

Hampton Roads Bridge Tunnel

Concept Scenarios

Presented by Robert B. Case, PE, PhD
To HRTPO Board, Nov. 19, 2015



Impetus

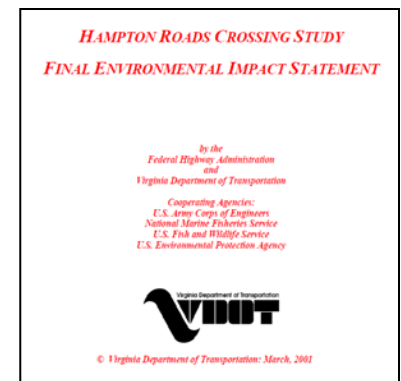


Hampton Roads Crossing Study (HRCS)

Supplemental Environmental Impact Study (SEIS)

“revisiting the three alternatives” from 2001 FEIS*:

1. **I-64** (from Hampton Coliseum to Wards Corner) **including HRBT**
2. Third Crossing
3. Hybrid (all of #1 plus part of #2)



Today's HRBT Analysis- *Overview*

A. History

B. Concepts that Add Lanes in Existing Right-of-Way

1. Capacity
2. Impacts
3. Cost

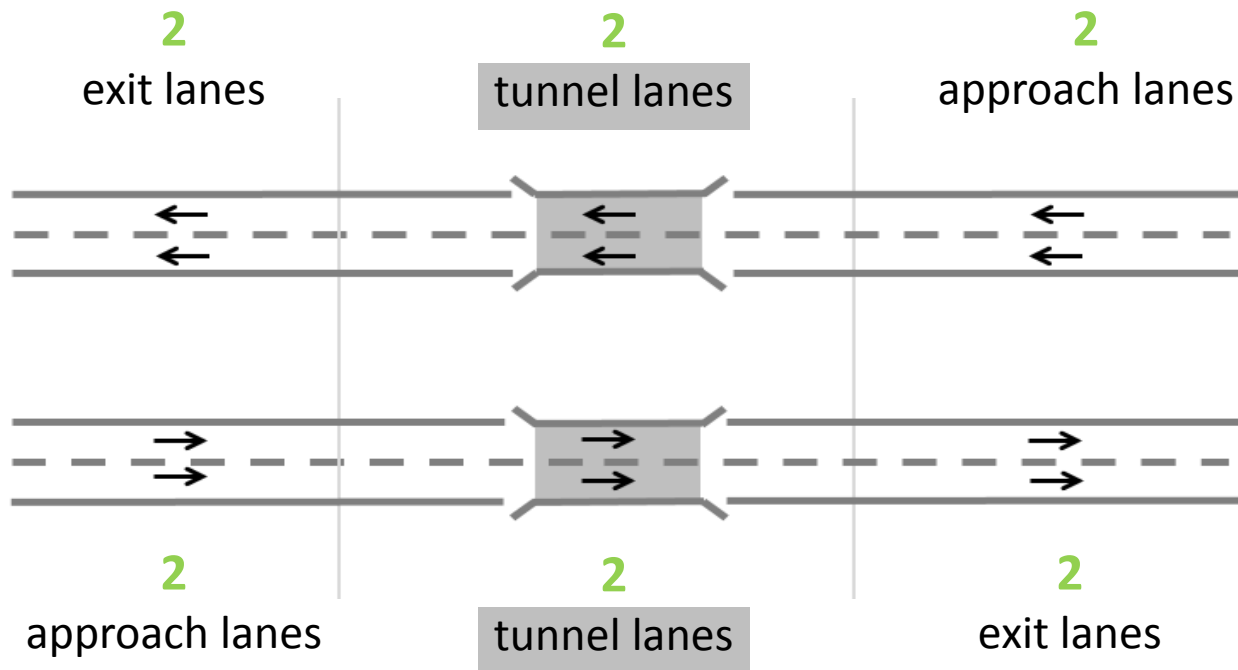
A. History

Concept Identification

Example Existing I-64 between Mallory St Hampton and Wards Corner Norfolk

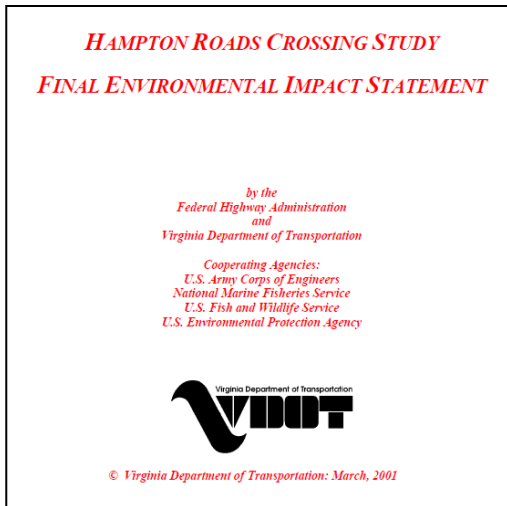
“2-2-2”

“Approach Lanes – Tunnel Lanes – Exit Lanes”



History- 2001

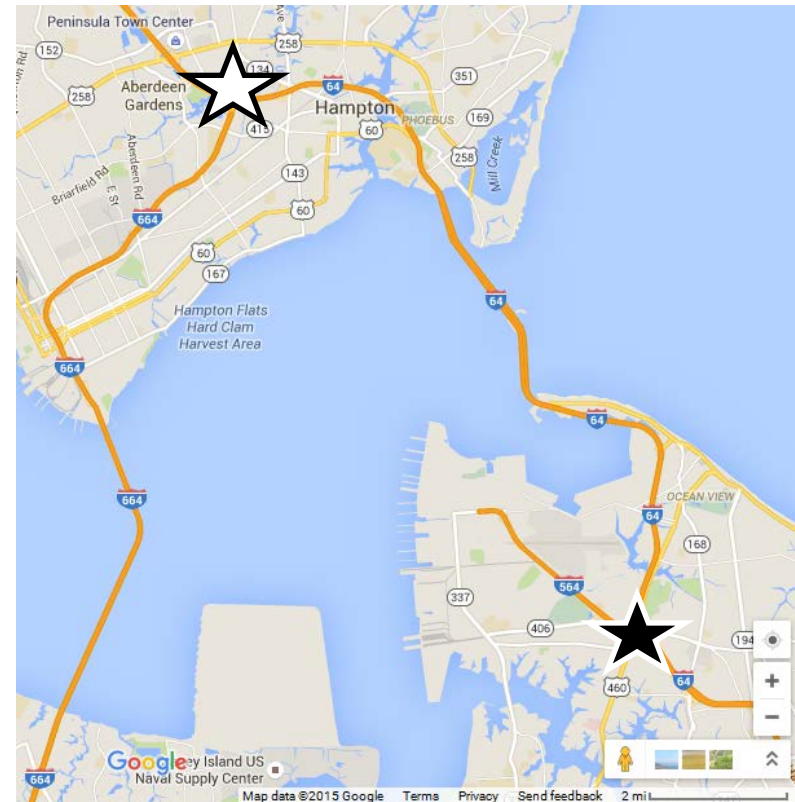
March 2001 FEIS*



Candidate Build Alternative (CBA) 1

5-5-5 Concept (4 conventional, 1 multimodal)

