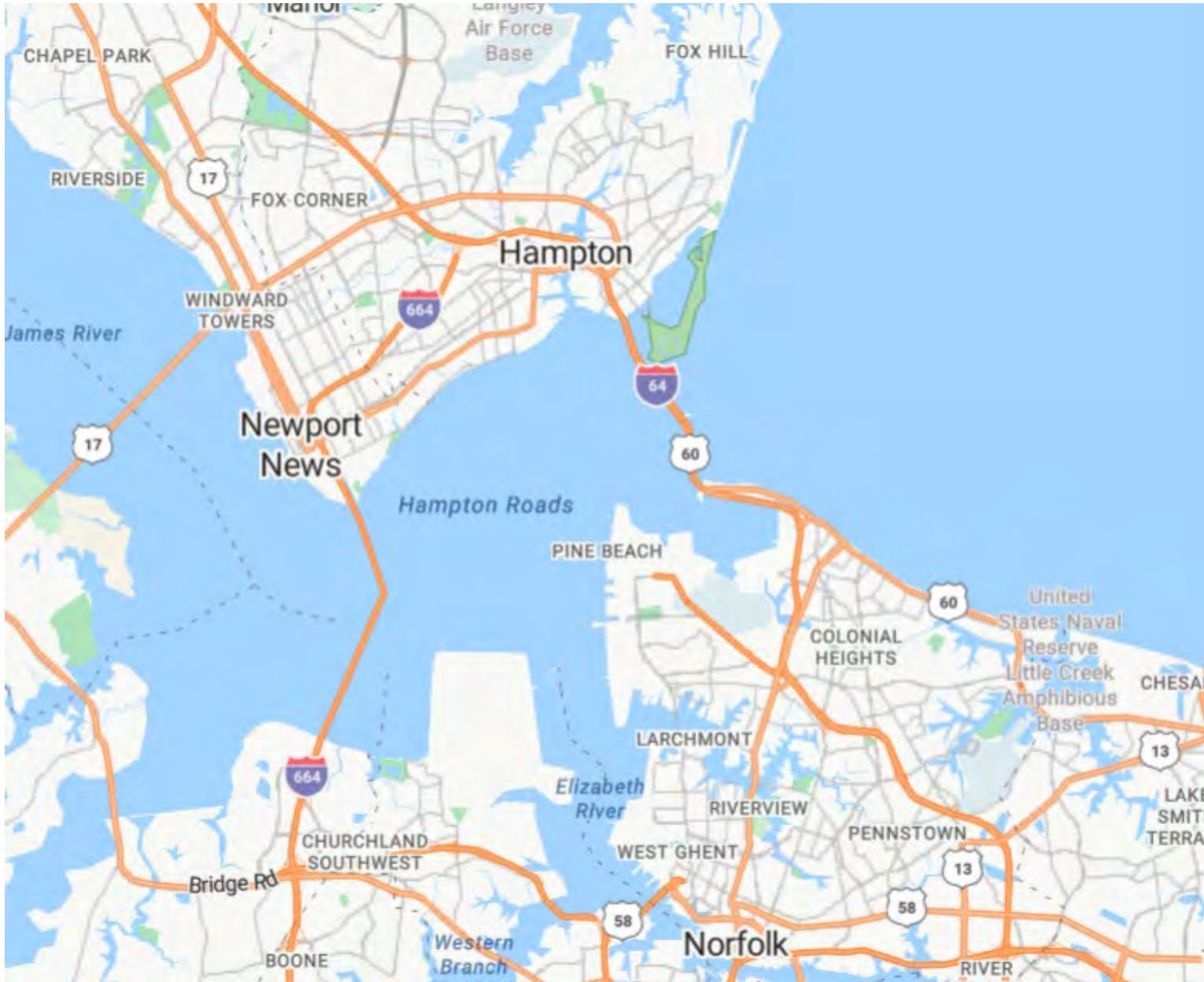




# Hampton Roads Bridge-Tunnel Expansion Project

Military Officer Association of America  
Project Update  
Friday, February 16, 2024



## Regional Landscape

- Home to the largest Naval Installation in the world
- Largest container port on the Eastern seaboard
- 1.7 million residents

