DATE: December 29, 2008

TO: Dave Dye
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FROM: John White

CC: Matt Preedy
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SUBJECT: SR 99 Deep Bore Tunnel

BACKGROUND

In response to your request for additional information about the cost, schedule, and transportation function of a single deep bore tunnel under downtown Seattle as a replacement for the Alaskan Way Viaduct, the program team has prepared this briefing paper. Based on preliminary analysis, the team believes that a single bore tunnel is the most likely cost effective bore tunnel option (compared to a twin bore tunnel).

1) Transportation function provided by a four-lane deep bore tunnel
2) Cost estimate for a deep single-bore tunnel
3) Schedule for opening a deep bore tunnel to traffic
4) Potential options for funding a deep bore tunnel

CONCLUSIONS

- Bulleted list of key findings based on information below

DISCUSSION

Proposed Deep Bore Tunnel. A deep single bore tunnel would connect in the south to the new mile of SR 99 (from Holgate St. to King St.), which will begin construction next summer. It would connect to Aurora Avenue, north of the Battery Street Tunnel.

Northbound drivers traveling to downtown Seattle on SR 99 would be able to exit the highway near the sports stadiums on the new ramps being built as part of the S. Holgate to S. King St. Viaduct Replacement Project. Northbound drivers traveling through downtown Seattle would go into the tunnel and travel under First Avenue through downtown to surface north of the Battery Street Tunnel. There would be no access points to the deep bore tunnel from downtown Seattle.

Southbound drivers traveling to downtown Seattle on SR 99 would be able to exist the highway at Denny Way or ???. Southbound drivers going through downtown Seattle would go into the bored tunnel and surface near the sports stadiums.

Trips from Ballard and other northwest Seattle neighborhoods would be able to enter the bored tunnel from Mercer Street or travel on the waterfront via Western and Elliott Avenues on a four-lane surface street.

The bore tunnel would be approximately 9,000 feet in length and would be a single bore 54 feet in diameter. The tunnel would accommodate four lanes of traffic (two lanes in each direction) plus shoulders and tunnel systems (i.e., ventilation).

1) How would a deep bored tunnel accommodate trips currently made on the Alaskan Way Viaduct? (Chris Wellander)
   a) Assumptions about connections provided by a bored tunnel
      i) Ramp locations
      ii) Alaskan Way surface street
      iii) Road connection to Battery Street Tunnel
   b) 2015 vs. 2030 (?)
   c) Volumes, trips, and travel times on the viaduct today
   d) Predicted volumes using a deep bored tunnel
      i) Diversion to other streets, I-5, or modes?
   e) Type of trips using a deep bored tunnel
      i) Through trips
      ii) Local trips
   f) Travel times for trips using a deep bored tunnel
   g) Potential investments in I-5
      i) Description of investments
      ii) Benefits of investments to I-5
      iii) Benefits of investments to SR 99 in a deep bored tunnel

2) When would a deep bored tunnel be open to traffic? (Gordon Clark, David Mattern)
   a) Environmental review process
      i) Deep bored tunnel
      ii) Removing the existing viaduct
   b) Construction approach
      i) Traffic maintenance
      ii) Impacts on surrounding properties
   c) Construction schedule

3) How much would a deep bored tunnel cost? (Gordon Clark, Mike Rigsby)
   a) What the cost numbers are and are not (i.e., not a CEVP)
   b) Key assumptions made
   c) Comparison of costs to other tunnels completed in the U.S.

Essential Elements	**Estimated Cost**
SR 99 Single Bore Tunnel	
Construction Costs	$961 million
Final Design and Construction Management	$300 million

Contingency and Risk	$547 million
Inflation	$281 million
Total Tunnel Costs	**$2,130 million**
Viaduct Demolition and Traffic Mitigation	
Alaskan Way Restoration (Four-Lane Surface Street)	
Total Program Costs	

These costs do not include the costs of the following items:

Other Elements	**Estimated Cost**
Seawall replacement	$270 million
Waterfront utility relocation	$56 million
Waterfront streetcar	$12 million
Other city street work	$70 million
Other	$84 million
Other Costs	**$492 million**

Paying for a Deep Bore Tunnel. The state has committed $2.8 billion to pay for a viaduct replacement. Currently $1.1 billion has been committed or spent for the Moving Forward Projects, which will replace or repair over half of the viaduct. This leaves approximately $1.7 billion in state investment.

Charging tolls to drivers in a four-lane bored tunnel through downtown Seattle would support an additional $410 million in project funding between 2014 and 2018. Tolling the existing viaduct during construction would raise another $140 million in pay-as-you go project funding. This would bring the total funding contribution of tolling SR 99 to $550 million.

Tolling SR 99 would increase the total possible state funding available for a deep bore tunnel to $2.25 billion.

What should we say about federal funding? Stimulus package?

Other potential funding sources have been identified, including a local improvement district for property owners who would benefit from new open space on the central waterfront; local public utilities paying for utility relocation; open space funds; and Port of Seattle funding.

NEXT STEPS

4) What are the next steps? (John White)
   a) Complete a three-month tunnel feasibility study (due March 31, 2008)
   b) Initiate environmental scoping

KEY ASSUMPTIONS

5) Assuming a single bore tunnel; more work needed to ensure twin bore tunnel is not a more cost effective option.
6) Still need to confirm that a 54-foot deep bore tunnel will meet traffic safety standards.
7) Only one option carried forward into EIS; potential legal challenges need to be assessed.
8) Battery Street Tunnel remains open to traffic to provide local circulation; potential cost savings could be realized by permanently closing the tunnel and avoiding needed upgrades.