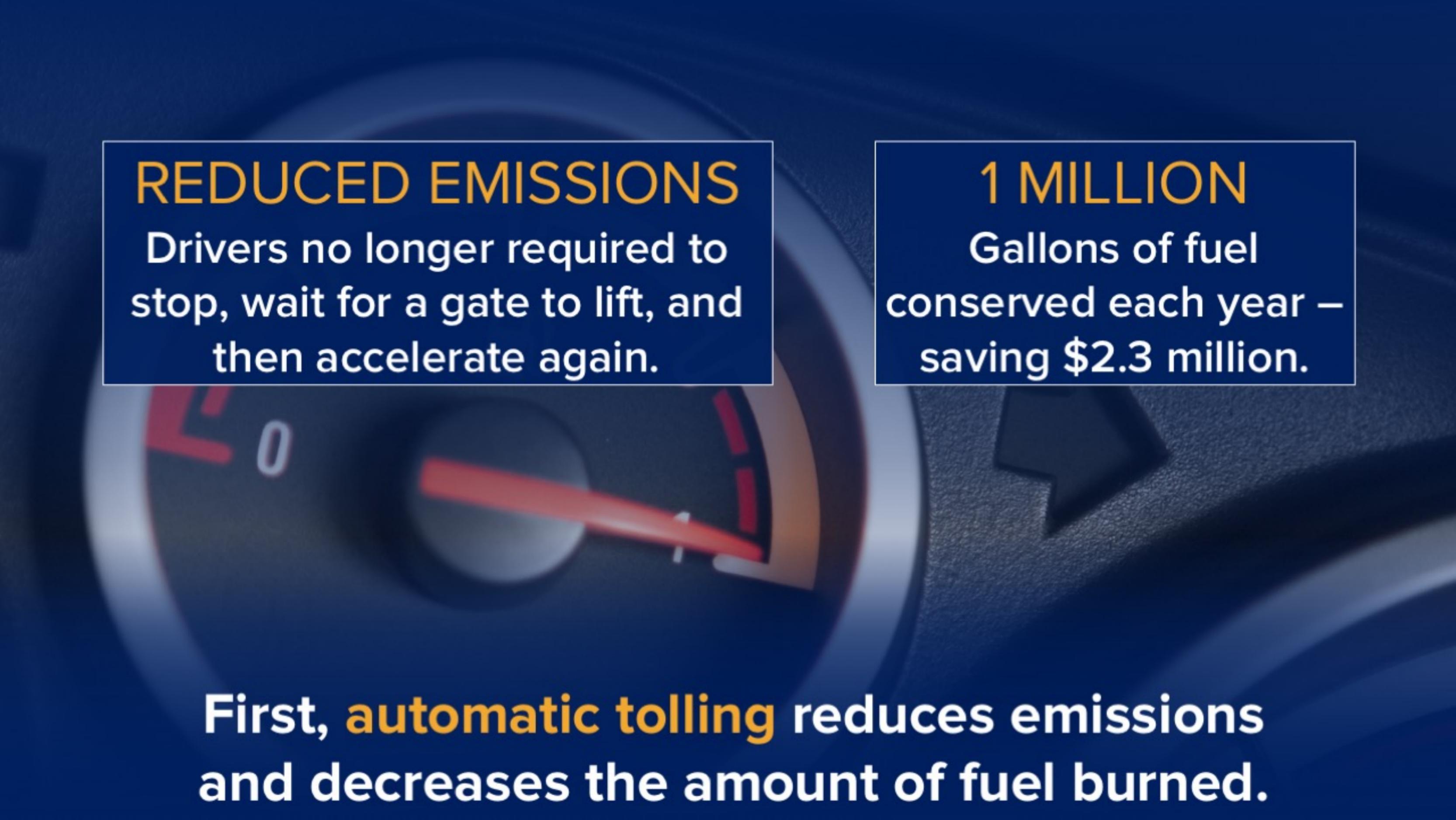


Lastly, to provide long-term protections beyond seismic events, we are installing concrete armor units around the underwater portion of bridge piers.



4

While we deploy all of these measures, the MTA is committed to promoting environmental conservation wherever possible.



REDUCED EMISSIONS

Drivers no longer required to stop, wait for a gate to lift, and then accelerate again.

1 MILLION

Gallons of fuel conserved each year – saving \$2.3 million.

First, **automatic tolling** reduces emissions and decreases the amount of fuel burned.



We are also adopting widescale use of **LED lighting on all MTA bridges and tunnels.**