# 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



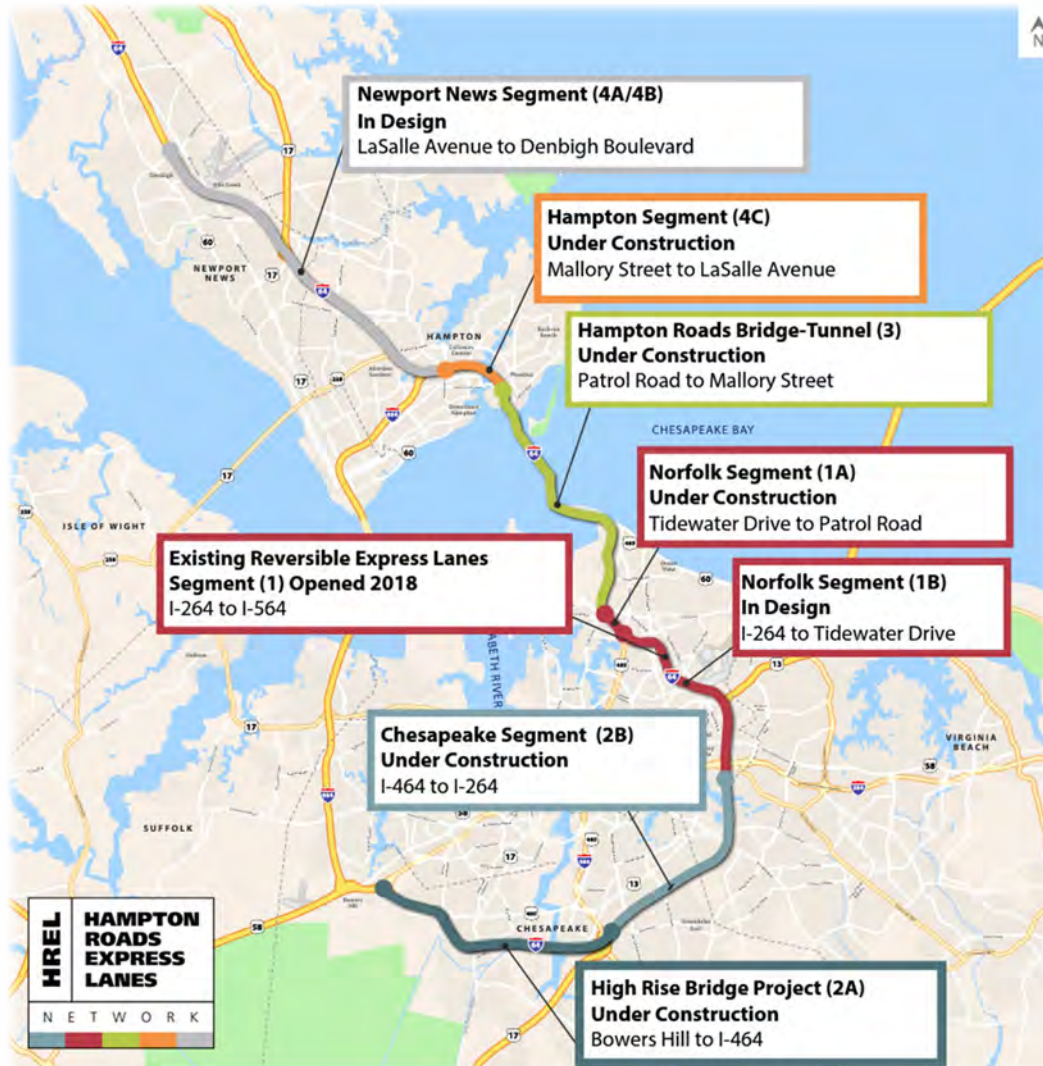


# Concept Video

[HRBTExpansion.org](http://HRBTExpansion.org)