CBA 1



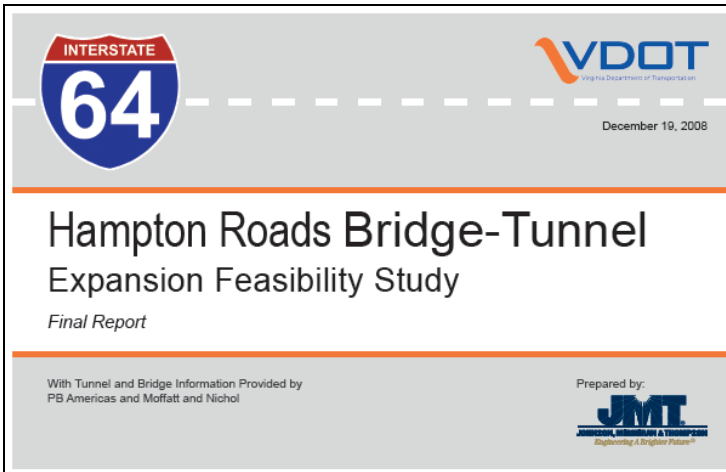
Limits of Construction

Hampton Coliseum (Hampton) ☆

Wards Corner (Norfolk) ★

History- 2008

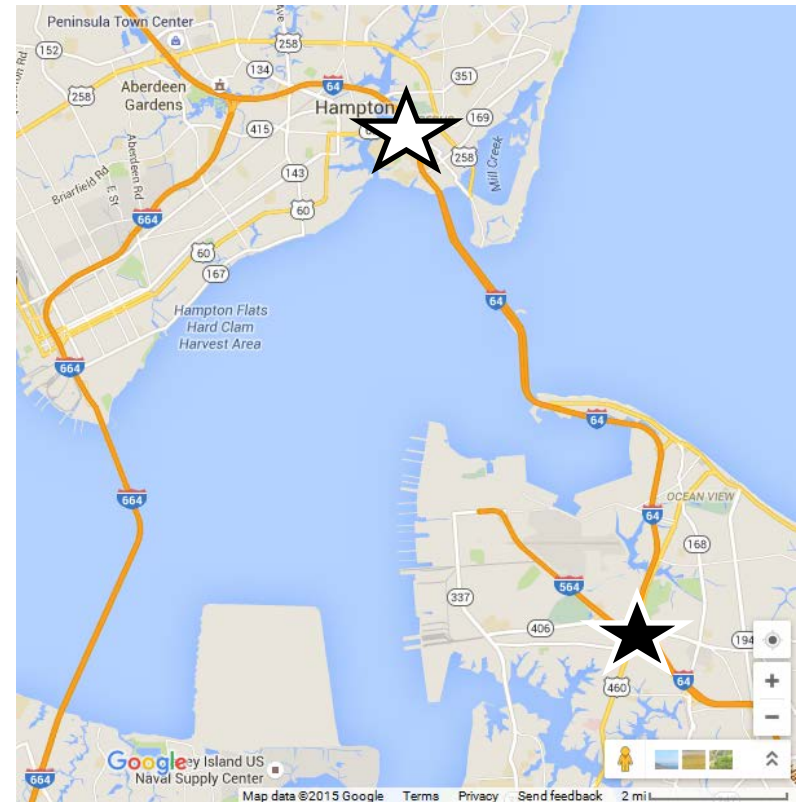
Dec. 19, 2008 Feasibility



Alternative 1

3-3-3 Concept

Alternative 1



Limits of Construction

Settlers Landing Rd (Hampton) ☆

Wards Corner (Norfolk) ★

History- 2010

September 29, 2010 Skanska Proposal to VDOT

Executive Summary

What is this Proposal?

The chronic congestion of Interstate 64 at the Hampton Roads Bridge Tunnel has for many years adversely affected the economic health of the region and the well-being of road users trying to cross between the Peninsula and South Hampton Roads. Although there is not always agreement on how to cure this problem, few would question the diagnosis that something must be done, and quickly.

In this Conceptual Proposal to form a Public-Private Partnership we aim to present a design, a development approach, a financial plan and a team that will double the capacity of the HRBT, manage traffic to ease congestion across the 3 major north-south harbor crossings, and secure that they are all maintained and operated at the highest standards long into the future.

Who is it from?

Hampton Roads Crossings is a consortium of leading international construction companies and an infrastructure investor committed to the improvement of people's lives through the development of sustainable infrastructure.

SKANSKA

- **Skanska Infrastructure Development:** Is the PPP development and investment business within the Skanska Group; it has developed some 19 PPP projects in Europe and Latin America, committing almost \$600m of its own capital. Since the recent global credit crisis Skanska ID has closed several PPP financings including two in the \$2billion range.



- **Kiewit Infrastructure Company:** Will lead the Construction Joint Venture; it is one of the largest transportation contractors in North America and is a leader in self-performing projects in the heavy civil market. Kiewit has played a major role in many of the largest and most challenging projects in North America, often working together with one or more of the other HRC members.