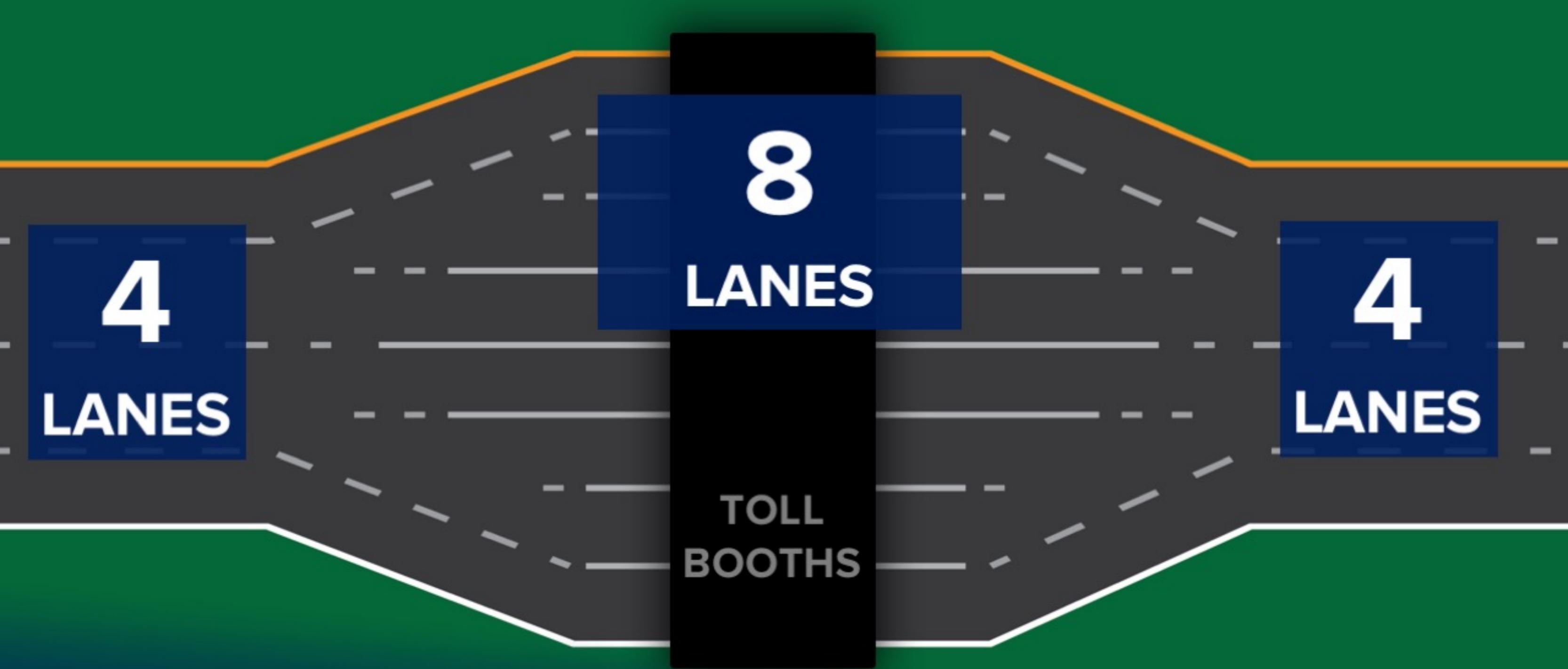
- **LEDs use 40% to 80% less power than other types of roadway lighting and last 6x longer.**



**The New York Power Authority will
begin LED installation this January.**



Implementation Steps



First, removal of the toll booths will
require a reconfiguration of the toll plazas...



Next, we must add **gantries** to suspend automatic tolling equipment.

Henry Hudson Parkway Gantry





We have additional **security personnel and equipment** that need to be strategically placed.



We must redesign and upgrade our tunnel and bridge plazas to meet these new needs.



WARNING
SEVERE SNOW
STORM
STARTING AT 3 PM

Fastest Route To

LaGuardia Airport
Grand Central Pkwy
13 MINS

SPEED
LIMIT
40
ENFORCED

And lastly, we are testing
new video message boards
with real-time communication to drivers.

New York Crossings - Schedule

**Automatic
Tolling & LED
Lighting**

Automatic tolling begins on both MTA tunnels in January; all bridges by end of next year. LED lighting begins in January.

**Security
Components**

State Police, National Guard and barricade vehicles deployed in January.

**Resiliency -
Tunnel Barriers**

Installed on both tunnels by end of next year.

**Seismic
Measures**

Currently underway.

New York Crossings – Cost Breakdown

Automatic Tolling & LED Lighting **\$500 million Capital Budget**

Security Measures **\$37 million annually**

Resiliency - Tunnel Barriers **\$100 million State and Federal Storm Recovery Funds**

Seismic Measures **Ongoing structural rehabilitation – included in Capital Plan**

**This is not a proposal – funding is secured
and implementation is underway.**



5

When we were more ambitious and more confident, our goal was to build projects that were not only practical, but **public art.**



Look at the

David N. Dinkins Municipal Building...



