VTCA District Dialogue: HRBT Project-Development Update

December 13, 2017

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Hampton Roads
Hampton Roads Bridge-Tunnel
(south island, looking south)
An Island Excursion

- HRBT superlatives upon its opening in November 1957
  - World’s longest immersed-tube tunnel (approx. 7500’)
  - World’s first marine tunnel between artificial islands

- Why were islands built in these particular locations?
  1. Had to accommodate natural channel location: tunnel route crosses Hampton Roads channel at its narrowest point
  2. Length was already at limit of then-current feasibility for ventilating tunnel with only two buildings
  3. Not economical to make tunnel longer to avoid poor soils on south island
Tunnel Ventilation: State of the Art in 1950

- Brooklyn Battery Tunnel in New York City: 9117’ long
- Length possible only due to conveniently-located island for intermediate vent building
Geotechnical Considerations

- Soil variations at north and south islands
  - Geotechnically, both Thimble Shoal and HRBT have one “good island” and one “bad island”

- Mitigation of soft material at HRBT south island
  - 1957: material was excavated and replaced with sand fill
  - 1976: surcharge and wick drains were used to consolidate compressible layers
1976 Tunnel Project: South Island

- Maximum surcharge: 26 feet near future vent building
- Maximum settlement: 13 feet
- Total settlements achieved 15 months after fill reached final elevation
- More details in procurement info reference section at HRBTExpansion.org
Geotechnical Investigations

- **Complete:**
  - 1953 data for westbound tunnel
  - 1969 data for eastbound tunnel
  - 1960’s data for Willoughby Bay bridges
  - 2017 data at north and south HRBT islands

- **In progress:**
  - 2017/18 data along potential project alignments

- **Future:**
  - Additional geotechnical investigations by contractor
Comparison of 1953 and 2017
Marine Geotechnical Investigations
Project-Development Status

- Record of Decision for SEIS received June 12, 2017
- Planning-level cost estimate for SEIS scope = $3.3B (2016 dollars): includes construction, owner’s costs, contingency
- New tunnel to have four lanes capacity $\rightarrow$ total of eight lanes capacity across water
  - At a minimum, HRBT corridor will include one HOT lane in each direction and two free General Purpose lanes
  - Fourth lane in each direction anticipated as peak-hour left-side shoulder lane
- SEIS re-evaluation anticipated for refined scope
- Maximum grade of new tunnel = 4%
Procurement Status

- Multiple project-delivery methods were evaluated:
  - Design-Build (DB)
  - Design-Build-Finance-Operate-Maintain (DBFOM)

- *Public Sector Analysis and Competition* report and *Finding of Public Interest* identified DB option as providing better value to Commonwealth:
  - Under DBFOM, revenue generation is insufficient for value-creating transfer of revenue risk to the private sector
  - Under DB, project will be supported fully by public funds, with no private financing

- Accordingly, Steering Committee recommended that project proceed as DB under Public-Private Transportation Act (PPTA)
## Next Steps

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