

HRBT EXPANSION Magazine

Summer 2021



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Message from Jim Utterback

April 2021 marked the two-year anniversary of contract award on the project, and we've seen a lot of progress so far. As we head into summer 2021, the team is moving full steam ahead on construction activities throughout the entire 10-mile project corridor in order to complete the \$3.8 million project over the next four years.

Our latest milestone represents a key accomplishment for the project team. The completion of the Tunnel Boring Machine (TBM) is the culmination of years of preparation and design efforts. We were proud to unveil "Mary the TBM" in May 2021 whose paint scheme reflects the regional cooperation that made this project possible. We're excited for Mary to arrive on the South Island this fall and to start tunnel activities in 2022.

This summer, we anticipate increased traffic as millions of visitors travel to and through Hampton Roads. During peak season, more than 100,000 vehicles drive through the HRBT every day and with increased construction activities, we need everyone's patience and cooperation as we work to improve capacity for the future. Please stay alert and drive safely through the work zone. As always, safety is our top priority.

James S. Utterback
HRBT Expansion Project Director

PROJECT OVERVIEW

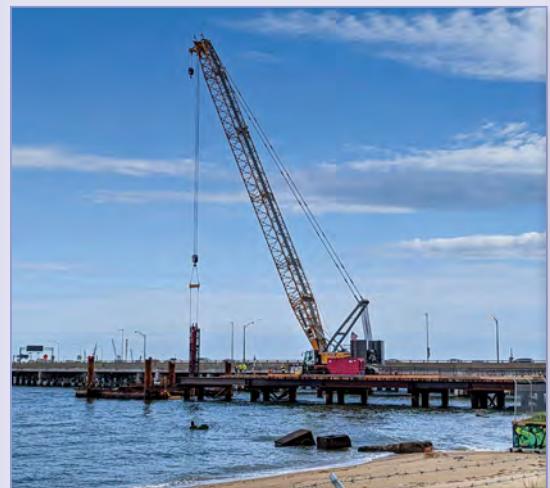
The HRBT Expansion Project will ease congestion along one of the region's most congested corridors with the widening of nearly 10 miles of interstate, including new twin two-lane tunnels and new or widened bridges. This long-anticipated contract is the largest infrastructure project in the state's history.



MARINE SAFETY NOTICE

Construction on the Water

The HRBT Expansion Project is underway with marine construction activities throughout the project waterways. Boaters should be aware of changes in the waterways including new bridge piles, work trestles and the expanded North Island. Boaters should also be mindful of the barges, tugboats, crew boats and equipment working on the water.





Summer traffic at the HRBT peaks around 100,000 vehicles per day. Motorists should plan their daily commutes and leisure travel ahead of time especially during the summer months.



CONSTRUCTION UPDATE

Construction Along Project Corridor

Active Summer Construction Season Ahead

It will be a busy summer for the HRBT Expansion Team. Construction is underway in all areas of the project corridor, while Virginia prepares for increased tourist traffic to Hampton Roads.

On the HRBT South Island, crews are making progress constructing a launch pit for the Tunnel Boring Machine (TBM). They are also building a receiving quay, or loading dock, for the TBM and tunnel materials. On the HRBT North Island, work continues on the expansion process. Crews are more than halfway through building the outer layer of the island's new footprint and have started filling the perimeter with sand. The footprint of the island expansion will cover about 16 acres and will serve as a turnaround point for Mary the TBM and home for new, twin tunnels.

Pile driving is in progress throughout the project corridor to accommodate the many work trestles and overpass

structures along I-64, including the Willoughby Bay Bridge, Mason Creek Bridge and Oastes Creek Bridge. The pile forms the support foundation of the bridges.

Crews have been shifting traffic and installing barriers along I-64 in order to create a safe median work zone for the roadway widening that will occur along the entire project limits. All of this work has to happen simultaneously to efficiently deliver the project by late 2025.

Summer traffic at the HRBT peaks around 100,000 vehicles per day. This year the seasonal increase coincides with increased construction activities on the project. The project team is asking motorists to remain especially alert behind the wheel, as crews work to improve capacity for the future. Motorists should also plan their daily commutes and leisure travel ahead of time, especially during the summer months.