- **Skanska USA Civil:** Brings the financial strength and global experience of Skanska AB, as well as being long established in Tidewater, VA. Skanska USA Civil has been involved in almost every water crossing project in the Hampton Roads area over the past fifty years or more.
- **Weeks Marine:** In over seventy-five years of existence, Weeks Marine has grown into one of the leading marine construction and dredging organizations in the United States. Its experience covers the full diversity of marine construction and refurbishment needed to successfully deliver HRBT, often gained working with Kiewit or Skanska.



- **Parsons Brinckerhoff:** Is a leading design and engineering consultant for submerged tube tunnels and bridge structures around the world; its capabilities extend to every aspect of transportation planning and design. It has major offices in the Hampton Roads area and was the designer of the previous 2 phases of the HRBT as well as many others.



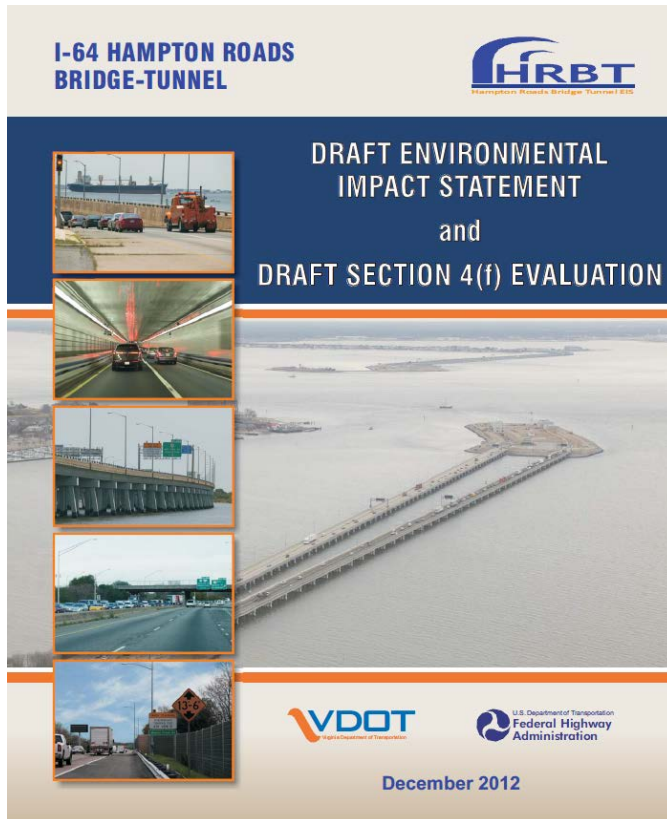
HRBT Exhibit 3 [See full-sized, fold-out version at end of section.]

3-4-3 Concept

3 lanes over land for the approach
 4 lanes over water and for the tunnel
 3 lanes over land for the exit

History- 2012

Dec. 2012 Draft Environmental Impact Statement (DEIS)



