Maritime Stakeholder Meeting
17 October 2019
I-64 Hampton Roads Bridge-Tunnel (HRBT) Expansion Project

Agenda

- Welcome/Introductions
- Meeting Objectives
- HRBT Expansion Project Overview
- Marine Construction Overview
- Navigation Plan
  - Typical Vessels to be Used
  - Potential Mooring and Anchorage Areas
  - Responsiveness to Navigational Interests
  - Communication During Construction
  - Safety
- Schedule
- Questions
Meeting Objectives

- Focus on construction works in the marine environment
- Describe the proposed construction activities in the project area including interface with the Norfolk Harbor Entrance Reach Channel, Anchorage F-1, the F-1 Anchorage Approach, the Hampton Creek Approach Channel, Phoebus Channel, and the Willoughby Channel
- Describe equipment to be used during construction
- Provide anticipated construction schedule
- Obtain input from maritime community in support of Section 408 concurrence

The Design – Build Project

- Comprehensive Agreement between Commonwealth of Virginia and Hampton Roads Connector Partners (HRCP) signed in April 2019
- HRCP CJV Partners: Dragados, VINCI Construction, Flatiron Constructors, Dodin Campenon Bernard
- HRBT Expansion project is a design-build project
- Designers: HDR and Mott MacDonald
- Project Cost: $3.8 Billion
- Scheduled Completion Date: November 2025
HRBT Expansion Project Overview

**Tunnels**
- **Tunnel Boring**: Two new two-lane tunnels
  - **Tunnel Portals**: North Portal and South Portal
  - **Tunnel Approach Structures (TAS)**: North Island and South Island

**Bridges**
- **North Trestle Bridges replacement**
- **South Trestle Bridges replacement**
- **Willoughby Bay Bridge widening**

**Landside**
- **Roadway and bridge improvements**
- **Roadway widening**
- **New bridge abutments**
- **Mallory Street Bridge replacement**

[Diagram of project locations and map showing existing and proposed features, including lane counts and other details.]
Buffers around each of the civil works projects
- 200’ for the Norfolk Harbor Entrance Reach, Anchorage F, and Anchorage F Approach
- 85’ setbacks for Hampton Creek Approach Channel and Phoebus Channel
- 1000’ buffer on Willoughby Channel due to Navy activity in the area

Bored Tunnel NOT Immersed Tube Tunnel
- Less Dredging Required (no surface dredging in the channel)
- Less Marine Traffic in the main channel

Marine Construction Overview

- North Trestle Bridge
- Tunnels
- South Trestle Bridge
- Willoughby Bay
North Trestle Bridge Phases

- North Trestle Bridge
- Tunnels
- South Trestle Bridge
- Willoughby Bay

December 19, 2019
North Bridges and North Island Expansion

**Scope of Work**
- Existing two-lane bridges demolished
- Build two new four-lane bridges
- Expand North Island to the west (16.41 acres)

**Schedule of Activities**
- Work to begin after JPA and IHIA approval
- Last activity September 2024
- Additional 6 months to remove remaining structures

**Barges on Water**
- Barge operation 500’ from expansion area
- Barge anchoring 1000’ from expansion area
- Spud and/or anchor barges used in water depths >’MLW
- +/- 15 barges at peak
- Crane barges, up to 100’x350’
- Supply barges, up to 100’x350’

North Island Expansion
North Bridges and North Island Expansion

Marine Construction Overview

- North Trestle Bridge
- **Tunnels**
- South Trestle Bridge
- Willoughby Bay
Tunnels

- **Tunnel Boring Machine**
  - Hydraulic rams push against newly-placed concrete segments to drive machine forward
  - The machine is operated from the control room
  - Excavated earth removed by conveyor belt and/or pipeline
  - Pressure is maintained in the cutting chamber
  - Rotating arm adds pre-cast concrete Tunnel segments to form a ring
  - Pre-cast concrete segments delivered to rotating arm
  - Rotating cutter head

Approximate TBM excavated diameter is 44.5’
Tunnels

Scope of Work
Bore two new tunnels
44.5' diameter, 7,900' long
40-150 below water surface

Schedule of Activities
Work to begin completion of South Island Portal
TBM assembly begins Sep 2021
Boring begins early 2022
TBM turnaround early 2023
Boring complete Spring 2024

Barges on Water
two pile driving barges up to 80' x 200'
one supply barge up to 80' x 200'

