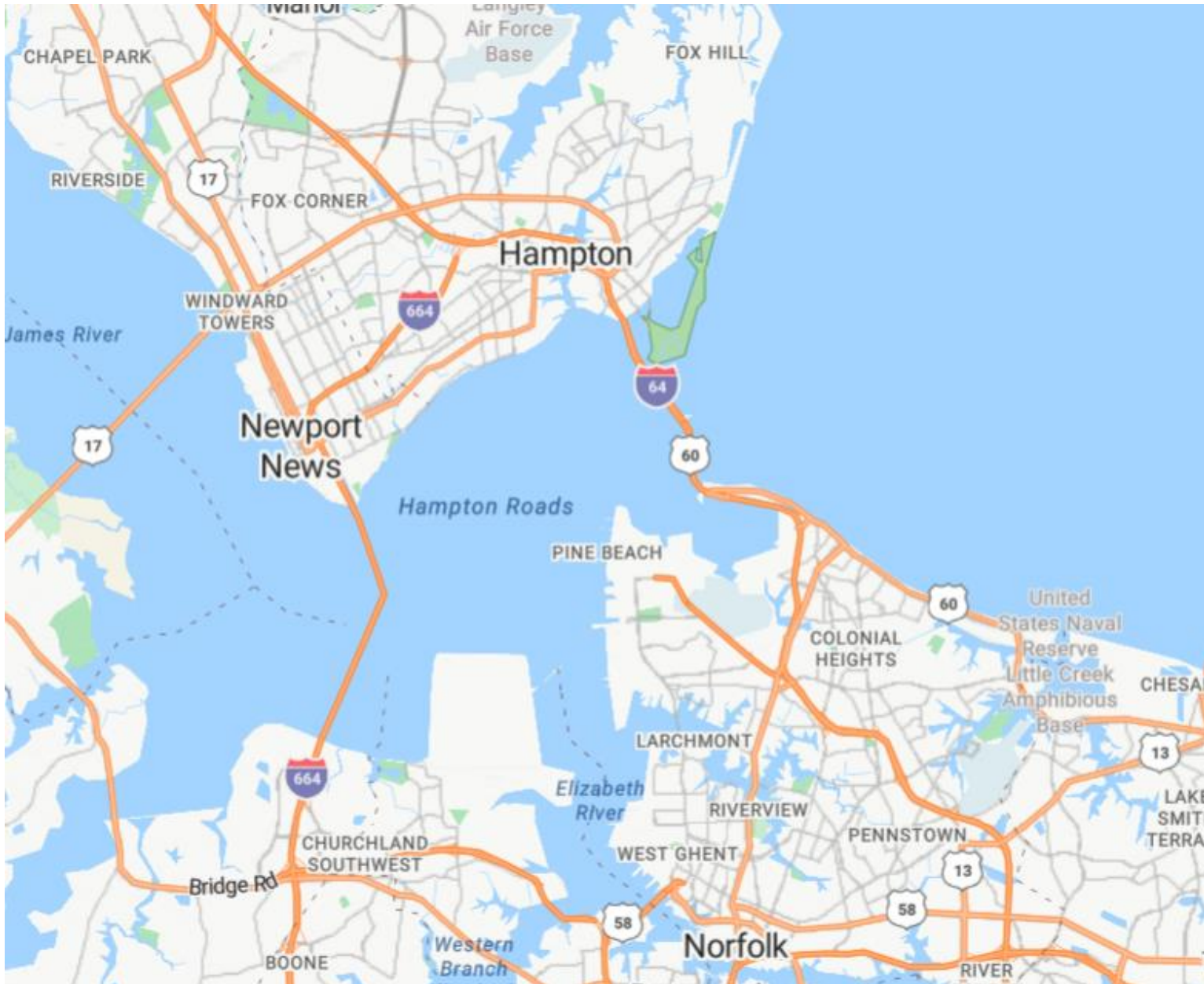




Hampton Roads Bridge-Tunnel Expansion Project

ACEC/PA Annual Leadership Meeting

Tuesday June 16, 2026



Regional Landscape

- Home to the largest Naval Installation in the world
- Most modern container port on eastern seaboard
- 1.8 million residents
- \$5.7+ billion in active construction by VDOT

Project Scope: More than Just a Tunnel



Increase Capacity | Ease Congestion | Enhance Travel Time Reliability



Project Overview



- Contract Award: April 2019
- Notice to Proceed: September 2020
- Cost: \$3.9 billion Design/Build Project
- Project Funding:
 - 92% - regional gas and sales tax
 - 8% - state and federal funds