Concepts

- 4-4-4 Concept
- 4-4-4 Concept- Managed
- 5-5-5 Concept

B. Concepts that Add Lanes in Existing Right-of-Way

1. Capacity
2. Impacts
3. Costs

1. Capacity

3-3-3 Concept

3-X-3 Concept

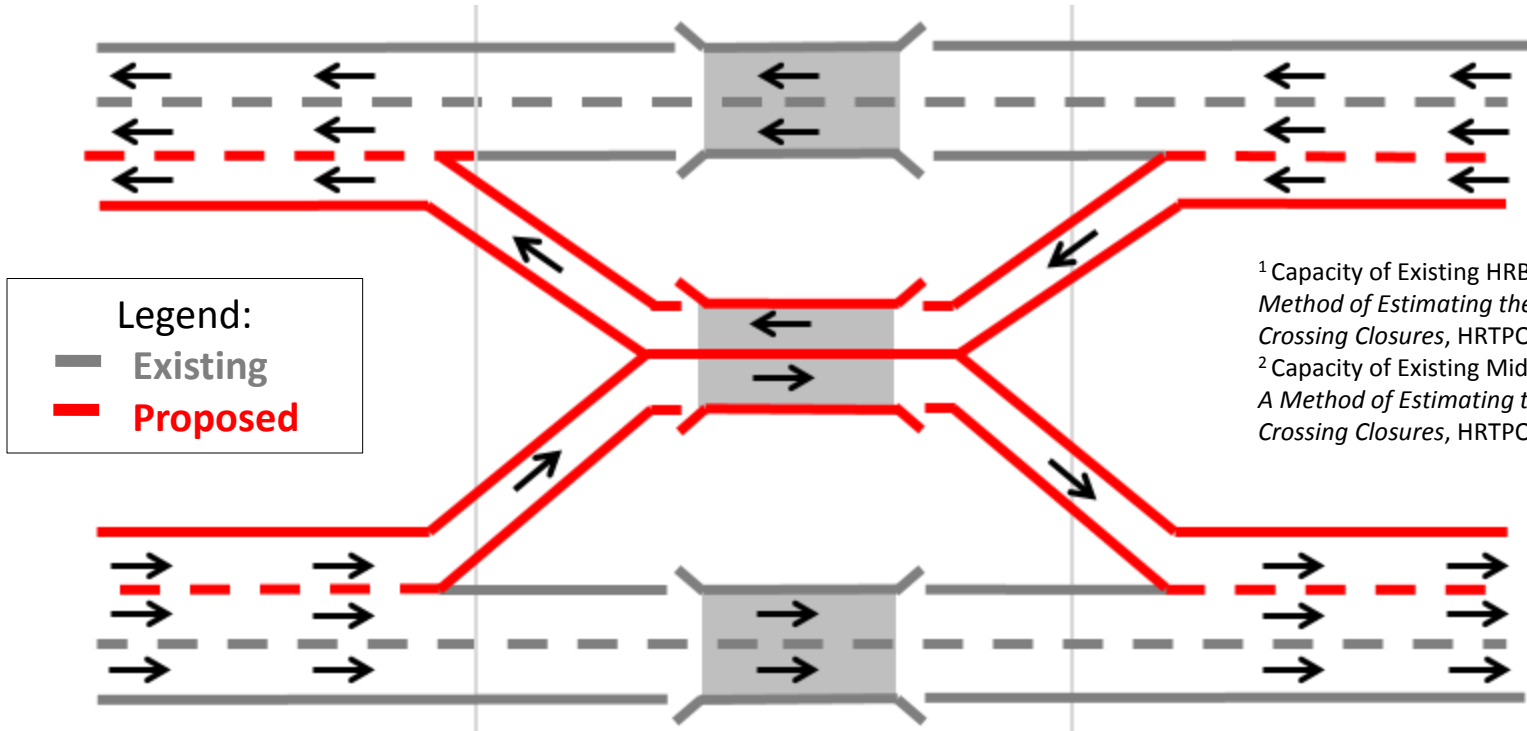
3-4-3 Concept

3-3-3 Concept

3 lanes on land within existing R.O.W.

3 tunnel lanes

3 lanes on land within existing R.O.W.



¹ Capacity of Existing HRBT, A Method of Estimating the Impact of Crossing Closures, HRTPO, Oct. 2013
² Capacity of Existing Midtown Tunnel, A Method of Estimating the Impact of Crossing Closures, HRTPO, Oct. 2013

Approach Lanes

Tunnel Lanes

Exit Lanes

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

2 ln × 1600⁽¹⁾ vphpl +
 1 ln × 1500⁽²⁾ vphpl
 = **4,700 vph**
 Capacity

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

3-X-3 Concept

(3-2-3 one direction; 3-4-3 other direction)

