Hampton Roads Bridge Tunnel Expansion:

Project Development Update

May 17, 2018
James S. Utterback
HRBT Project Director
Virginia Department of Transportation
Ten Hampton Roads Tunnels

- Thimble Shoal Tunnel (1964)
- Chesapeake Channel Tunnel (1964)
- Hampton Roads Bridge-Tunnel (1957 & 1976)
- Monitor-Merrimac Memorial Bridge-Tunnel (1992)
- Midtown Tunnel (1962 & 2016)
- Downtown Tunnel (1952 & 1987)
- Downtown Tunnel (1952 & 1987)
65 Years of Tunneling in Hampton Roads

- 9 tunnels are steel-shell immersed tubes
- 1 tunnel is concrete-box immersed tube
- Future tunnel #11 at Thimble Shoal will be bored tunnel
- Between Settlers Landing in Hampton and I-564 in Norfolk
- Improvements in I-64 including the construction of a new 4 lane HRBT tunnel
- New 4 lane HRBT tunnel will serve Eastbound traffic
- 2 existing HRBT tunnels will serve Westbound traffic
Proposed Tunnel Alignment (Hampton Side)
Proposed Lane Configuration for Tunnel and Approach Bridges

- **2+1+1** concept in each direction:
  - 2 free General Purpose lanes
  - 1 full-time HOT lane
  - 1 peak-hour HOT lane on left shoulder
Tunnel Considerations

- Landside work has risks but is largely conventional
- Tunnel work is less conventional and will generate greatest risks from cost and schedule standpoint
- This is a rare location where both immersed-tube and bored-tunnel construction methods are feasible
  - All ten Hampton Roads tunnels to date have been immersed tubes
  - Until recently, bored tunnels were not feasible in soft soils
  - But recent advances in technology now make bored tunnels possible in soft soils
- These methods were directly compared in the nearby Thimble Shoal Tunnel procurement in 2015
Immersed-Tube Tunneling (ITT)
Immersed Tube Elements
Conceptual Tunnel Section (Immersed)
Tunnel Boring Machine

- Rotating cutter head
- The machine is operated from the control room
- Excavated earth removed by conveyor belt
- Hydraulic rams push against newly-placed concrete segments to drive machine forwards
- 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

Person to scale: 150m
Twin Bore with TBM
Conceptual Tunnel Section (Bored)
Key Differences between Bored and Immersed-Tube Tunneling

- **Alignment**
  - ITT alignment must be further away from existing tunnel (Hampton Roads rule of thumb → about 200 feet)
  - Bored tunnel can be much closer to existing facilities (general rule of thumb → about one diameter ≈ 50 feet)

- **Geotechnical**
  - ITT method has limited concern for soil properties, since soil along tunnel path is dredged out and removed
  - Bored method is specifically tailored to local soil properties

- **Environmental and Permitting**
  - Section 408 coordination with marine stakeholders / federal channel
  - Section 103 concurrence for offshore disposal of ITT spoils
  - JPA permit for disposal of bored-tunnel spoils
VDOT has the authority to pursue a Design-Build (D-B) procurement under both the PPTA or VPPA:

- Current VDOT D-B (VPPA) template was not developed to handle a project of HRBT magnitude
- PPTA provides contractual flexibility for complex risk profile (significant construction and geotechnical risk)
- PPTA encourages innovation through extensive use of Alternative Technical Concepts (ATCs) process
- PPTA provides for iterative process that invites feedback and collaboration from the proposers in order to develop more responsive procurement documents
## Procurement Activities Completed to Date

<table>
<thead>
<tr>
<th>DATE</th>
<th>ACTIVITY</th>
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<tbody>
<tr>
<td>December 15, 2017</td>
<td>RFQ issued</td>
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<tr>
<td>December 15, 2017 to February 7, 2018</td>
<td>Q&amp;A period</td>
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<tr>
<td>January 19, 2018</td>
<td>Project Information Meeting</td>
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<tr>
<td>February 2018</td>
<td>SOQ Evaluation Manual developed</td>
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<tr>
<td>February 1, 2018</td>
<td>Addendum No. 1 issued</td>
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<tr>
<td>February 5 to 6, 2018</td>
<td>One-on-one meetings</td>
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<tr>
<td>February 16, 2018</td>
<td>Addendum No. 2 issued</td>
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<tr>
<td>March 2, 2018</td>
<td>3 teams submitted SOQs</td>
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<tr>
<td>March 5 to 9, 2018</td>
<td>SOQ evaluation (sequestration)</td>
</tr>
<tr>
<td>March 12 to April 10, 2018</td>
<td>Reference checks, clarification questions</td>
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<tr>
<td>April 2, 2018</td>
<td>Selection Committee met</td>
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<tr>
<td>April 26, 2018</td>
<td>Announcement of Short-listed Offeror-teams</td>
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</tbody>
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Key Points in SOQ Evaluation

Two-part Evaluation Method

Pass/Fail Review

✓ Compliance and completion of submission
✓ Offeror legal information and financial capability

Qualitative Evaluation

✓ Equal emphasis on General Technical Qualifications (50 points) and Tunnel Delivery Qualifications (50 points)
✓ Option to submit for either or both Immersed Tube Tunnel and Bored Tunnel methodologies
Key Points in SOQ Evaluation

Qualitative Evaluation

Objective is to short-list well-integrated teams that demonstrate experience in:

✓ Design and construction of large diameter roadway or rail tunnels
✓ Bridge design and construction in marine environments and in close proximity to existing structures and bridges
✓ Widening heavily-traveled environments in urban environments requiring complex maintenance of traffic
✓ Land reclamation/island construction in a tidal marine environment
✓ Construction in an active navigable channel
# SOQ Submissions

<table>
<thead>
<tr>
<th>TEAMS</th>
<th>Skanska – Kiewit JV (ITT)</th>
<th>Hampton Roads Capacity Constructors (ITT + BT)</th>
<th>Hampton Roads Connector Partners JV (ITT + BT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Contractor</td>
<td>Skanska USA Civil Southeast Inc.</td>
<td>Fluor Enterprises, Inc.</td>
<td>Dragados USA</td>
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<td></td>
<td>Kiewit Infrastructure Co.</td>
<td>The Lane Construction Corporation</td>
<td>Vinci Construction Grands Projects</td>
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<td>Traylor Bros., Inc.</td>
<td>Dodin Campenon Bernard SAS</td>
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<td>Dragages Civil Works Virginia, LLC (Boygues subsidiary)</td>
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<td>Lead Designer</td>
<td>WSP USA Inc.</td>
<td>AECOM Technical Services, Inc.</td>
<td>I-64 Design JV</td>
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<td>• HDR Engineering, Inc.</td>
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<td>• Mott MacDonald</td>
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## Next Procurement Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Date</th>
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<tbody>
<tr>
<td>Draft Request for Proposals</td>
<td>May 2018</td>
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<tr>
<td>Alternative Technical Concept Process</td>
<td>Summer/Fall 2018</td>
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<tr>
<td>Final Request for Proposals</td>
<td>Fall 2018</td>
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<tr>
<td>Selection of Best Value Proposal</td>
<td>January 2019</td>
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<tr>
<td>PPTA Statutory Audit</td>
<td>Early 2019</td>
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<tr>
<td>Execution of Comprehensive Agreement</td>
<td>Early 2019</td>
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<tr>
<td>PPTA Steering Committee Briefing</td>
<td>No later than 60 days from execution of CA</td>
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