Project Partners



PROJECT OWNER



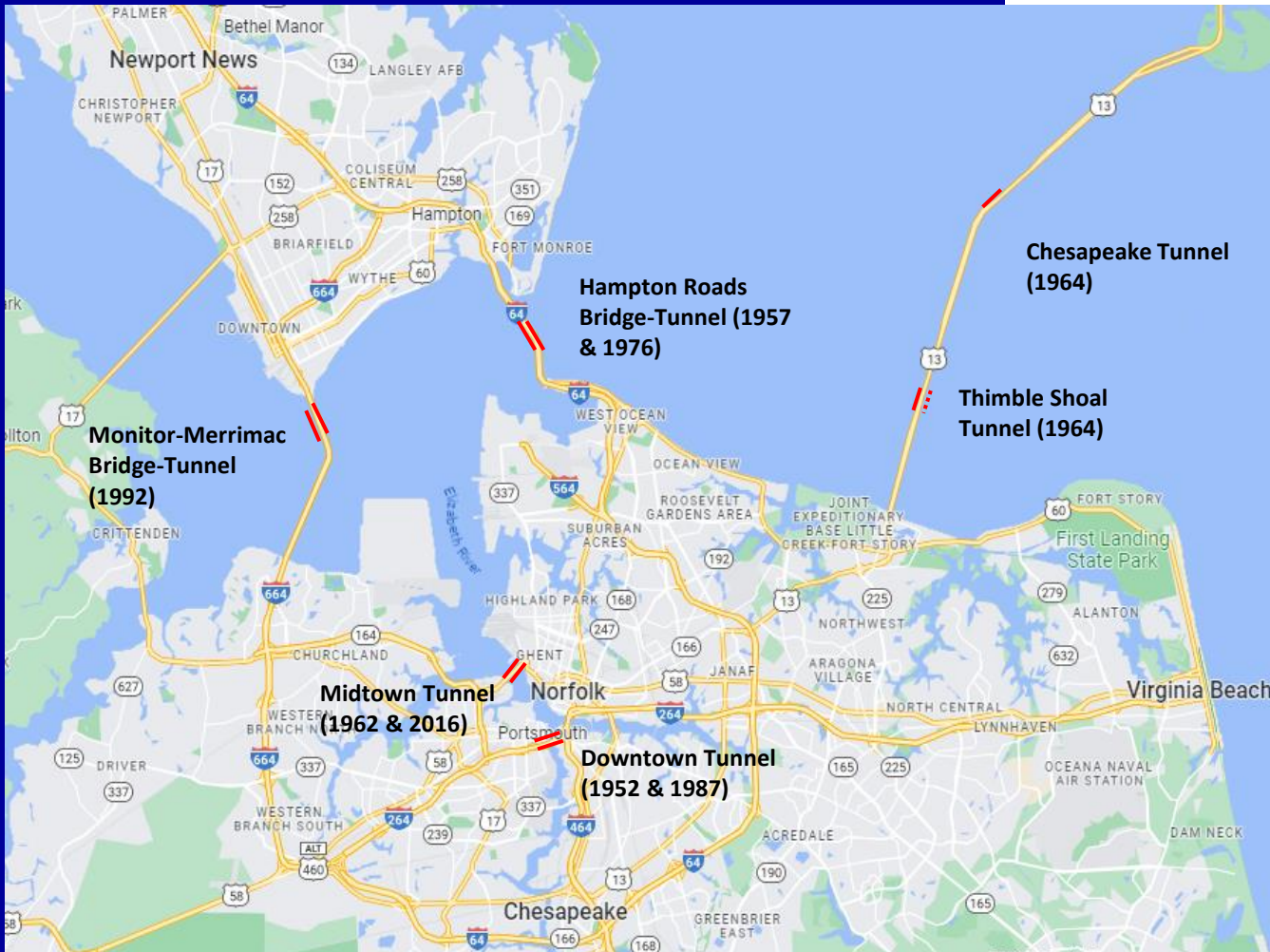
PROJECT FUNDING



PROJECT DESIGN/BUILDER



Tunneling in Hampton Roads



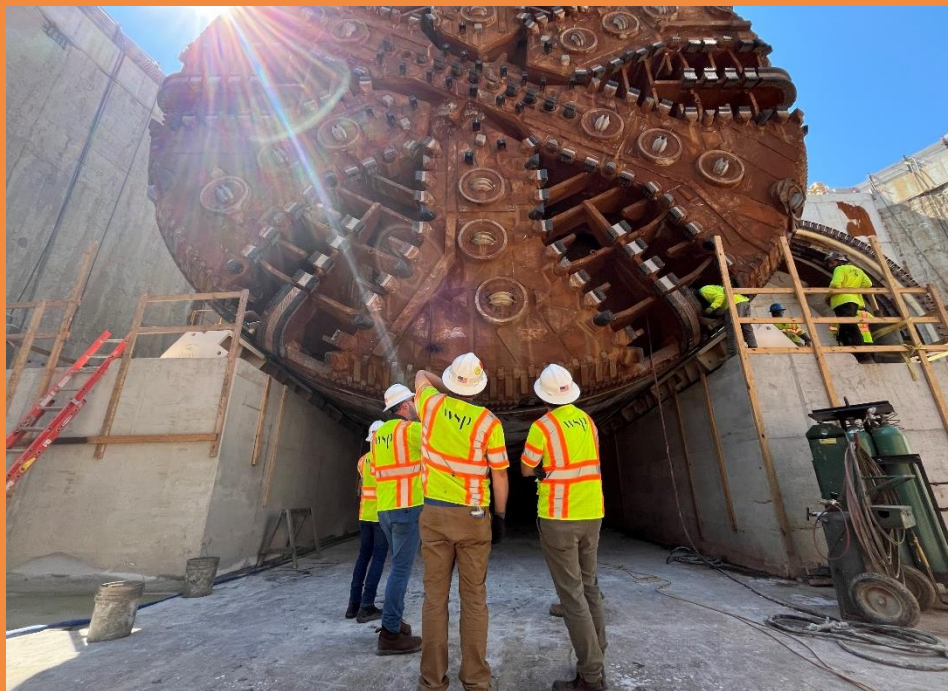
- Largest collection of immersed tube tunnels in the world
 - 10 immersed tube tunnels in the region
 - Oldest: Downtown Tunnel (1952)
 - Newest: Midtown Tunnel (2016)
- World's first tunnel between man-made islands
 - HRBT (1957)