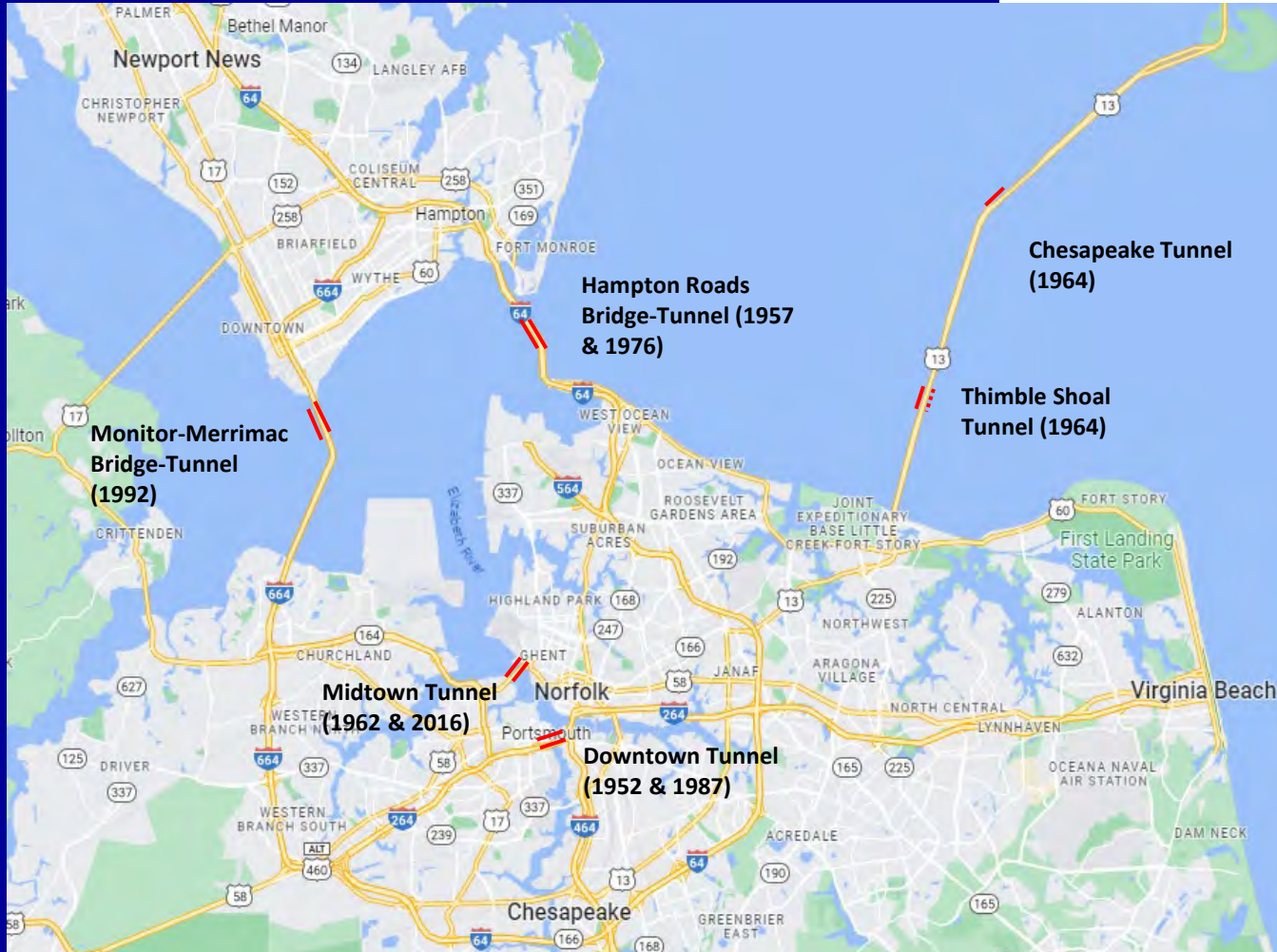


# Hampton Roads Express Lanes Network (HREL)



- 45-Mile Continuous Network
- I-64 from Denbigh Boulevard to I-664 (Bowers Hill)
- High Occupancy Toll (HOT-2)
- Dynamic Tolling System