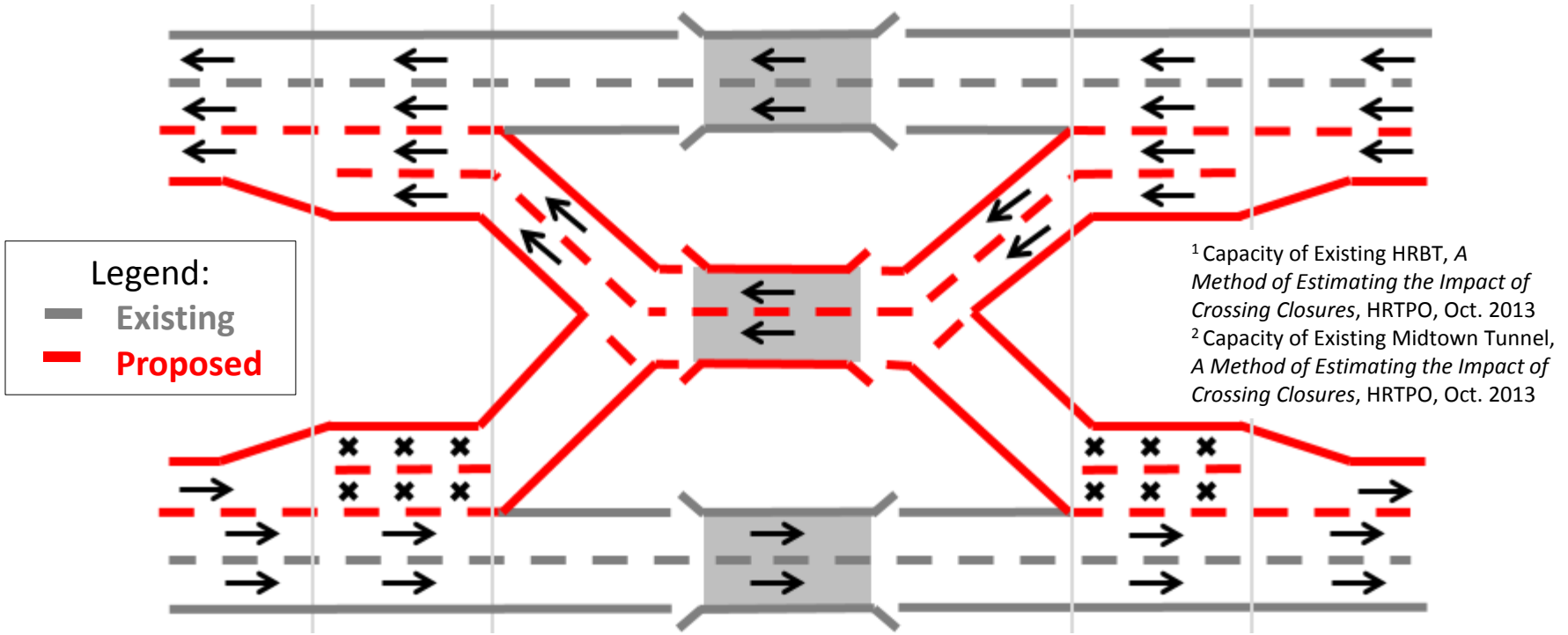
3 lanes on land within existing R.O.W.

trestle

2 or 4 tunnel lanes

trestle

3 lanes on land within existing R.O.W.



Legend:
 — Existing
 — Proposed

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Approach Lanes

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

Tunnel one direction

4 × 1600⁽¹⁾
 = **3,200 vph**
 Capacity

Tunnel other direction

2 × 1600⁽¹⁾
 = **6,400 vph**
 Capacity

Exit Lanes

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

System Capacity: 3,200 vph (one direction); 6,300 vph (other direction)