Tunneling in Hampton Roads



- Immersed Tube Tunnel Challenges
 - Space for casting
 - Maritime traffic considerations
 - Subject to tides & weather

What Makes “Mary” Unique



■ First bored tunnel for VDOT

- 2nd largest TBM in North America
 - ✓ 46 FT diameter cutterhead
 - ✓ 430 FT long
 - ✓ 9.8 Million pounds
- 3rd bored vehicular tunnel in the US



■ No impacts to Navigable Waterways

- New tunnel will be 173 FT below water surface

■ Minimal Impacts to Traveling Public

- Segments shipped by barge
- Spoils hauled by water

■ Continuous Operation

- Not subject to adverse weather
- Able to continue 24/7 without interruption

What's in a Name?

- TBM was named “Mary” by local schoolchildren in honor of **Mary Jackson**
- Pioneering NASA engineer and Hampton Roads native
- NASA’s first black female engineer in 1958
- Famously memorialized in the 2016 movie *Hidden Figures*

Slurry Treatment Plant



- Manufactured in France
- Stands 3 stories tall
- Separates soil from slurry
- Spoils pumped to surface through 22-inch steel pipe
- Operates 24 hours a day
- Largest STP in North America

Katherine & Mary - Working Together Again



The legacy of Katherine Johnson

- First black female engineering student at West Virginia University
- Entered NASA's West Area Computing section in 1953
- Famously calculated John Glenn's re-entry calculations for Friendship 7 mission

