

**Alaskan Way Viaduct and Seawall Replacement Program  
Stakeholder Advisory Committee – December 16, 2008  
Briefing Summary**

**Agenda Item #1: Welcome, introductions, and overview of meeting**

Dave Dye, WSDOT Deputy Secretary, welcomed the Stakeholder Advisory Committee (SAC) members and thanked them for attending. The purpose of the briefing was to answer more in-depth questions regarding bored tunnels.

Although Seattle Channel was not present at this briefing, videos of previous Stakeholder Advisory Committee meetings can be found at [www.seattlechannel.org/issues/viaduct.asp](http://www.seattlechannel.org/issues/viaduct.asp)

Dave asked the members of the SAC to introduce themselves and the group they represent.

**Stakeholder Advisory Committee attendees:**

- Jeff Altman, Northwest County
- Carol Binder, Pike Place Market
- John Coney, Queen Anne
- Bob Donegan, Seattle Historic Waterfront Coalition
- Mary McCumber, Furturewise
- Jim O'Halloran, Northeast Seattle
- John Odland, Manufacturing Industrial Council
- Vlad Outstimovich, West Seattle
- Susan Ranf, Sports Stadiums
- Rob Sexton, Downtown Seattle Association
- Todd Vogel, Allied Arts
- Tayloe Washburn, Seattle Chamber of Commerce

**Agencies and staff announced in attendance:**

- Ron Paananen, WSDOT Urban Corridors Deputy Administrator
- Victor Obeso, KCDOT
- Robert Powers, SDOT Deputy Director
- Jim Parsons, Parametrix, Independent Project Manager

**Agenda Item #2: Bored tunneling 101, Seattle bored tunneling history, and cost estimating**

Dave introduced Harvey Parker, of Harvey Parker & Associates, who gave a presentation on management and technical considerations for major, complex tunnel projects. He described the traditional reasons for building underground, life cycle costs and benefits of tunnels, and general tunnel approaches.

**Question** – How much groundwater is along the proposed bored tunnel alignment?

*Answer – There is 160-170 feet of water at its deepest location. Some of the sands are very permeable at the north end of the tunnel.*

**Question** – How can a tunnel be more resistant to earthquakes?

*Answer – Above-ground structures are affected by whiplash. The waves are amplified as they go up. Tunnels only move a little bit in an earthquake, in concert with the soil. Earthquake waves are long, so there is not a lot of distortion in a tunnel.*

**Question** – Explain how a tunnel could result in energy savings and less pollution.

*Answer – You never have to heat or warm a tunnel, which makes it energy efficient. However, transportation tunnels lose some of this efficiency due to the need for ventilation and other systems.*

**Question** – Explain the life cycle benefit of a tunnel.

*Answer – The initial cost for a tunnel is more, but the yearly cost over its lifetime is less, because tunnels have a long lifespan. However, there is no mechanism for determining these savings.*

**Question** – Could you use fixed contracts to build a tunnel, to account for the risk of encountering surprises underground?

*Answer – Fixed cost contracts are usually used when there is minimal risk. You try to manage riskier projects, like tunnels, with risk sharing.*

**Question** – What is the relative risk of building a tunnel in the Seattle fault zone, compared to San Francisco?

*Answer – The soils here are dense. A large fault zone means that you won't have immediate shearing.*

Dave then introduced John Reilly, of John Reilly International, to discuss WSDOT's Cost Estimate Validation Process (CEVP). CEVP is a process used on major projects that identifies uncertainties and risks in order to determine cost ranges for a major project. John also discussed other cities' cost and budget problems with transportation projects.

**Question** – During the last eight to nine years, has there been more experience with tunnel technology? Wouldn't this reduce the cost of a tunnel?

*Answer – Yes, but other factors come into play. You need to examine market factors, such as the rising cost of materials. You need to ensure that, when comparing tunnel projects and their related costs, you are comparing apples to apples.*

**Question** – Have you done a CEVP on the bored tunnel concept?

*Answer – Not yet.*

**Question** – Why isn't the same level of effort used for CEVP also used to determine life cycle costs?

*Answer – We can try to capture that data, but public works in general are low bid projects. Upfront costs are what drive the decision making process.*

**Question** – What is the capacity in the market for building bored tunnels? How many firms could build an Alaskan Way tunnel?

**Answer** – *Four to five. There is a base of U.S. and Canadian contractors. Some European contractors have also entered the market.*

**Question** – Does a long construction timetable increase or decrease risk contingency?

**Answer** – *It doesn't increase the ground risk, but it does increase the risk of inflation.*

**Question** – Did Sound Transit's Beacon Hill tunnel go through a CEVP? Was that project over budget?

**Answer** – *That project is 15 to 20 percent above budget. The bored tunnel portion was on budget, but there are claims related to building the transit station. Sound Transit also budget's differently than WSDOT, with different layers of funding that could be applicable to a project.*

### **Agenda Item #3 and 4: Overview of Scenario F conceptual design and assumptions, construction schedule, and cost estimates**

Dave introduced Mike Rigsby, senior project manager with Parsons Brinckerhoff for the Alaskan Way Viaduct program, who gave a presentation on tunnel designs that have been considered during the life of the viaduct program. He also described the program's conceptual design, construction schedule and cost estimate for single and twin bored tunnels.

**Question** – What percent of the scenario costs would go to items other than “bricks and mortar”?

**Answer** – *The SR 99 elevated bypass hybrid scenario has \$100 million added for traffic mitigation and \$30 million for a parking facility. The I-5/surface/transit hybrid scenario only has the \$30 million for a parking facility. Our bored tunnel costs do not include traffic mitigation. We used the same cost methodology for all eight central waterfront scenarios.*

**Question** – Would a bored tunnel allow you to cut out the rest of the building blocks?

**Answer** – *No. The other building blocks allow us to build a smaller tunnel.*

### **Agenda Item #5: Other thoughts on the proposed bored tunnel approach**

Dave introduced Bruce Agnew with the Cascadia Center, independent tunnel consultant Kern Jacobsen, and Peter Chamley with Arup. Bruce expressed his organization's support for a bored tunnel. Peter gave a presentation on Arup's tunneling projects and the benefits of replacing the viaduct with a bored tunnel.

**Question** – How did you look at life cycle costs in Arup's projects in Brisbane and Miami?

**Answer** – *We examined factors such as maintenance costs, how many crews would be needed to run the tunnel, how much it would cost to light it, and how often the roadway would have to be resurfaced. We then calculated a net present value of those costs.*

**Comment** – Tunnels like this are less risky, because of improvements in tunnel boring machine technology. The ground conditions here are difficult, but not as difficult as what these machines can deal with.

**Question** – To reduce the cost of a tunnel, couldn't you eliminate the wasted space above and below what is needed for the roadway?

*Answer* – *We would use every bit of that space for tunnel ventilation systems.*

**Agenda Item #6: Action items and next steps**

Dave said the project team will work with Arup to compare bored tunnel cost estimates and determine where their numbers agree and don't agree.

He thanked everyone for being at the briefing. The next SAC meeting is set for Dec. 18.