3-4-3 Concept

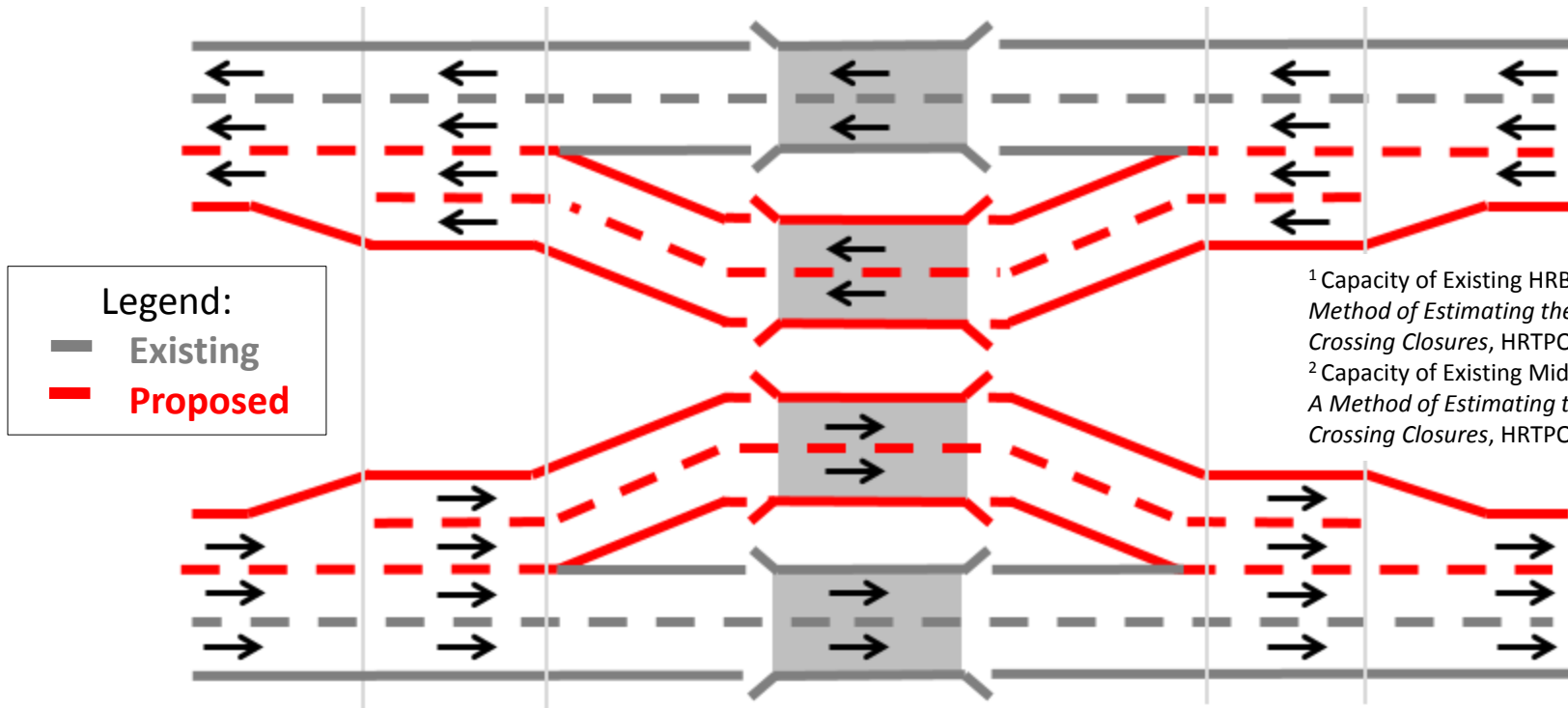
3 lanes on land
within existing R.O.W.

trestle

4 tunnel lanes

trestle

3 lanes on land
within existing R.O.W.



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Approach Lanes

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

Tunnel Lanes

4 ln × 1600⁽¹⁾ vphpl
 = **6,400 vph**
 Capacity

Exit Lanes

3 ln × 2100 vphpl
 = **6,300 vph**
 Capacity

System Capacity: 6,300 vehicles per hour (vph)