**Our magnificent
New York State Capitol...**

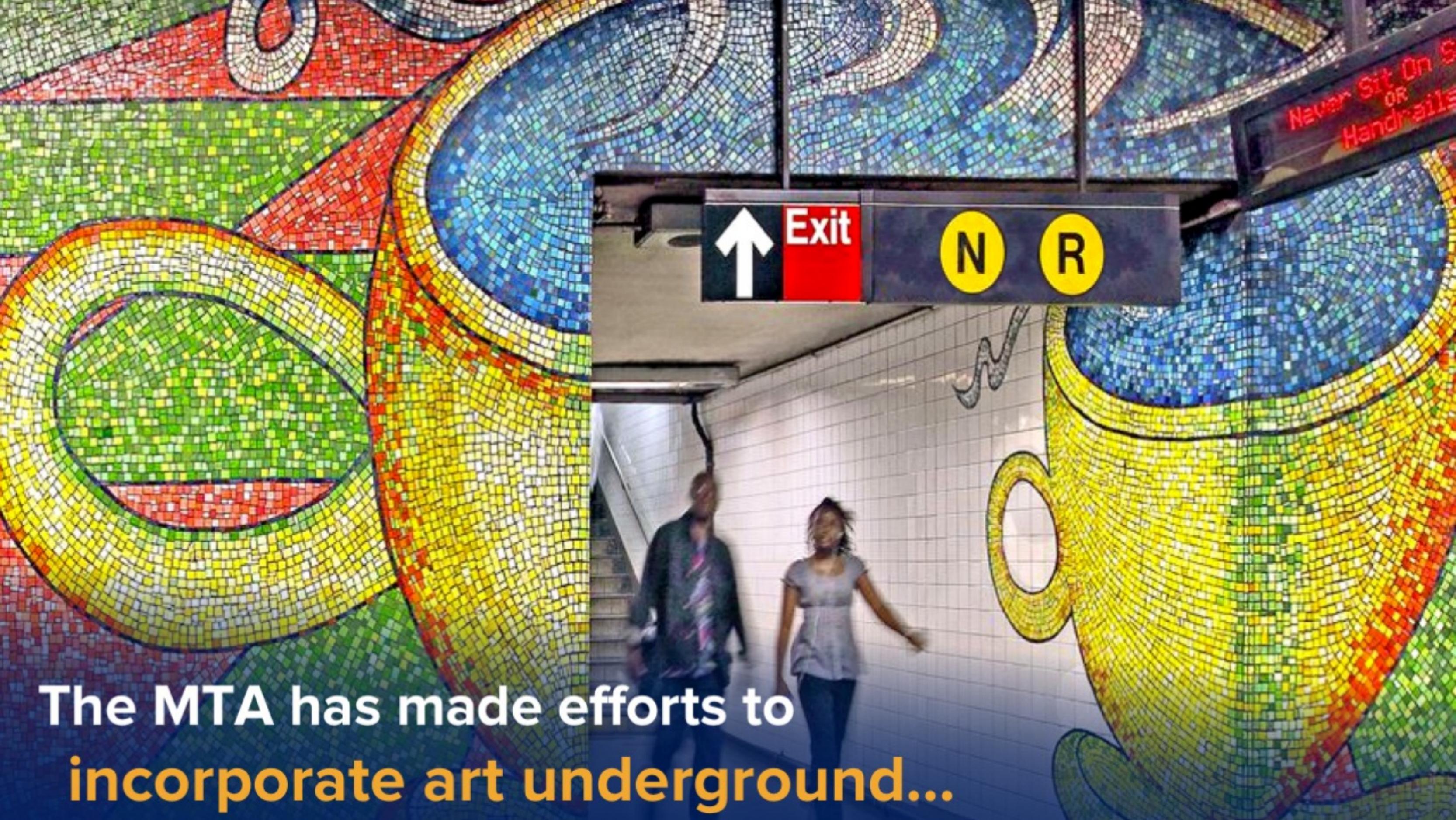


The original
Penn Station...

Central Mall Mosaics



And
Jones Beach.



The MTA has made efforts to
incorporate art underground...



Now it's time to bring art aboveground.

ON OUR TUNNELS

The plaza walls will have covering veils that shield security personnel and equipment, while acting as LED message boards – all in an attractive redesign.



The veil shields security equipment...

Conduit and maintenance equipment no longer exposed

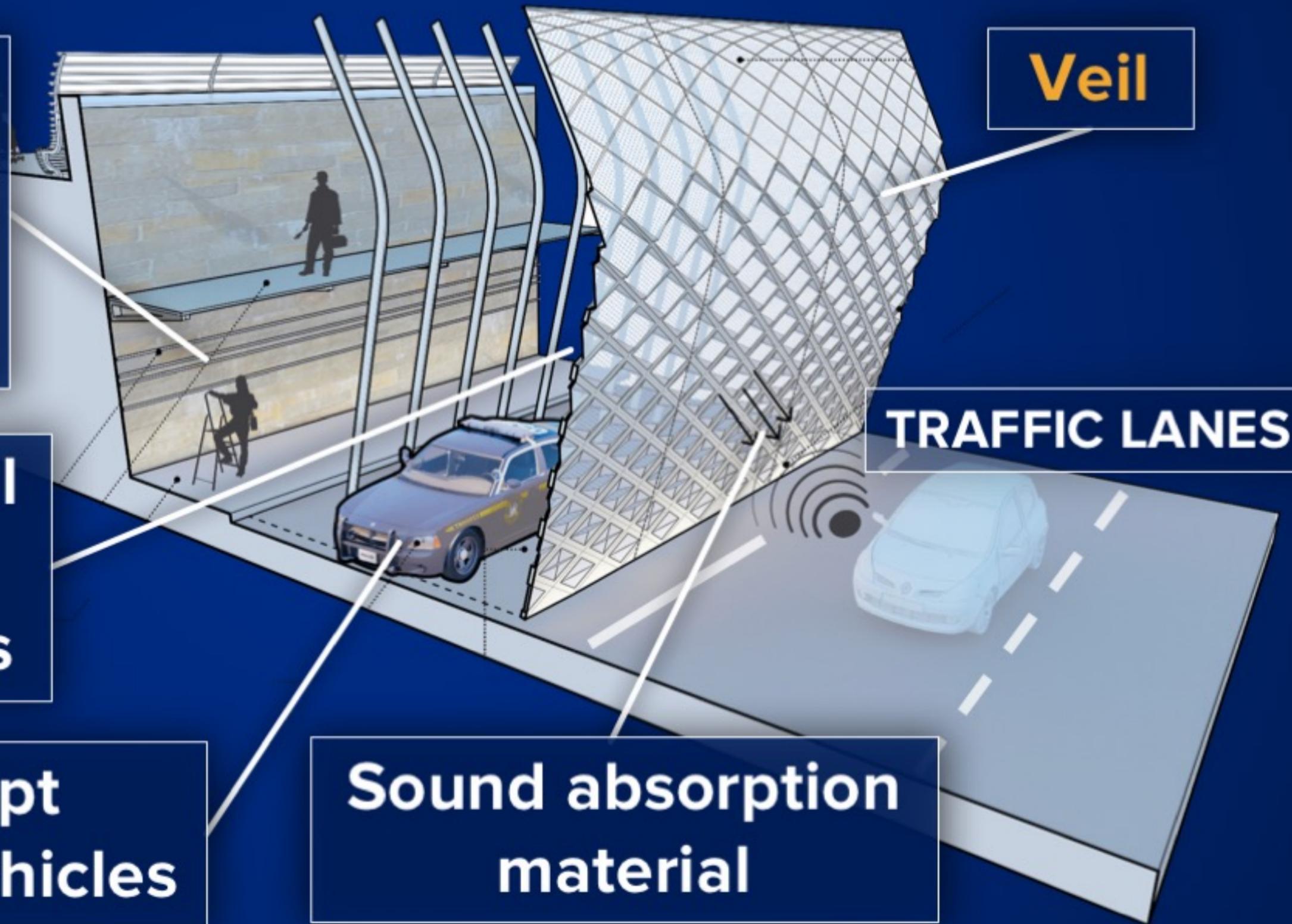
Security personnel with line-of-sight monitoring portals