# 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)

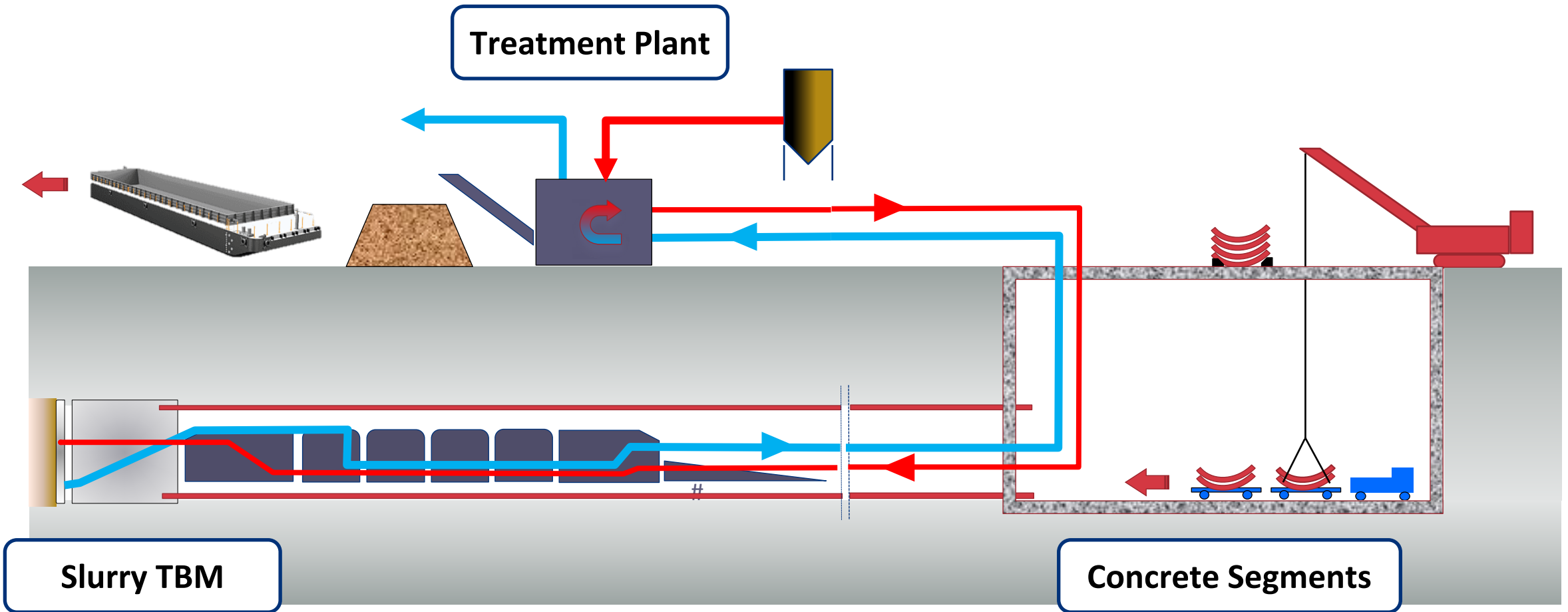


# Tunneling in Hampton Roads



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

# Tunnel Boring Machine & Slurry Treatment Plant



# “Mary” the TBM



- “Mary” the Tunnel Boring Machine
- Colors on TBM cutterhead represent Hampton Roads regional flag
- Length: 430 feet
- Weight: 4,700 tons (9.8 million pounds)
- Diameter: 46 feet
  - 2nd largest TBM in North America



# 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*

# What Makes HRBT Unique

- First bored tunnel for VDOT
  - 2<sup>nd</sup> largest TBM in North America
  - 4<sup>th</sup> 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

# 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 HRBT Expansion Project team honors the legacy of **Katherine Johnson**, lending her namesake to our Slurry Treatment Plant (STP).