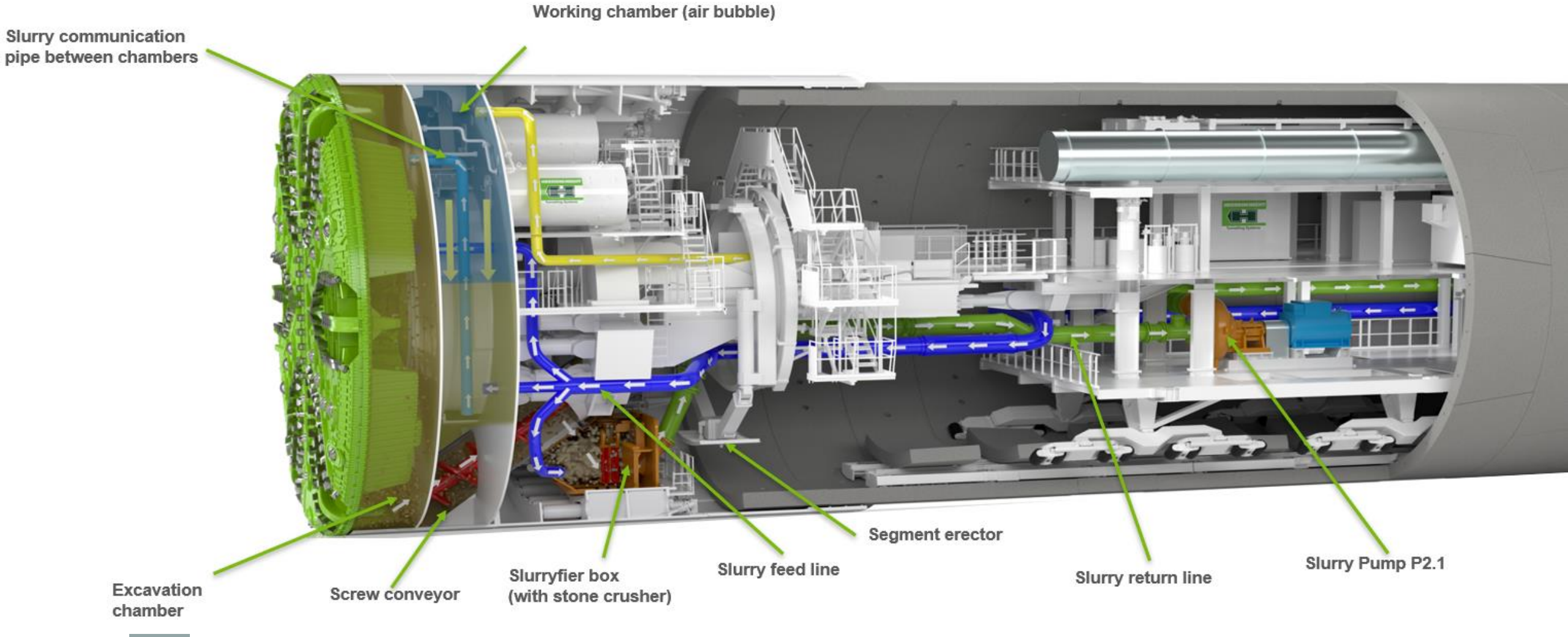


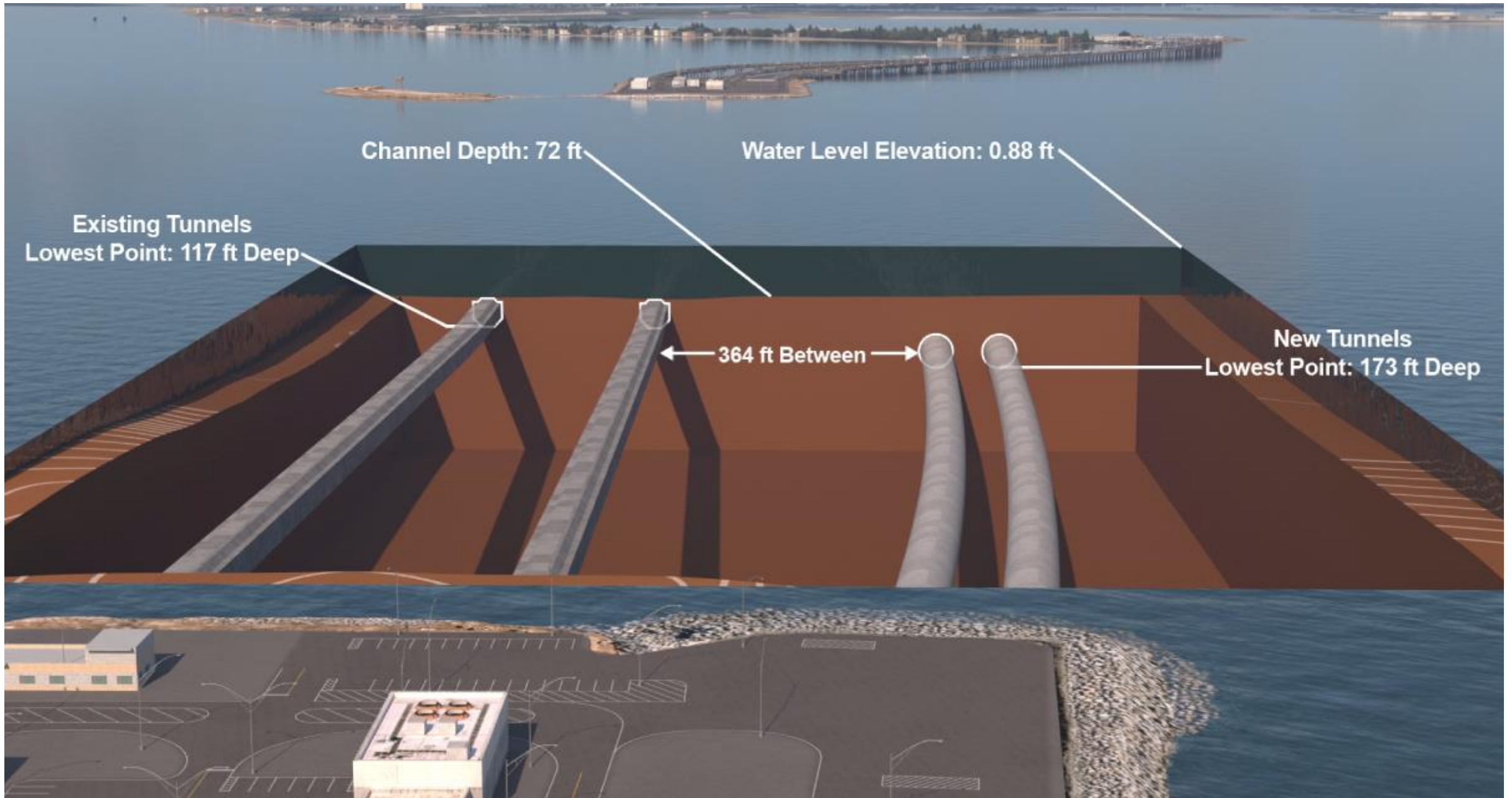
Tunnel Segments

- Fabricated in Cape Charles, VA
- 9 segments per ring
- 44.5' diameter ring, 18" thick
- Each segment weighs roughly 10 tons
- 2,388 rings were used to complete both tubes