Intercept security vehicles

Sound absorption material

Veil

TRAFFIC LANES



And also houses messaging boards.

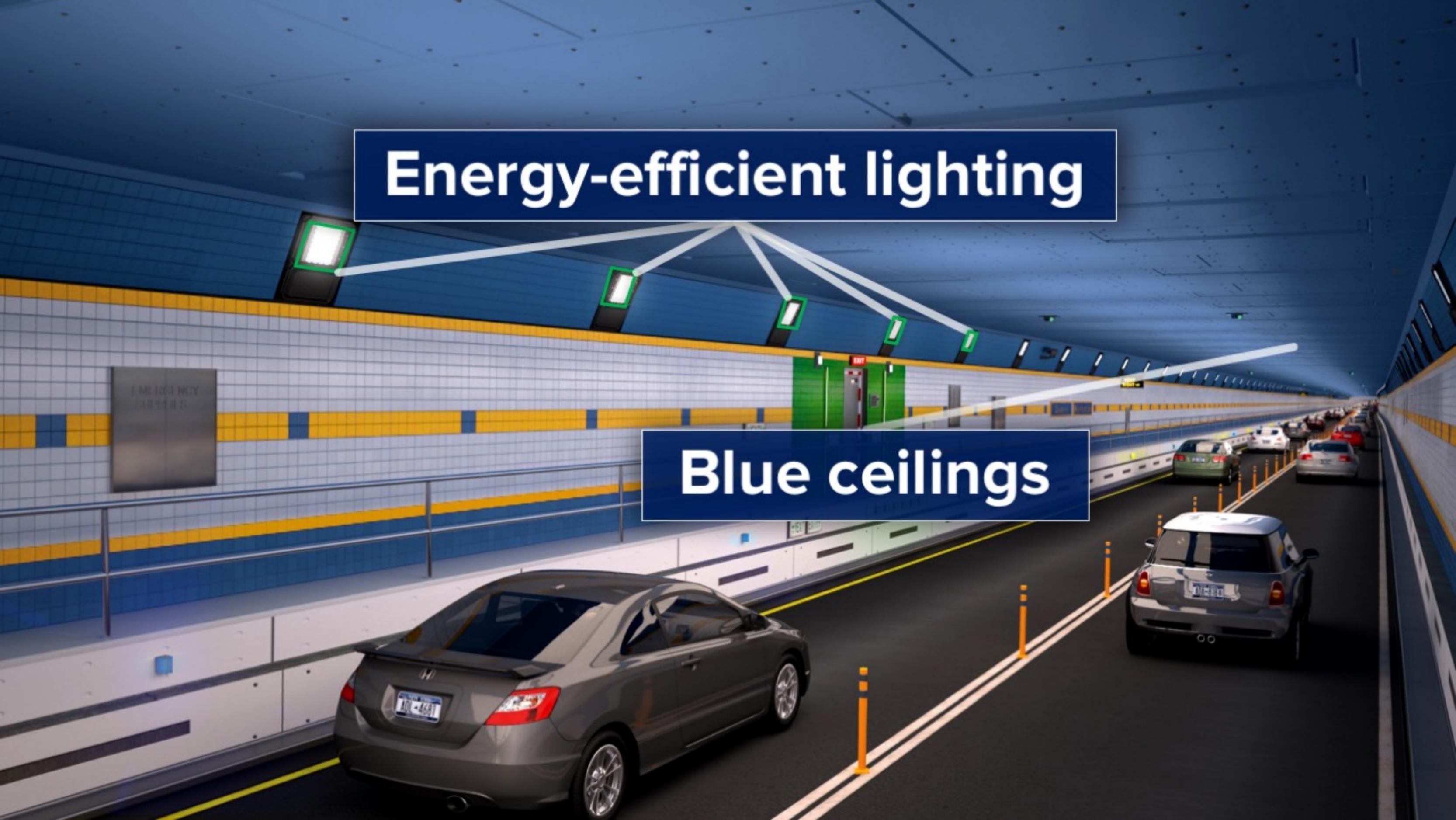


Queens Midtown Tunnel

The inside of the tunnels will have color accents and LED lighting.