- 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

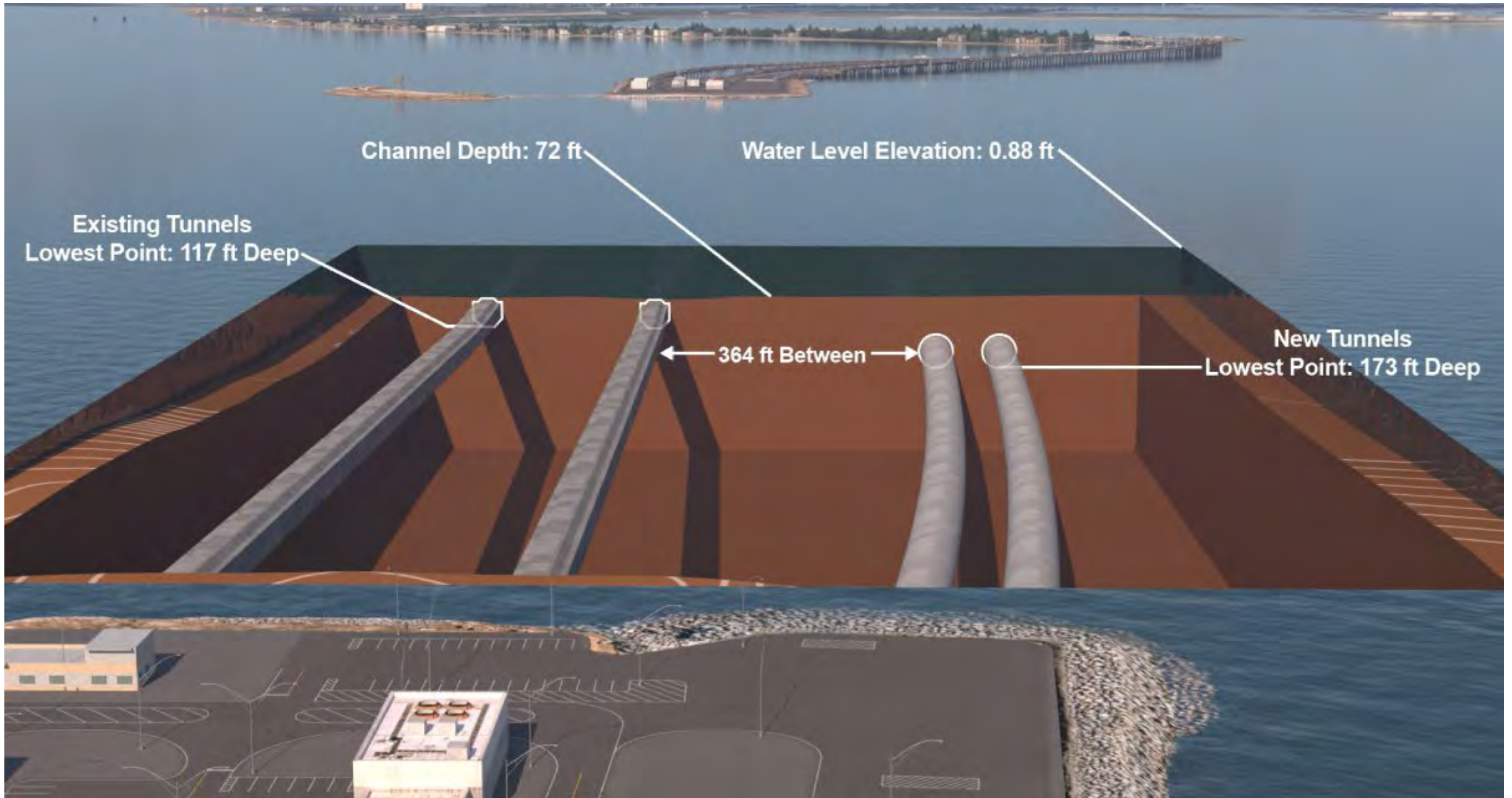


# Tunnel Segments

- Fabricated in Cape Charles, VA
- 9 segments = 1 ring
- Average Dimensions = 16' x 6'-6" x 18"
- Each segment weighs roughly 10 tons
- 2,388 rings will be needed to complete both tubes