Inside the TBM

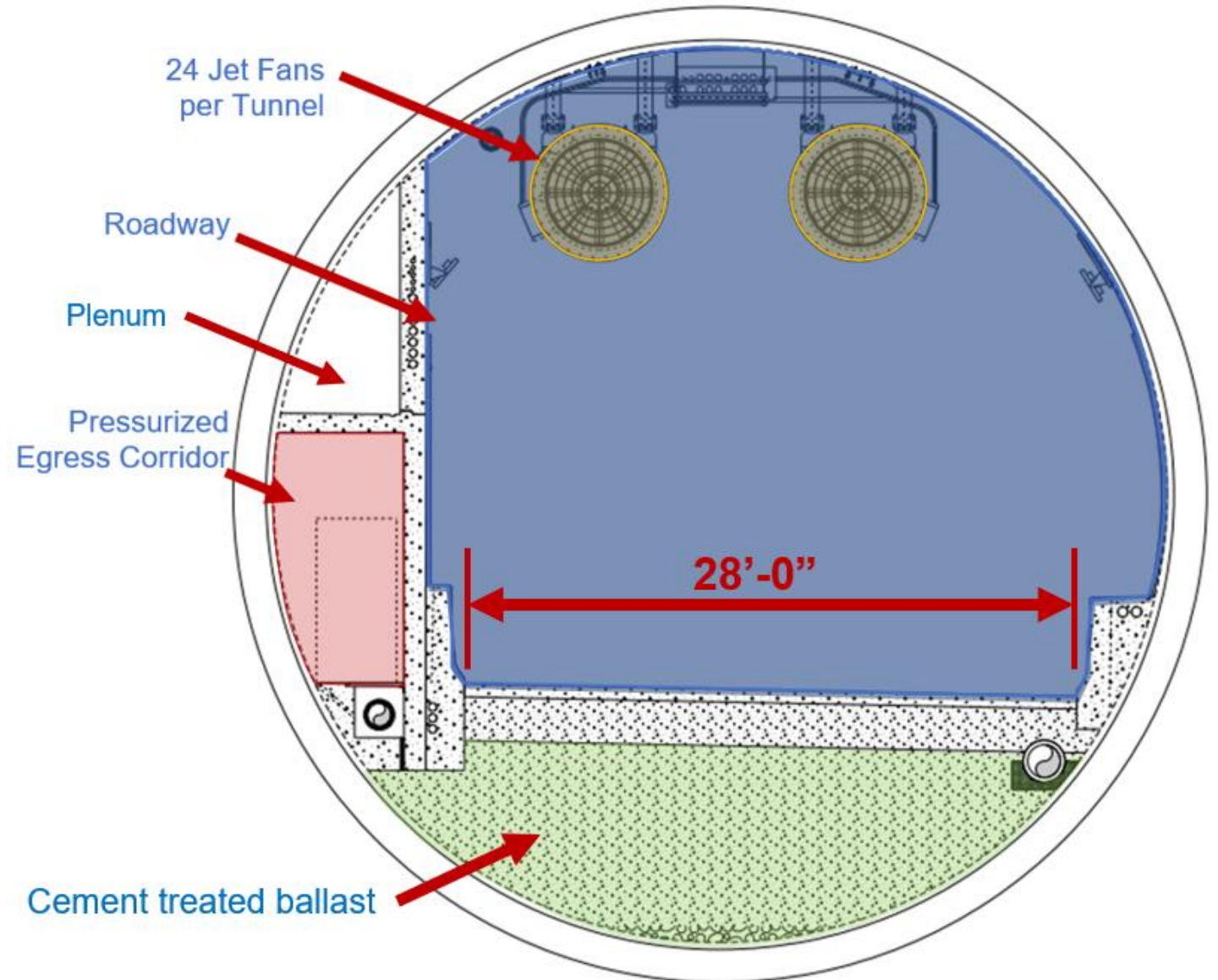




Features

- 16'-6" vertical clearance
- Egress corridor
- Jet fan ventilation
- Fire life safety systems
 - Standpipes
 - Deluge system
 - Linear heat detection
 - Mass notification system

Tunnel Interior



Island Expansion and Tunnel Approaches



- North Island Expansion (15 acres)
- South Island Expansion (3 acres)
- Tunnel Approach Structures
 - Slurry walls
 - Dewatering system
 - Ground improvements
 - 75 ft deep launching/receiving pits for TBM
 - Support for tunnel ventilation buildings



Buildings

- Five buildings for tunnel operations
- Garage and maintenance buildings
- Inspection booths
- Switchgear and generator buildings
- Renovation of existing building space



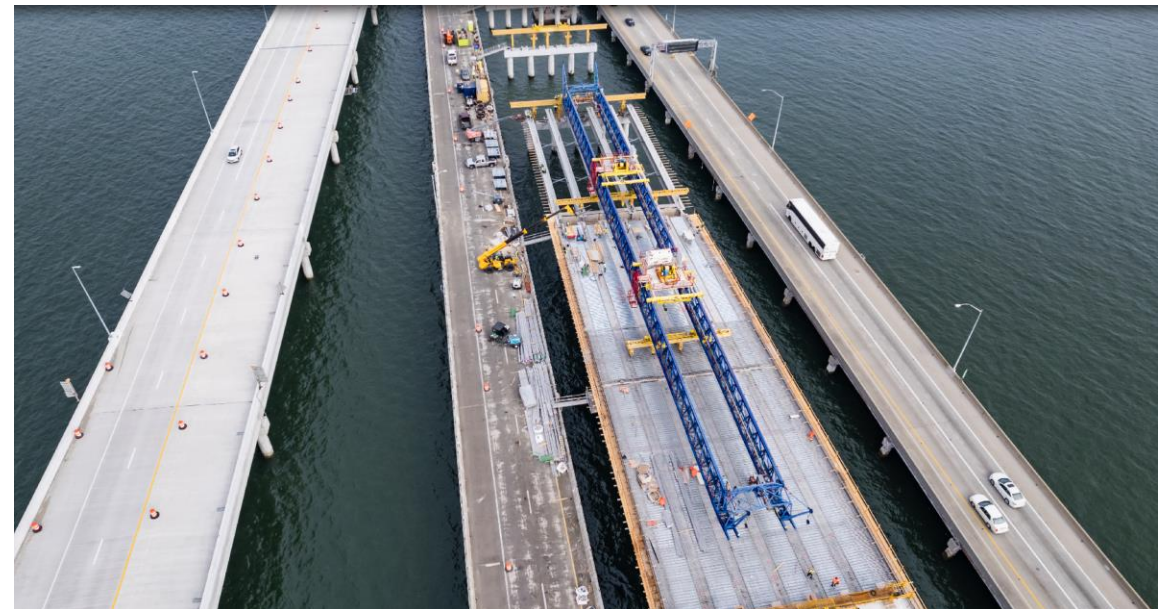
Marine Bridges

2.5 miles of new marine trestles

- 54” diam. Prestressed cylinder piles
- Precast concrete bent caps
- Virginia bents with tooth joints
- Prestressed Bulb Ts (PCBT-29s to PCTB-85s)
- CFRP strands in piles and beams
- Stainless reinforcing in caps and deck