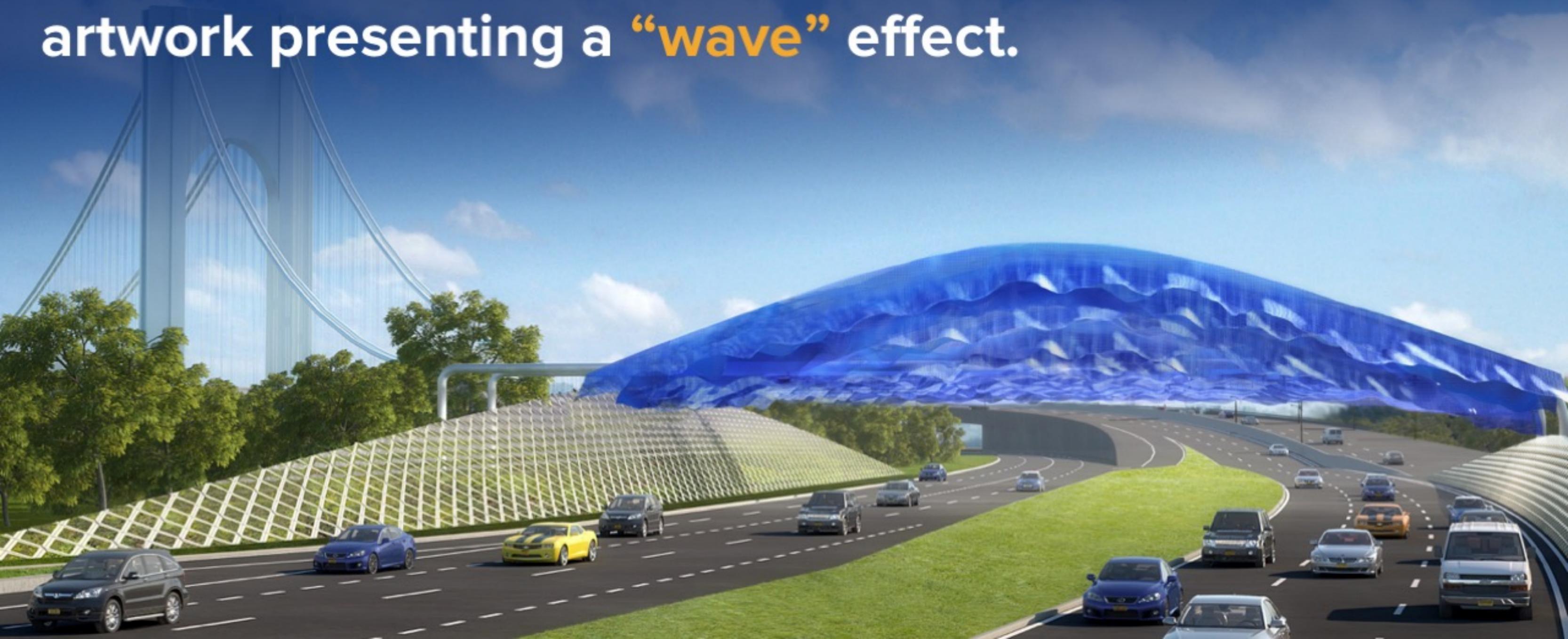
Energy-efficient lighting

Blue ceilings



ON OUR BRIDGES

Each gantry on our bridges and tunnels will be covered with a decorative artwork presenting a “wave” effect.