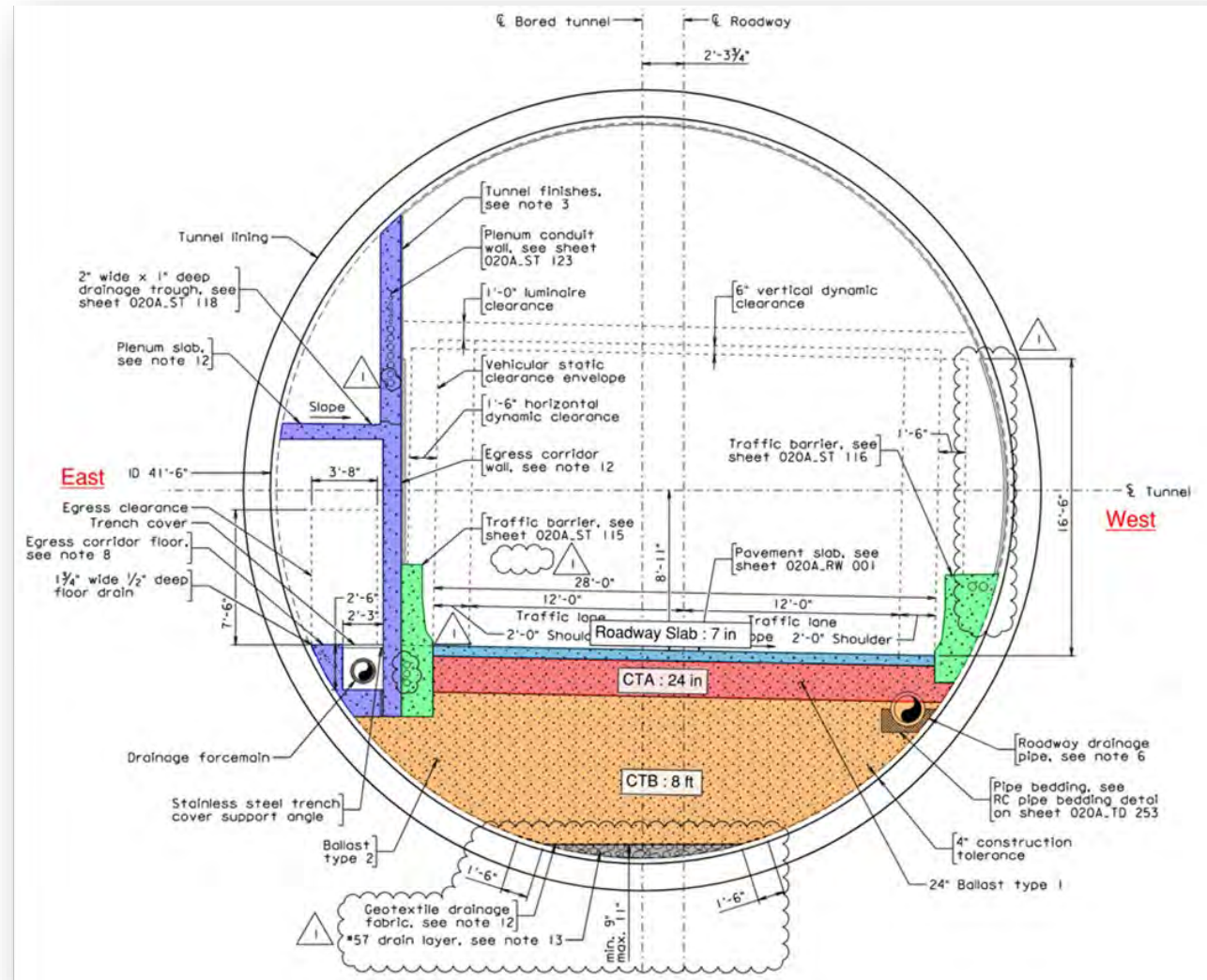


## Features

- 16'-6" Clearance
- Egress corridor
- Jet fan ventilation
- More than 1M square feet of tile
- 15,000 truckloads of base material

# Tunnel Interior Structures

### Typical Cross Section



# Project Progress





# North Marine Trestles





# North Marine Trestle Progress

- Construction began in 2021
- Installed to date:
  - 352 54” precast piles
  - 96 precast caps
  - 251 girders
  - 33 concrete deck pours
- Traffic shift to new eastbound trestle Spring 2024



