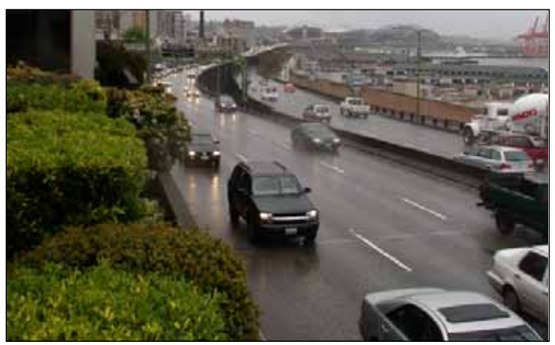
as a single, most likely cost number. The low end of the cost range represents when almost nothing goes wrong, and the high end represents when almost all of the cost-increasing risks actually occur.

The updated estimates focus on a likely cost estimate to provide a more accurate picture of what the actual project cost will be. While cost ranges still exist for the alternatives, a "likely" number means that possible risks have been moderately defined, so it's a strong prospect that the final cost will fall towards the mid-point of the range.

Formal CEVP-validated estimates for both projects will be released in 2007 after designs advance to a 15 to 20 percent design level.



The Alaskan Way Viaduct carries 110,000 vehicles each day.

Morning commuters sit in traffic on SR 520 in the Montlake area.

For information on these projects:

Alaskan Way Viaduct and Seawall Replacement Project

Visit: www.wsdot.wa.gov/projects/viaduct

Email: viaduct@wsdot.wa.gov

Call the project information line: (206) 269-4421

Write: Alaskan Way Viaduct and Seawall Replacement Project
c/o Washington State Department of Transportation
999 Third Avenue, Suite 2424, Seattle, WA 98104

SR 520 Bridge Replacement and HOV Project

Visit: www.wsdot.wa.gov/projects/SR520Bridge

E-mail: SR520Bridge@wsdot.wa.gov

Call the project information line: (206) 781-3922

Write: SR 520 Bridge Replacement and HOV Project
c/o Washington State Department of Transportation
414 Olive Way, Suite 400
Seattle, WA 98101

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Washington State
Department of Transportation

October 2006

Updated Cost Estimates: Alaskan Way Viaduct and SR 520 Bridge Projects

In September 2006, the Washington State Department of Transportation (WSDOT) re-evaluated the 2005 cost estimates for the Alaskan Way Viaduct and Seawall Replacement Project and the SR 520 Bridge Replacement and HOV Project. The cost estimates were revised to factor in rising construction costs and anticipated higher future construction inflation rates, following advice from an independent Expert Review Panel appointed by the Governor in June 2006.

While these new numbers are not good news, they remind us of one important thing: delaying these projects will only cause costs to increase more. Prompt decision and action on replacing these two aging and deteriorating structures will minimize exposure to future cost increases.

Construction costs are rising across the country.

In releasing new cost estimates for the alternatives to replace the Alaskan Way Viaduct and the SR 520 bridge, WSDOT acknowledges national and global trends of rising construction costs. These trends directly impact construction projects around the world, and our important public safety projects are no exception.

The cost estimates are higher for two main reasons. First, actual construction costs today are higher than anticipated — some items have risen in cost by 40 percent in the last 18 months. Second, construction costs are anticipated to continue to increase for awhile at rates higher than experienced in the past and higher than assumed in previous cost estimates.

This higher inflation rate includes the rising costs of commodities, such as steel, concrete, and fuel. The rise can be attributed to several factors, including the reconstruction of the Gulf States required after sustaining damage from Hurricane Katrina. There has also been greater demand for construction materials from growing economies in Asia, and the industry has been unable to keep up with demand. Experts cannot predict when the market for construction commodities will stabilize.

Much of the increase in costs for both projects can be attributed to the higher costs of key materials such as concrete.

Alaskan Way Viaduct and Seawall Replacement Project

Funding Update

The Expert Review Panel found that the funding plans for both the tunnel and elevated structure to be reasonable even with the higher cost estimates. The project currently has $2.4 billion in secured funds for replacing the viaduct and seawall. That leaves a small funding gap for the Elevated Structure Alternative, which could be met in a number of ways. Future funding for either alternative could come from the Regional Transportation Investment District (RTID) regional tolling, or future federal funding.

In reviewing the funding plan for the Tunnel Alternative, the Expert Review Panel analyzed the City of Seattle's estimate of $2.6 billion in "anticipated" funds and also found it to be reasonable.