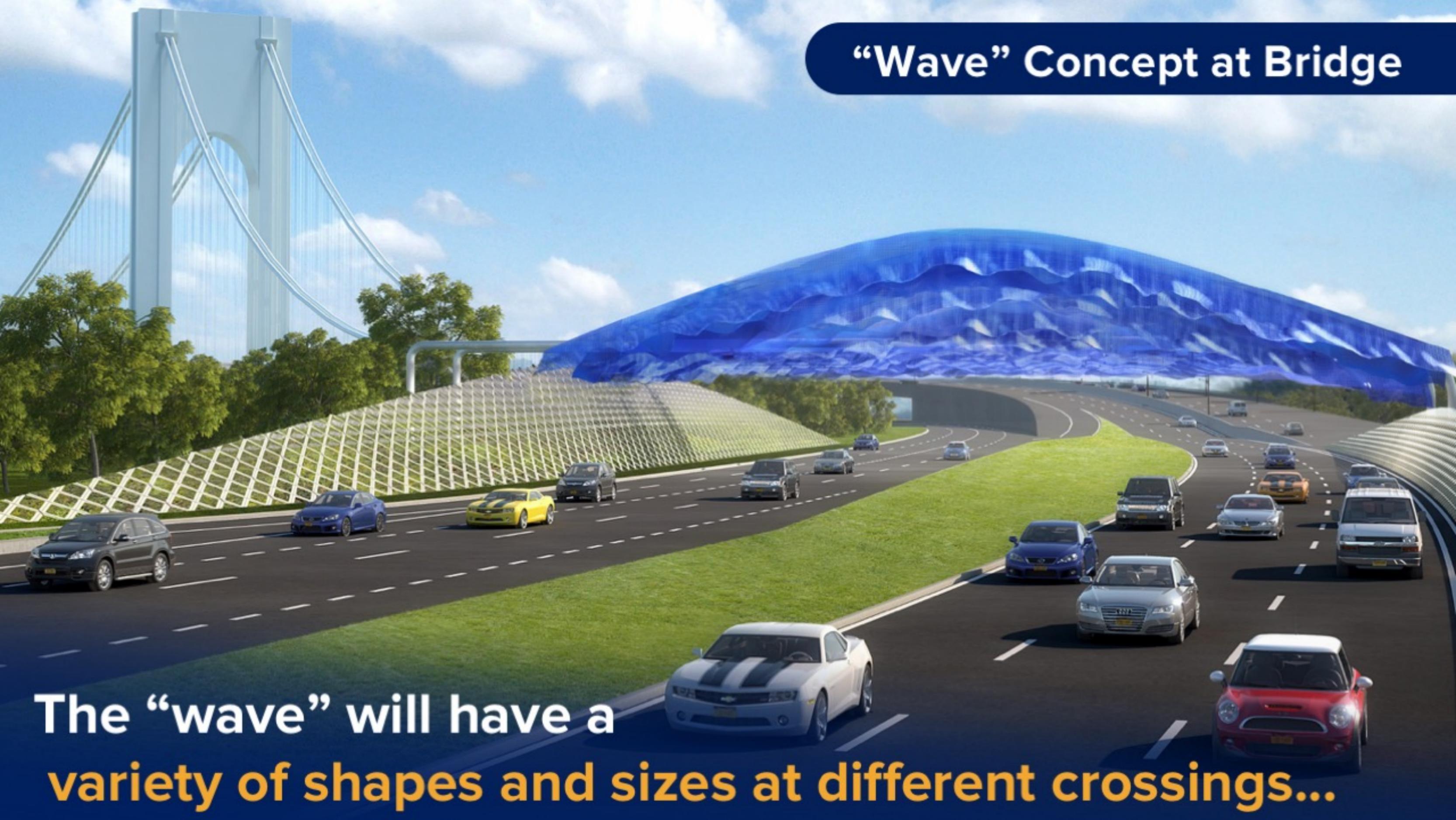


**The “wave” will be constructed from
a chainmail fabric which moves with the wind...**



Chainmail fabric applied to parking garage

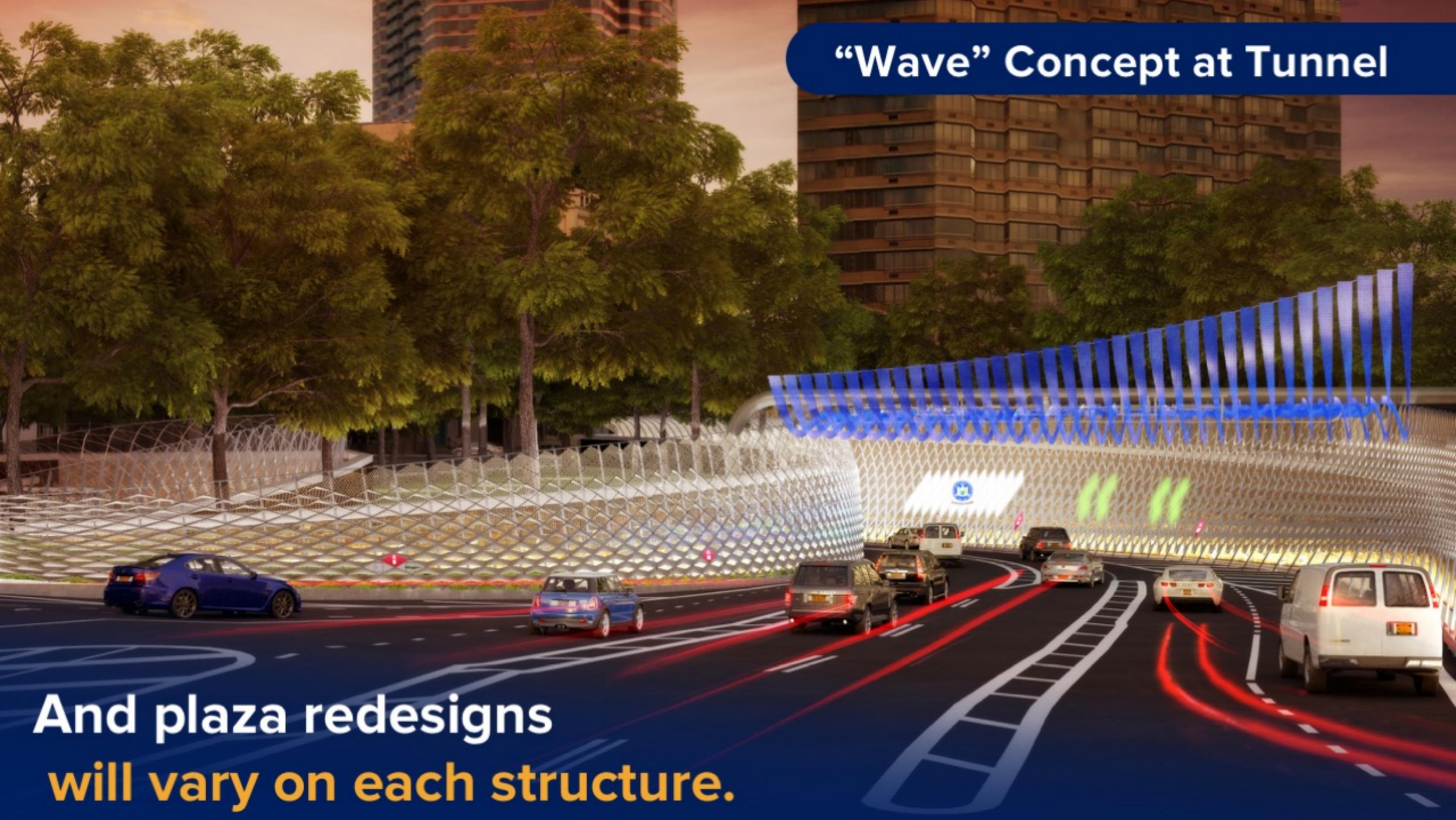
“Wave” Concept at Bridge

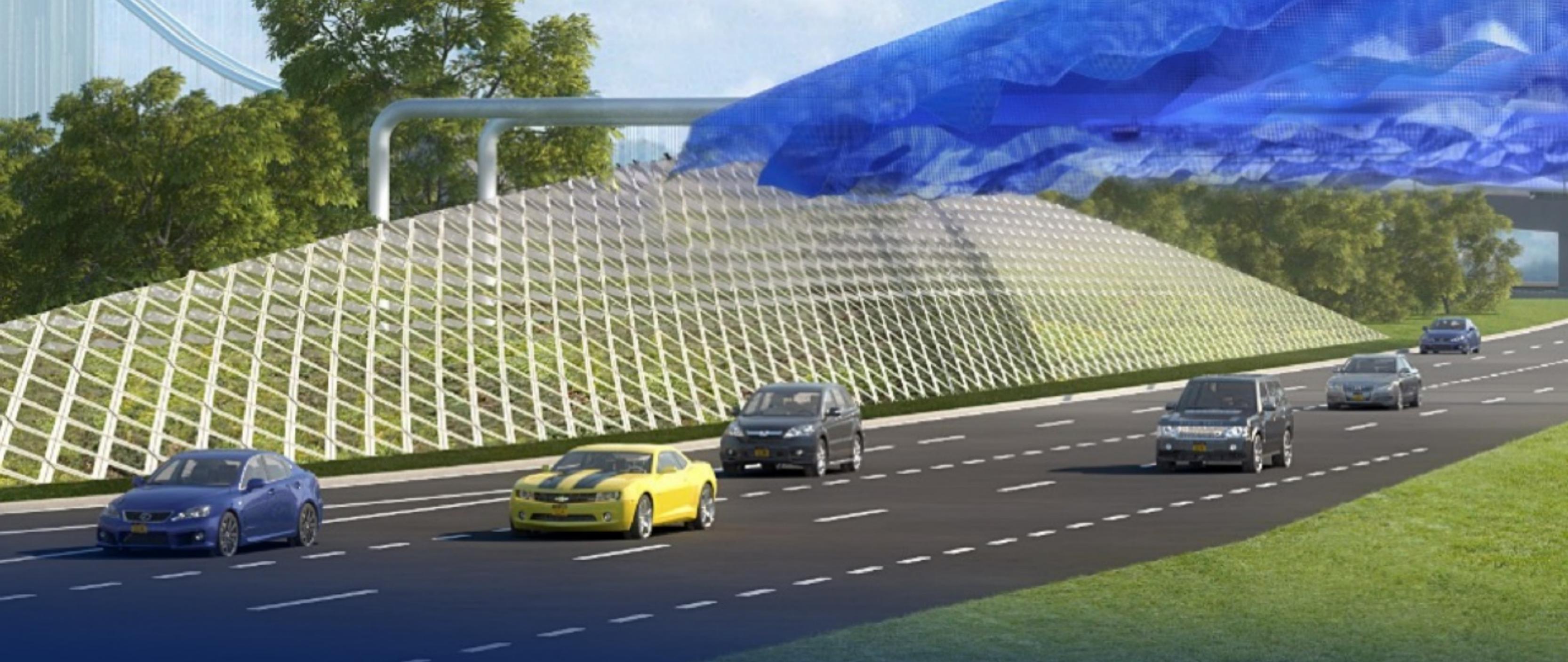


The “wave” will have a variety of shapes and sizes at different crossings...

“Wave” Concept at Tunnel

And plaza redesigns
will vary on each structure.





We are incorporating landscaping throughout, and some gantry coverings will include **veil walls** to protect and cover equipment and personnel.

A blue-tinted photograph of a city square. In the foreground, there is a large, circular fountain with water spraying upwards. The background shows a multi-story building with many windows and arched openings. The overall scene is dimly lit, suggesting an evening or night setting.

**New York is about
imagination,
creativity,
and the arts.**



**We are implementing the
world's most dynamic use of
digitally-controlled LED lighting...**



In addition to costing less to operate and lasting significantly longer, LED lights can be programmed into different colors and patterns.

South Korea - Busan Harbor Bridge



In recent years, governments across the globe have begun lighting single bridges or buildings with LEDs...



Buffalo/Canada – Peace Bridge



Ben Franklin Bridge - Philadelphia



Zakim Bunker Hill Memorial Bridge - Boston

The image shows the Tower Bridge in London at night. The bridge is illuminated with a combination of blue and yellow lights. The two main towers are brightly lit, and the suspension cables and walkways are also illuminated. The bridge spans the River Thames, and the city lights of London are visible in the background. The sky is dark, and the water of the river reflects the lights from the bridge and the city.

Tower Bridge – London

The City of London is in the midst of a project to illuminate a series of bridges over the Thames River.