3 temporary marine bridges

- Steel piles and caps
- Precast Northeast Extreme TEE (NEXT) beams
- Variable depth asphalt overlay



Landside Bridges

Phased replacement of overpass bridge at Mallory St interchange

Widening and rehabilitation of 20 other interstate bridges:

- Willoughby Bay bridges (1 mile)
- Bay Ave bridges (1800')
- Oastes Creek bridges (1200')
- 14 smaller bridges



Project Progress



North Marine Trestles

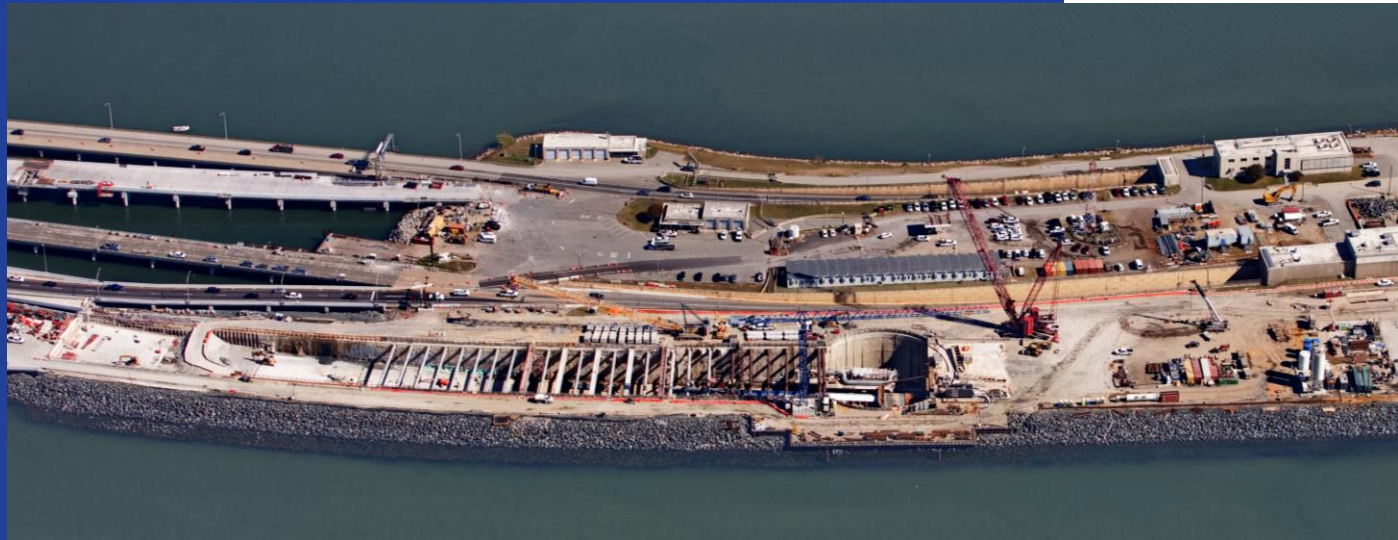
- Construction began in 2021
 - First phase opened May 3, 2024
- **First new trestle at the HRBT in more than 50 years**



Summer 2021



Fall 2024



North Island Progress

- 15-acre island expansion completed
- Slurry walls installed
- Receiving pit excavated to depth of -65 FT
- Concrete base slab poured
- Approach excavation underway

North Island Progress



May 2026

VDOT's Largest-Ever Continuous Concrete Placement



North Island Receiving Pit Base Slab

- November 17th, 2023
- Placement time: 31 hours
- Pour volume: 5,480 CYD
 - 176 cubic yards per hour
 - Fully loaded concrete truck every 3 minutes

South Island Progress

- South Island expansion and tunnel approach structure ongoing
- Building construction