- 1** A crane lowers a steel rebar cage that reinforces the wall of TBM launch pit.
- 2** Crews work on roadway widening in the median of I-64 in Norfolk.
- 3** A temporary work trestle is used to move equipment over shallow waters for the construction of the new bridge between the South Island and the Norfolk shoreline.
- 4** Construction crews prepare I-64 for widening in Hampton.
- 5** A temporary work trestle assists with the widening of Mason Creek Bridge in Norfolk.
- 6** The sun sets over the piles that form the foundation of the quay, or dock where the tunnel boring machine will be received on the South Island.

IT'S BIG. IT'S BOLD. IT HAS A NAME.



“Mary the TBM” Selected as the Name for TBM by Hampton Roads Students

The Tunnel Boring Machine (TBM) will bear the name “Mary,” in honor of the late NASA engineer Mary Jackson. The submission from a team of middle school students at Saint Gregory the Great Catholic School in Virginia Beach took first place in the TBM Naming Contest. The HRBT Expansion team announced the winner in a virtual ceremony in late February.

Last fall, the project team invited middle schools from across Hampton Roads to submit potential names for the TBM. Naming a TBM is a tradition dating back to a time when miners looked to Catholic Saint Barbara for good fortune with tunneling projects.

“We were very impressed with all of the entries received; especially with their creativity and presentations, so choosing the winner was no easy task,” said HRBT Expansion Project Director Jim Utterback.

While working on their submission, the students said they considered scientists with local ties who had made outstanding contributions to their field and found that one stood out – Mary Winston Jackson. The winning team submitted a simulated newscast advocating for Jackson’s name, highlighting her background, accomplishments and legacy. Jackson earned her degree from Hampton Institute in 1942, briefly working as a

teacher before joining the team at NASA Langley in Hampton, VA. Jackson worked as a human “computer,” completing calculations for experiments and projects, before becoming the first African American female engineer at NASA. She was also known for her volunteer work in Hampton and as an advocate for promoting women in engineering. Jackson and her colleagues were featured in the 2016 movie *Hidden Figures*.

“I am so proud that we were able to reach the students across the region, and I was very impressed to see the participation from both sides of the water, which makes this a true regional program,” said Hampton Roads Transportation Accountability Commission Executive Director Kevin Page.

The top submissions followed contest guidelines, keeping the name relevant to the Hampton Roads region, transportation or engineering fields. Since some entries featured the same name, the winning submission was ultimately selected based on creativity and presentation.

Mary, the winning name, will be prominently displayed on the TBM. The TBM was manufactured in Germany and is expected to arrive at the project site later this year.





(ABOVE): St. Gregory the Great students win first place in the TBM Naming Contest.

"We were very impressed with all of the entries received; especially with their creativity and presentations, so choosing the winner was no easy task"

HRBT Expansion Project Director Jim Utterback



(ABOVE): First Place Winners - St. Gregory the Great Catholic School, Virginia Beach with former HRCP Project Executive, Jose Martin Alos (far left) and HRBT Project Director, Jim Utterback (far right). Winning name: "Mary the TBM"

(LEFT): Mary W. Jackson grew up in Hampton, Virginia. After graduating with highest honors from high school, she then continued her education at Hampton Institute, earning her Bachelor of Science Degrees in Mathematics and Physical Science. Following graduation, Mary taught in Maryland prior to joining NASA. Mary retired from the NASA Langley Research Center in 1985 as an Aeronautical Engineer after 34 years. Photo credit: NASA



Mary Passes With Flying Colors

The HRBT Expansion Project reached another milestone in May 2021 as the Tunnel Boring Machine (TBM) passed a Factory Acceptance Test (FAT) in Germany at the Herrenknecht plant. Conducted at the manufacturer's site prior to delivery and installation, the Factory Acceptance Test was the final stage of the manufacturing process, which allowed for a complete and thorough review and testing of the TBM's features and functions.

The FAT was conducted at the plant in order to assure that the mechanical, electric and hydraulic systems are working properly, and to address any adjustments needed while the machine is still in factory conditions. The FAT was a rigorous process that took place over several weeks as engineers from the design-builder Hampton Roads Connector Partners (HRCP) examined and tested every component of the TBM.

Passing the FAT signifies that Mary the TBM has been accepted by the contractor, and the manufacturer can move forward to ship the machine to the job site. Mary the TBM will now be disassembled for shipment and will arrive in Virginia later this year. Once reassembled, the TBM will begin boring in mid-2022.



View videos of the TBM in production and the finished TBM by scanning the QR code here.



The completed TBM is unveiled

As the first bored tunnel project to be constructed by VDOT, the TBM represents the centerpiece of the HRBT Expansion Project. While most of the machine's work is underground, the project team wanted the design of the TBM to reflect the region and the localities that banded together to fund the project for the benefit of the entire region.