**Applications of these lights have become
tourist attractions in and of themselves.**

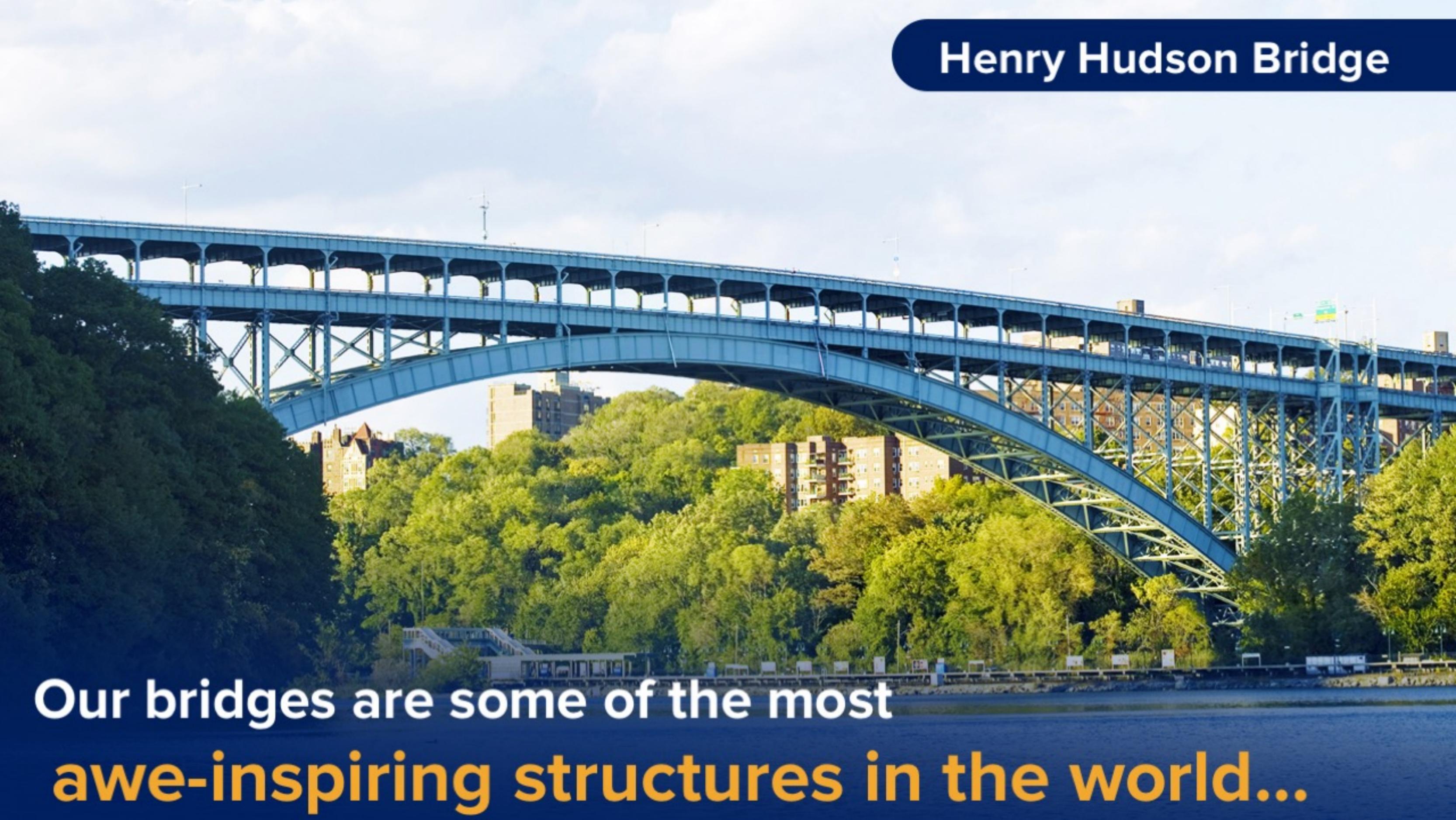


**San Francisco's lighting of the Bay Bridge
generates \$100 million in economic activity
from increased tourism every year.**

Photo: Lucas Saugen
Source: >20 independent analyses



But we are
New York...

A large, blue steel arch bridge spanning a wide river. The bridge has a prominent arch and multiple lanes of traffic. In the background, there are green trees and some buildings on a hillside. The sky is blue with some clouds.

Henry Hudson Bridge

Our bridges are some of the most
awe-inspiring structures in the world...



If we illuminate our crossings,
they can be breathtaking
and an international tourist attraction.





Our theme will be

“The City That Never Sleeps.”

A dusk to dawn lighting cycle.

The background features a variety of hand-drawn sketches and drawings on a textured, light-colored surface. The sketches include several colorful arrows pointing in different directions, some with decorative patterns. There are also circular diagrams, possibly representing wheels or gears, and other abstract shapes. The entire scene is overlaid with a semi-transparent blue gradient, which makes the text stand out prominently.

Imagine the possibilities...



**Spectacular, multi-color light shows
will be visible for miles.**



**We will add the Port Authority's
George Washington Bridge.**



**We could also coordinate with
the Empire State Building and
Freedom Tower – **New York icons.****



We need to do the work –

Let's do it right!



Let's do it the New York way!

Let's lead.



REIMAGINING
NEW YORK'S CROSSINGS



REIMAGINING
NEW YORK'S CROSSINGS