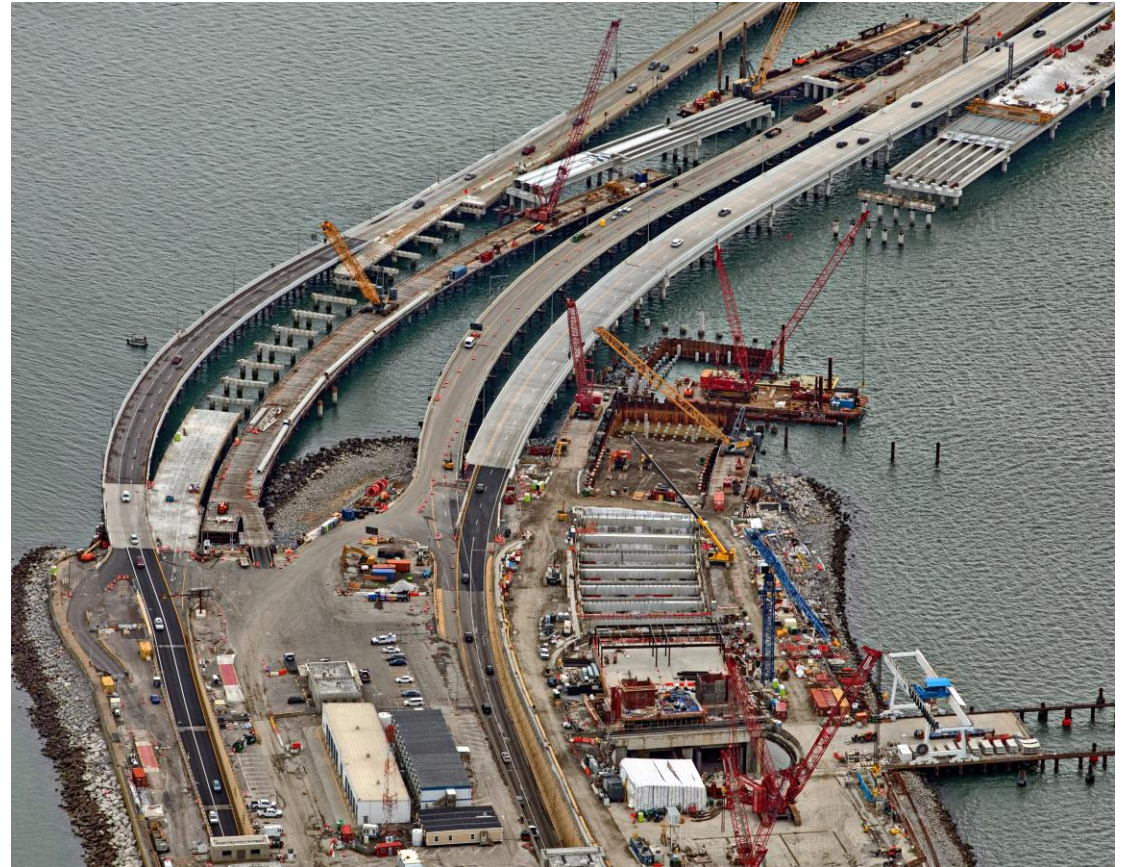


South Island



South Marine Trestles

- Construction began in 2021
- First phase opened November 2025



Landside South Progress



- Interstate widening & bridge rehabilitation
- Stormwater control improvements
- Sound walls under construction



Bridge and Surface Street Rehabilitation



- **Patrol Road**
- **West Evans Street**
- **1st View Street**
- **West Bay Ave**
- **Mason Creek Road**
- **13th View Overpass**



Tunnel Work



- Mining commenced April 23, 2023
- Planned 1-year evolution

Tunnel Work



- Twin Tunnels

- 7,941 FT
- 1,191 rings

Virginia's First Bored Tunnel

➤ April 17, 2024



Tunnel Work

Rotation of Shield

- Heaviest (2,350 Tons) & Largest (46 FT) ever rotated
- Shatters previous record (2023) of 1,542 Tons and 39 FT