The design of the TBM cutter head is a creative representation of the Hampton Roads flag. The blue represents the maritime aspects of the region, while the green signifies the land-based agriculture and industry. There are 14 stars on the front of the TBM, representing each of the HRTAC member cities and counties.





“The HRBT project shows how VDOT and HRTAC work together to achieve a greater vision for Hampton Roads. The TBM cutter head paint design reflects the unprecedented regional cooperation that made funding possible for the HRBT Expansion Project through HRTAC,” said Kevin Page, Executive Director of the Hampton Roads Transportation Accountability Commission (HRTAC).



1 May assembled for testing in Germany.

2 The conveyor mechanism transports the concrete tunnel segments.

3 The Hampton Roads regional flag was the inspiration for the TBM design.

4 A view from the TBM rear gantry that supports the tunneling process.

5 The shield will push forward.

6 The inside of the TBM control room.





(ABOVE): A drone flyover shows the progress made on the bund, or perimeter, of the North Island Expansion.



NORTH ISLAND RECLAMATION

Piece By Piece – How To Build An Island



The sand fill process has started on the North Island.

A five-thousand-ton barge slowly cuts through the waters near the City of Hampton, making its way towards the North Island of the Hampton Roads Bridge-Tunnel. On board, six-and-a-half-ton stones from a quarry in Maryland, now destined for life in Virginia as part of the HRBT Expansion. As the stones arrive, crews measure them against “witness stones,” making sure they are the correct size and shape for placement. Finally, a grapple grabs a stone and gently swings it into place, before workers key and lock it in position like a 20-thousand-ton jigsaw puzzle.

And so goes the North Island Reconstruction (NIR), a critical portion of the larger HRBT Expansion Project. The NIR will expand the island’s current footprint by about 16 acres and lay the foundation for future elements of the project. The completed NIR will provide space for a receiving pit for Mary the Tunnel Boring Machine (TBM) as well as an approach roadway for the new, twin

tunnels. Mary the TBM will build the first tunnel on its initial journey from the South Island to the North Island. Crews will use the future receiving pit on the North Island to turn the TBM around so it can construct the second tunnel on its way back.

While it may seem like simple work, the job is extremely technical. Beyond what is visible from the surface there is a larger rock footprint sloping further underwater, carefully designed to support and protect the island interior. The reclamation process includes construction of the bund, or core perimeter layer, as well as an outer, or armor stone layer, to protect the structure from the surrounding waves and currents. From here, several layers of sand will be compacted to fill the expansion.

It’s a lot of work only to then excavate a portion of this newly expanded island to accommodate the TBM receiving pit. Yet building the full island expansion with the precise soil mix and compaction is necessary in order to maintain the structural integrity as the walls of the receiving pit and new tunnel approaches are constructed. Wind and waves can batter or change artificial islands over time, so it is important to make sure each portion of the NIR is executed correctly, from design to materials. This will help Keep Virginia Moving for the next 100 years.



STAFF SPOTLIGHT

IT'S A FAMILY AFFAIR

Mother-Daughter Work To Build HRBT Expansion

As a young child, HRBT Expansion Field Engineer Kayla Jones remembers driving over the Jordan Bridge with her family, where her mother drew attention to the role she helped play in its construction. Kayla says stories like that inspired her to follow her mother, Sarah, into the construction industry. Now Kayla and Sarah joined their passion for work and family on the job at the HRBT Expansion.

Mother and daughter are working together for Hampton Roads Connector Partners (HRCP), the design-build contractor for the project, each one specializing in a different area of the project. Sarah serves as the Fleet and Logistics Manager, responsible for coordinating deliveries for the project and managing the equipment. Her daughter, Kayla, focuses her engineering skills on the portals and excavation work to prepare for the new tunnels.

Kayla was attracted to the collaborative atmosphere of the construction industry and excitement of a team that comes together to create functional masterpieces. Kayla says seeing her mother in her professional role as an Equipment and Logistics Manager is admirable and she's impressed with her mother's success. Kayla loves seeing her role model stand strong every day and enjoys the opportunity to work together on the largest project in the history of the state.