Summer 2021

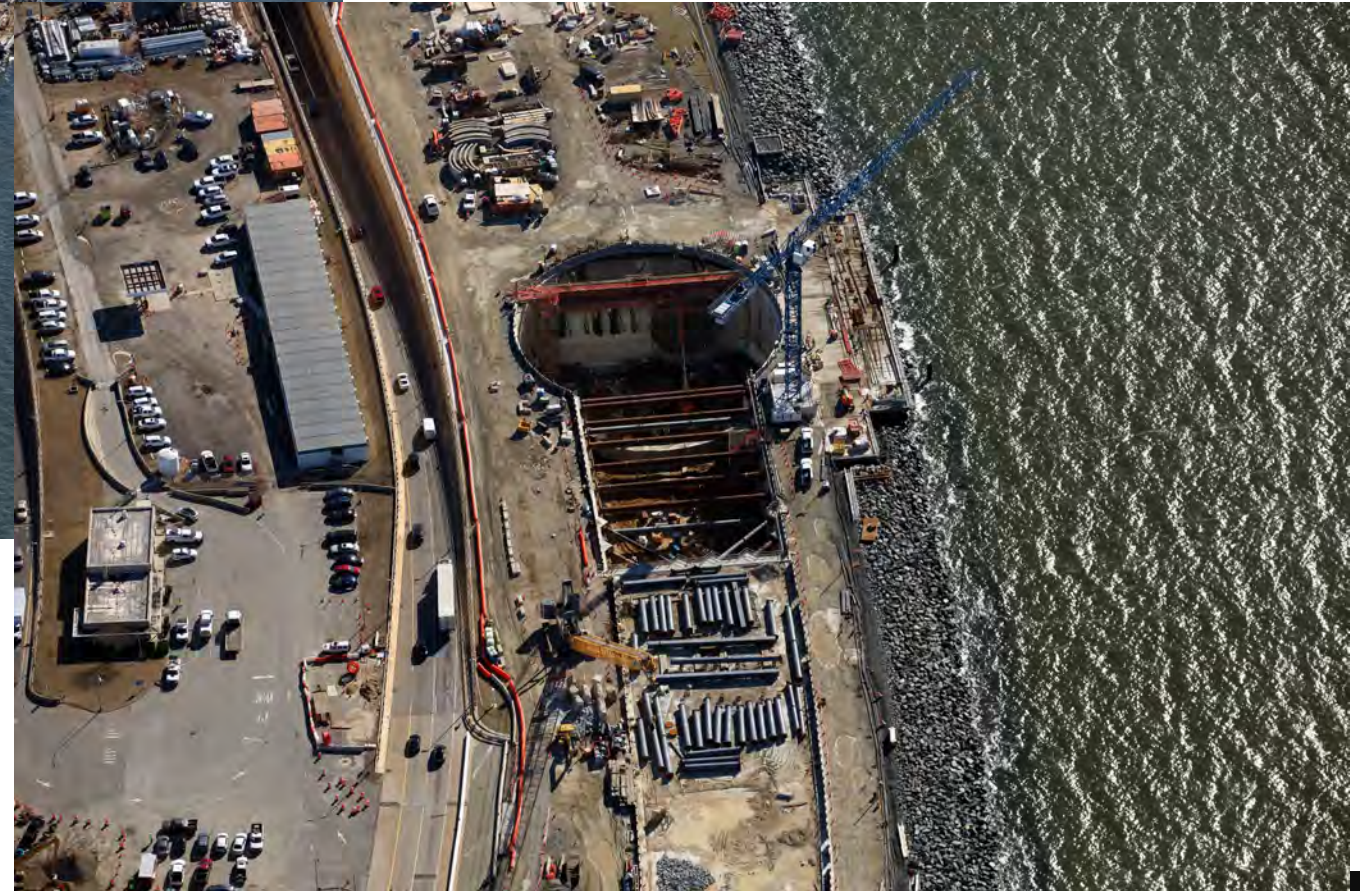
# North Island Progress

- 15-acre island expansion completed
- Slurry walls installed
- Receiving pit excavated to depth of -65 FT