Tunnel Work



Second Tunnel

- Completed September 24, 2025
- 48-week evolution



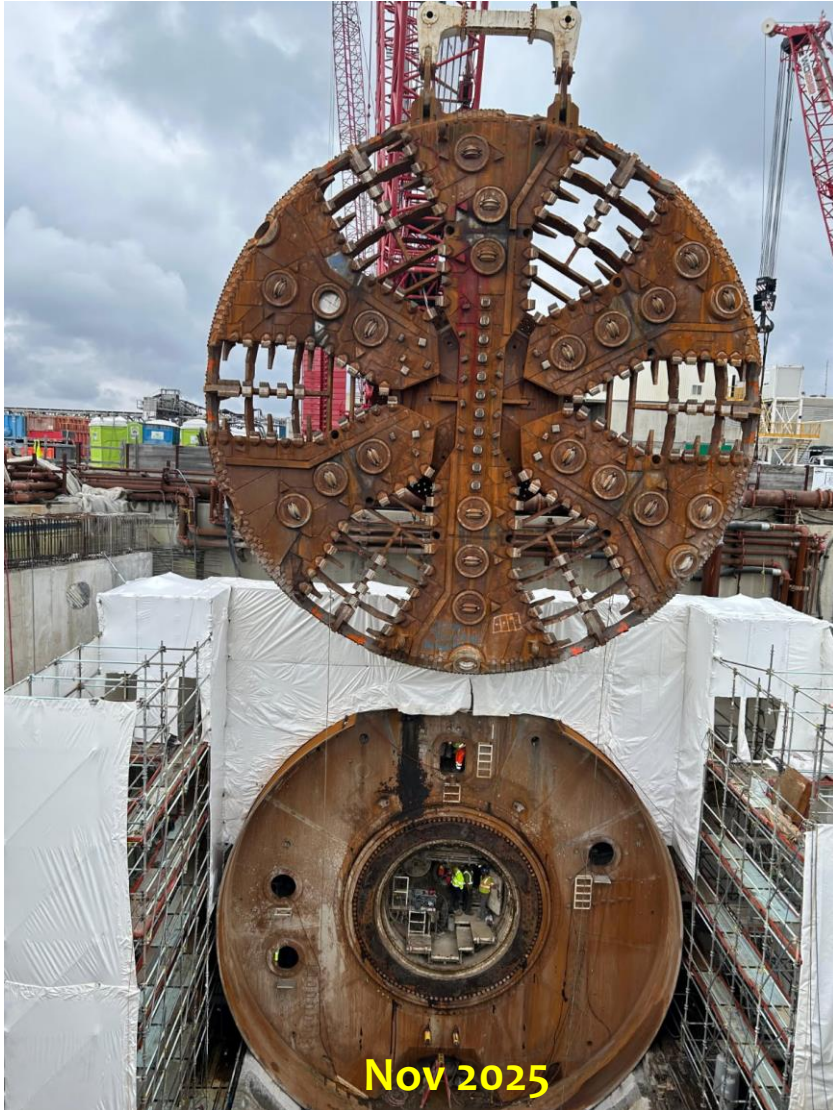


Total Distance Mined: 3.05 miles
Mining duration: 99 weeks

Segments Placed: 21,465
Rings Erected: 2,385

Best Day: 17 Rings, 113.2 FT
Best Week: 66 Rings, 440 FT

Farewell to Mary



Tunnel Interior



Tunnel Interior



Project Facts & Finds

An aerial photograph showing a large-scale bridge construction project over a body of water. The bridge spans a wide waterway and curves towards a residential area in the background. The bridge deck is under construction, with visible cranes and construction equipment. A large construction site is located on the left side of the bridge, featuring various structures and materials. The water is dark blue, and the sky is clear. The text "Project Facts & Finds" is overlaid on the image in a large, white, sans-serif font, with orange horizontal lines above and below it.



Environmental Challenges

- Endangered/Protected Bird Species
 - ❖ *Migration and Nesting Season*
- Marine Noise Impacts
- Protected Species within Project Limits



Historic Artifacts

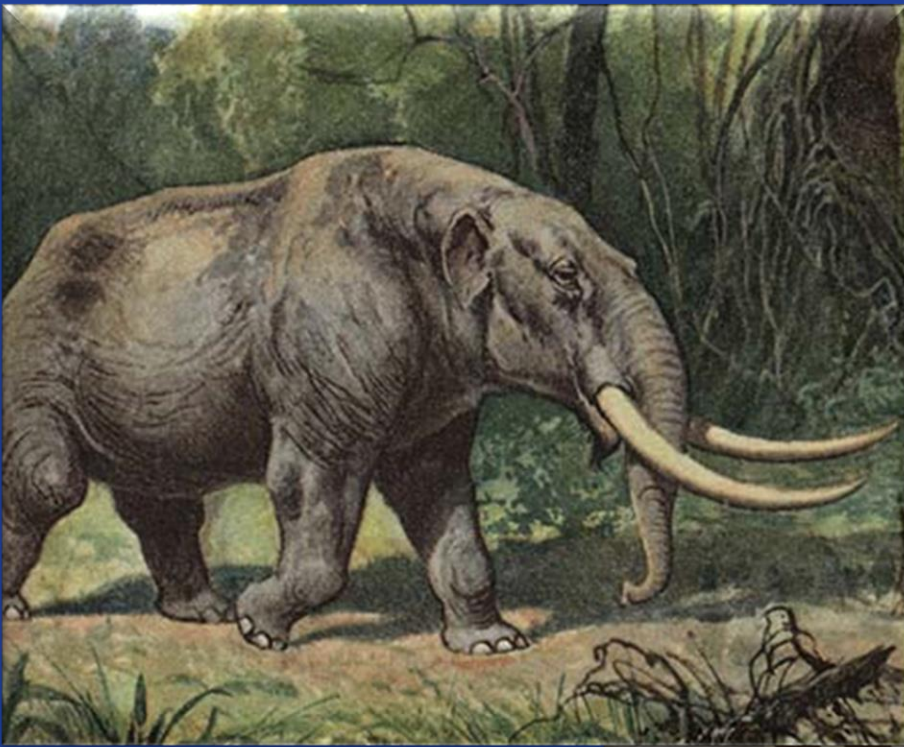


From the Battle of Hampton Roads between the USS Monitor and the CSS Virginia (formerly the USS Merrimack) in 1862.



Timber from ship delivering granite to Fort Monroe. Circa 1823.

PreHistoric Artifacts



- Mastodon
 - ❖ Approximately 50,000 years old
 - ❖ Fossils include partial
 - Tooth
 - Rib
 - Limb
 - Vertebra

Virginia & HRBT: Leading the Way



- ✓ Largest Collection of Immersed Tube Tunnels in the World
- ✓ 1957 → HRBT First Immersed Tube Tunnel Constructed between two Artificial Islands
- ✓ \$3.9B → VDOT's largest single construction contract
- ✓ 5,480 Cubic Yards – VDOT's largest continuous concrete pour
- ✓ Estimated \$4.6B economic impact during construction
- ✓ First Bored Tunnel for Vehicular traffic in Virginia History
- ✓ 2nd largest Tunnel Boring Machine in North American history
- ✓ 46 FT → Largest Diameter Variable Density TBM in the World
- ✓ 2,500 Tons → Largest TBM ever rotated using nitrogen sled technology

HRBT EXPANSION Magazine



Summer 2022



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Powered 1.8c Flowcode to Get Power to the TBM

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A Month Under the "SAC VOTAC" Artificial Reef Program



Ongoing Outreach

- Social Media
- Local Presentations
- Project Website
- HRBT Monthly Newsletter
- HRBT Tunnel Talk Podcast

“A Boring Podcast”

- HRBT Magazine
- Community Engagement Events
- Weekly Lane Closure Report





CONNECT

PROJECT PROGRESS, UPDATES, & MORE!



757.619.4163



www.HRBTExpansion.org



HRBTinfo@VDOT.virginia.gov



@HRBTExpansion



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