For Sarah, the feeling is mutual, and she is extremely proud of Kayla and her accomplishments. Sarah says the admiration of her children helped drive her to improve and succeed for them. The mother-daughter team



MOTHER-DAUGHTER DUO ON THE PROJECT

Kayla Jones, Field Engineer (Daughter)

Sarah Jones, Equipment and Logistics Manager (Mother)

represent two of many women who are helping bring the HRBT Expansion Project to life. The project has nearly doubled its goal for employing women, with many serving in professional engineering and leadership roles. As for Sarah and Kayla, they say they feel blessed and honored to be working on this monumental project, and both say they enjoy learning from others around them.



Construction has long been an industry primarily staffed by men. According to the U.S. Bureau of Labor Statistics, there is only one woman for every 10 men working in construction. And even then, the majority of women work in office or administrative positions for construction projects. In fact, the number of women working on a job site is even smaller – in the construction and extraction industries, only 3.4% of workers in the field are women.

However, the HRBT Expansion Project is breaking ground in expanding the role of women in construction. According to the Virginia Department of Transportation, the project boasts the highest percentage of women working in the field of any project in the state's history. The project's current field workforce consists of 12% women.

That's nearly four times the industry average and almost double the project's goal. Women are working in every aspect of the project, from field engineers to trade crafts and from project managers to equipment operators. With women in leadership positions throughout the project, it creates an environment that encourages and supports even more women in construction.



(TOP): Women are represented in all aspects of construction on the project.

(BOTTOM): The HRBT Expansion Project celebrated the women on the project as part of Women's History Month in March.

Connecting with Stakeholders as Construction Ramps Up



(ABOVE): HRBT Expansion Project Director Jim Utterback presents to the Hampton Roads Chamber LEAD757 Class. (BOTTOM): HRBT Expansion Communications Manager, Annalysce Baker presents to the Newport News Rotary Club.

The HRBT Expansion Team is keeping community stakeholders updated on progress. Throughout the spring, Project leaders remained mindful of COVID-19 mitigation efforts by focusing on limited in-person events and larger virtual efforts.

VDOT and HRCP held a HRBT Expansion Project Pre-Construction

Open House virtual event on January 27, 2021 to update the public about the project ahead of construction activities. With over 500 people in attendance, the open house event was one of VDOT's largest virtual events to date. The meeting featured a general progress update, along with breakout panels focused on

roadway construction in Hampton, Norfolk tunnel construction and marine construction. Participants were able to ask questions and receive answers from project experts. The webinar also showcased the project's design concept video, which can be viewed on the project's website at HRBTExpansion.org.

VDOT also presented a virtual tour of the HRBT Expansion Project as part of WTS International's annual conference held in May 2021. VDOT's Technical Director of Tunnels/Islands, Martha Gross provided an overview of the project and shared behind-the-scenes 3D animations. WTS International, an organization dedicated to advancing women in transportation, featured Virginia projects and transportation leaders at its 2021 national conference.

In addition to these high-profile events, the project team has been busy providing virtual



View virtual tour
by scanning the QR code here.





presentations to dozens of local organizations. The visits have included Broad Bay Sailing, Old Point Comfort Yacht Club, Rotary Clubs, and local large employers. The project team also talked with students at the Hampton Maritime Academy at Hampton High School sharing a presentation on career

opportunities in the maritime construction industry.

As COVID restrictions were lifted in late spring, the project team has started to re-engage with in-person presentations with community groups such as the Hampton Road Chamber's LEAD 757 class and

the Newport News Rotary Club. In-person presentations allow for more interaction between the public and the project team. We're thankful for the resilience of the local community who have remained engaged over the past year to the point where we can return to in-person outreach.

More Ways to Stay Connected

The HRBT Expansion Project has even more ways to stay connected. In addition to the broad range of communications tools, the team has added even more resources for the public to stay involved with the project. With construction in full swing, the HRBT Expansion weekly lane closures report provides details on construction activities and impacts throughout the project corridor. From lane closures to construction milestones, you can view regular project updates on the new HRBT Expansion Project LinkedIn Page.

These additions, combined with the existing tools, offer more choices for connecting with the project.

Connect with the HRBT Expansion Project:

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 [Facebook.com/groups/HRBTExpansionProject](https://www.facebook.com/groups/HRBTExpansionProject)

 www.linkedin.com/company/hrbt-expansion-project

 Email us at: HRBTinf@VDOT.Virginia.gov

HRBT Project Communications Tools:

 [Monthly Newsletter](#)

 [Weekly Lane Closures Report](#)

 [Tunnel Talk Podcast](#)

 [YouTube playlist](#)

 [Outreach events](#)

 [Community Presentations](#)





For more project details visit:

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✉ Email us at: HRBTinfo@VDOT.Virginia.gov