Spring 2023

# North Island Progress





# VDOT's Largest-Ever Continuous Concrete Placement



## North Island Receiving Pit Base Slab

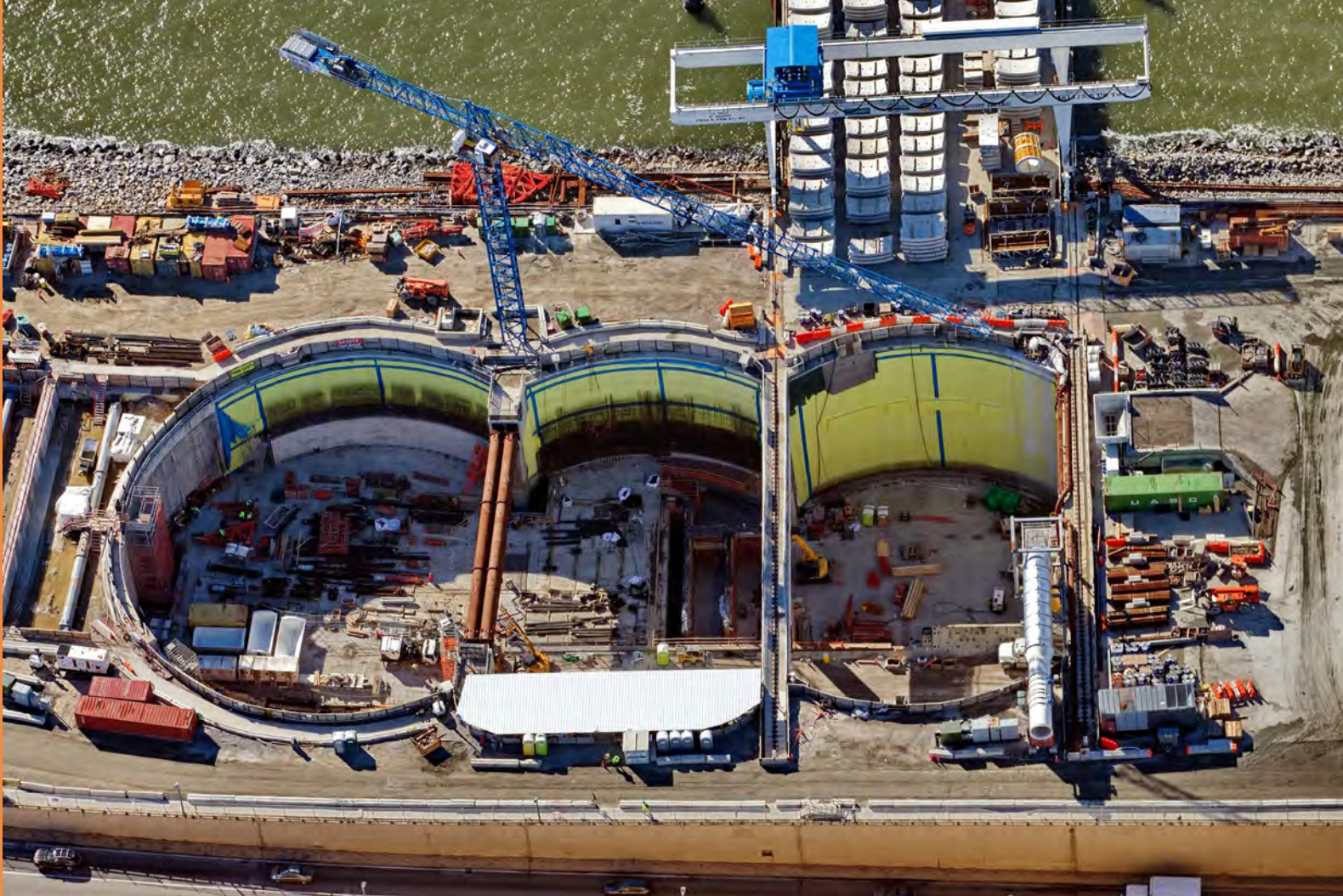
- November 17<sup>th</sup>, 2023
- 5,480 CYD
- 31 hours

***176 CYD/HR for  
more than 30 Hours***

# South Island



# South Island Progress



- Support of mining
- Permanent approach structure waterproofing, rebar, & concrete
- South Island expansion has started

# South Marine Trestles



# South Trestle Progress



# South Trestle Progress



- Construction began in 2021
- Installed to date:
  - 365 54” precast piles
  - 135 precast caps
  - 412 girders



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

## Landside South Progress



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# Bridge and Surface Street Rehabilitation

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- **Patrol Road**
- **West Evans Street**
- **1st View Street**
- **West Bay Ave**
- **Mason Creek Road**
- **13th View Overpass**
- **4th View**





# Tunnel Work



- Mining started in April 2023
- 5,052 feet mined
- 902 rings
- 1-year evolution
- Expected breakthrough in Spring 2024

# Tunnel Work



## Best Day

- 13 Rings
- 83.9 FT

## Best Week

- 50 rings
- 329.9 FT

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# INTERESTING FACTS ABOUT THIS PROJECT

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# Environmental Challenges

- Endangered/Protected Bird Species
  - ❖ *Migration and Nesting Season*
- Marine Noise Impacts
- Protected Species w/in Project Limits
- Recovery of Historical Artifacts
- A Plethora of Permits





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# Environmental Challenges

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- Endangered/Protected Bird Species
  - ❖ *Migration and Nesting Season*
- Marine Noise Impacts
- Protected Species within Project Limits
- Recovery of Historical Artifacts
- A Plethora of Permits

# Partnering Efforts



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



*Recovered ship timbers at the VDOT storage facility.*

# HRBT EXPANSION Magazine



Summer 2022



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- 12 A Home Under the Sea: VDOT's 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





**Q&A**





# CONNECT

PROJECT PROGRESS, UPDATES, & MORE!



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