1100 FT from end of jet grouting trestles to federal channel

Jet Grouting Trestles @ South Island
Jet Grouting Trestles @ South Island

Marine Construction Overview

- North Trestle Bridge
- Tunnels
- South Trestle Bridge
- Willoughby Bay
South Trestle Bridge Phases

South Bridges and South Island Expansion

Scope of Work

- Existing two-lane bridges demolished
- Build new eight-lane bridge
- Expand South Island to the south (2.64 acres)

Schedule of Activities

- Work to begin after JPA and IHA approval
- Last activity September 2024
- Additional 6 months to remove remaining structures

Barges on Water

- Barge operations 500' from expansion boundary
- Barge anchoring 1000' from expansion boundary
- Spud barges used in water depths >7' MLW
- +/- 25 barges for South Trestle at peak
- +/- 10 barges for South Island expansion at peak
- Crane barges, up to 100' x 350'
- Supply barges, up to 100' x 350'
South Island Expansion & South Bridges

500 ft for barge operation

1000 ft for barge anchor fleeting

South Island

South Shore
### Barge Routes from Project Site for Upland DM Disposal

<table>
<thead>
<tr>
<th>Area (SF)</th>
<th>Volume (CY)</th>
<th>Dredge Depth (ft)</th>
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</thead>
<tbody>
<tr>
<td>150,000</td>
<td>16,700</td>
<td>3</td>
</tr>
<tr>
<td>15,000</td>
<td>1,670</td>
<td>3</td>
</tr>
<tr>
<td>14,000</td>
<td>1,560</td>
<td>3</td>
</tr>
<tr>
<td>4,000</td>
<td>450</td>
<td>3</td>
</tr>
<tr>
<td>~45,000 (Willoughby Spit)</td>
<td>7,225</td>
<td>N/A – Debris Removal</td>
</tr>
</tbody>
</table>
Marine Construction Overview

- North Trestle Bridge
- Tunnels
- South Trestle Bridge
- Willoughby Bay

Willoughby Bay Bridge

SEGMENT 3C - WILLOUGHBY BAY BRIDGE CONSTRUCTION
Willoughby Bay

Scope of Work
Widen existing structures in both directions to the outside

Schedule of Activities
Work to begin after JPA approval
Last activity December 2024
Additional 3 months to remove remaining structures

Barges on Water
Spud barges used in water depths >7’ MLW
+/- 10 barges at peak
Crane barges, up to 100’x 350’
Supply barges, up to 100’ x 350’
Navigation Plan
Navigation Plan – Typical Barges

- Crane barges will be outfitted with spuds and/or anchors. The mooring system will be defined by the operation, location and the environmental risk associated.

- Several material barges/deck barges will support the operations of the crane barges.

- Other barges anticipated on site include: hopper barges for support of rock work, scow barges for dredging applications, sectional barges for shallow water operations and anchor handling barges.

Navigation Plan – Typical Tugboats

- The images show typical pushboat style tugboats

- The project anticipates using a combination of pushboats, model bow and shallow drafting truckable tugboats for the marine movements, towing and logistics

- Horsepower and sizes will vary. Estimated horsepower ranges between 600 and 4,000 HP.
Navigation Plan – Typical Pile Driving Operation

Pile driving

Barge secured on spuds and anchors

Typical Fixed Lead

Navigation Plan – Typical Dredging Operation

Rock handling and dredging operation

Typical dredging with environmental bucket

Typical dredging
Navigation Plan – Typical Barge Mooring

Typical Mooring Anchor

Material Barge on Mooring

Typical Mooring Buoys

Navigation Plan – Proposed Mooring and Anchorage Areas
Navigation Plan

- The vessel captain will navigate to pre-determined locations, monitor ship traffic, communicate with local vessels via VHF radio, & coordinate with designated channel vessel/traffic authorities, as well as per instruction from the USCG.

- Weather and environmental conditions will be monitored continuously. When weather permits barges may remain on site on spuds or anchorages overnight.

- The vessel will go back to the mooring areas or their home ports during extended shutdowns.

- Crew boats and/or tugboats will transport project personnel from shore to vessel each day.

- Every barge and tugboat will be equipped with an AIS transponder (Automatic Identification System) which will aid in traffic and enhance coordination between vessels and other traffic authorities.

- Each and every barge, pile mooring and anchorage mooring will be lit and marked according to the clearly defined Coast Guard Standard.

- All barges will undergo a marine survey prior to on hire or off hire in order to ensure structural and mechanical integrity for the project working environment.

- Regular routine inspection will be carried on the barge to ensure structural and mechanical integrity.