Example of 3-4-3 Concept

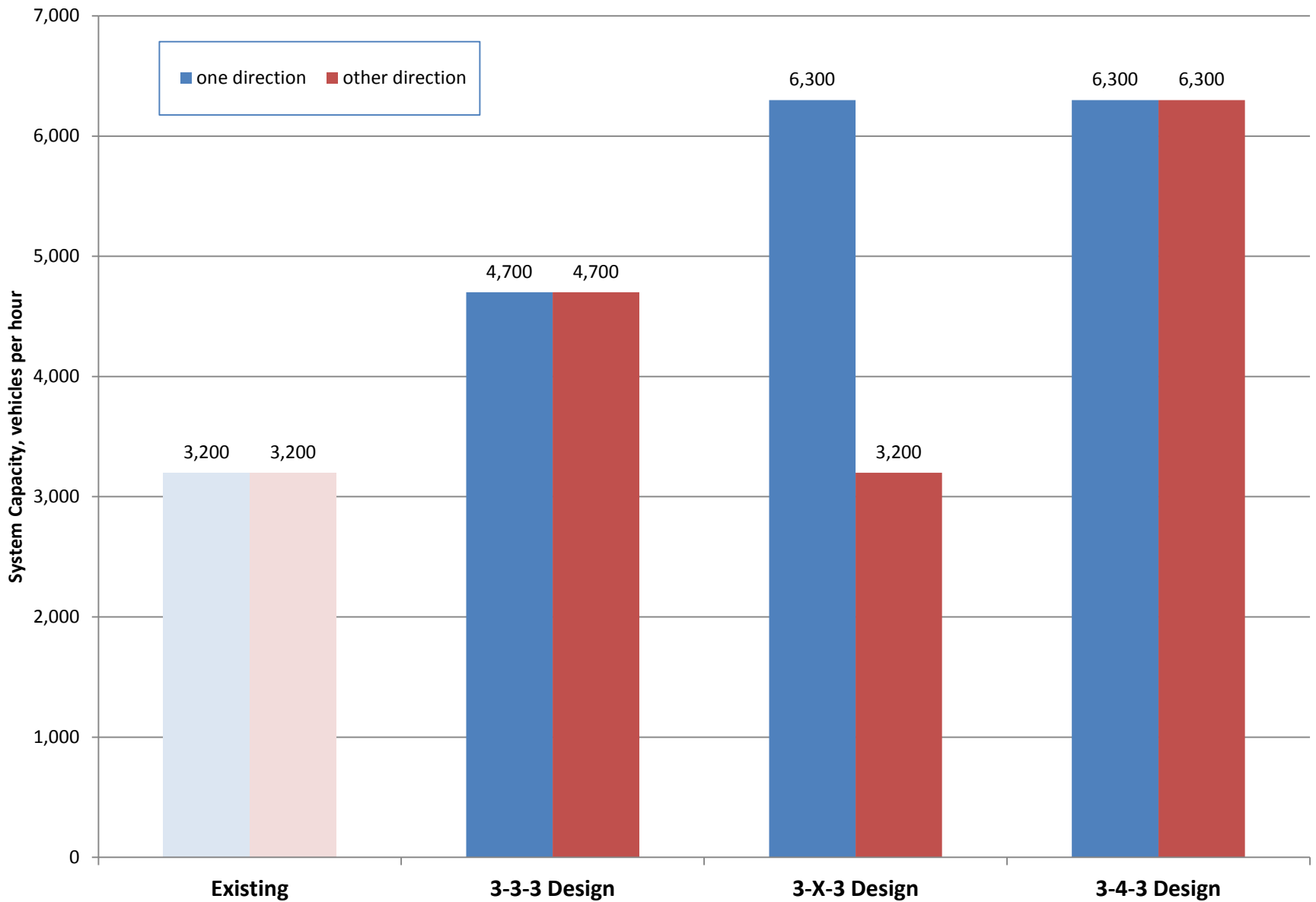


www.baer.pt

No queues where the lanes come back together

The highway downstream of a wide segment can handle as much volume as the highway upstream of the wide segment can deliver.

System Capacity



2. Right-of-Way Impacts

Right of Way Impacts

- 2008 Alt. 1 (3-3-3 Design)
 - An “order of magnitude” assessment
 - “**potentially impact 50 to 75 buildings**” (p. 4)
- 2010 Skanska Proposal (3-4-3 Design)
 - “new lanes within the current right-of-way”
 - “**significantly less** than the 70-105 impacted buildings projected...previously” (p. 73)
- 2012 DEIS (4-4-4 Design)
 - **261 “Potential residential relocations”**
 - **16 “Potential business displacements”**
 - **2 “Env. Justice Populations impacted”** (p. S-8)

3. Costs

Costs

- 2008 Alt. 1 (3-3-3 Design)
 - “2.13 Billion” (p. 4)
- 2010 Skanska Proposal (3-4-3 Design)
 - “\$3.5 to \$4.5 billion” (p. 3)
- 2012 DEIS (4-4-4 Design)
 - “\$4.4 to \$5.5 billion” “2012 dollars” (p. S-5, 2-19)

Next Steps

SEIS Citizen Information Meetings- VDOT

- “Come see and comment on **alternatives that could be retained for analysis....**”
- “Give your written or oral comments at the meeting or submit them **by December 21, 2015....**”
- Norfolk
 - 9 Dec. 2015, 5-7pm, Ocean View Elementary School
- Hampton
 - 10 Dec. 2015, 5-7pm, Capt John Smith Elementary School