Regardless, our worst enemy is delay. The viaduct and seawall are old, deteriorating, and must be replaced.

The Nisqually Earthquake shook the viaduct in 2001, and accelerated its deterioration. Another earthquake of similar intensity could cause it to collapse. The viaduct and Alaskan Way surface street together carry more than 120,000 vehicles each day (about one quarter of all north-south traffic through Seattle) and serve as an important route for commuters and freight.

Tunnel	Elevated Structure
Re-evaluated Likely Cost Sept 2006: $4.63 billion	Re-evaluated Likely Cost Sept 2006: $2.82 billion
Previous Cost Range Oct/Nov 2005: $2.98 - $3.63 billion	Previous Cost Range Oct/Nov 2005: $1.99 - $2.36 billion

SR 520 Bridge Replacement and HOV Project

Funding Update

Currently, a total of $1.25 billion in funding has been identified from state and federal sources. This includes an estimated $700 million that will be generated from future tolls on the new floating bridge. The resulting funding shortfall was highlighted by the Expert Review Panel as an area that needs further development. The panel also noted that it is early in the project to have a full funding plan.

Despite the funding shortfall, delaying the project is not an acceptable plan. This would only serve to increase costs due to inflation and increase the chance of a catastrophic event closing the bridge. Such an event would have a devastating effect on the 115,000 vehicles that use the SR 520 floating bridge each day as well as those who commute on all other regional highways.

Due to the urgency of this project, the Governor has directed the Legislature to work on a comprehensive funding package during the 2007 legislative session. Initial ideas include additional funding from the state and new funding from the RTID. The Expert Review Panel also encouraged pursuing alternative funding options.

4-Lane Alternative	6-Lane Alternative with Montlake Interchange	6-Lane Alternative with Pacific Interchange
Re-evaluated Likely Cost Sept. 2006: $2.79 billion	Re-evaluated Likely Cost Sept. 2006: $3.90 billion	Re-evaluated Likely Cost Sept. 2006: $4.38 billion
Previous Cost Range April 2005: $1.67 - $2.02 billion	Previous Cost Range April 2005: $2.33 - $2.83 billion	Previous Cost Range April 2005: $2.73 – $3.10 billion

How were previous cost estimates determined?

WSDOT is committed to continual cost evaluation as a means to better manage projects. WSDOT's Cost Estimate Validation Process (CEVP) was developed in 2002 to identify and quantify potential risks that can impact a project's budget and schedule. In CEVP, project engineers sit down with national experts in construction and risk assessment to evaluate cost estimates by identifying and quantifying risks such as inflation, schedule delays, market conditions, and changes to material costs that can increase the cost of the project. Both projects have completed CEVP workshops each year since 2002.

Estimates developed in earlier CEVP workshops used a rate of 2 to 3 percent, the historic average inflation for construction costs over the past 15 years. The Expert Review Panel was concerned that recent national and worldwide inflation trends were much steeper than WSDOT's estimate assumed, especially in an uncertain market with limited supply of critical construction materials. The Panel suggested that a higher inflation rate would be more realistic given these trends.

How did we develop the revised cost estimates?

The recent cost re-evaluation was conducted by members of the Expert Review Panel together with WSDOT staff and the project teams. The revised base cost estimates, schedules and risks were then run through the same computer model used for CEVP, however this re-evaluation was not a full CEVP workshop.

The CEVP computer analysis handles the uncertainty of future events by accepting ranges of input values and using a Monte Carlo simulation to paint a picture of possible costs under different scenarios. So if the project team has not finalized a particular design element or if future market conditions are uncertain, the simulation randomly generates values for these uncertainties again and again to produce a model that expresses the overall project cost and schedule results as a range.

One example: In updating the cost estimates to account for inflation, WSDOT used a larger variable rate of inflation, rather than the historical rate of 2 to 3 percent, to address the Expert Review Panel's concerns. For the anticipated duration of the Alaskan Way Viaduct project, the inflation rate model works out to range from 2 to 8 percent. Most experts believe that inflation rates will eventually return to historic trends.

WSDOT also took into account today's higher costs of construction, but the base costs didn't increase significantly. That is, the cost to build each structure today, minus the new risks and inflation scenarios, rose only about 10 percent for the viaduct replacement and 10 to 20 percent for the SR 520 bridge replacement.

Previous CEVP estimates resulted in the expression of project cost and schedule as a range, rather than

Did you know?

The Monte Carlo simulation was named for Monte Carlo, Monaco, known for its casinos and games of chance. When you roll a die, you know that either a 1, 2, 3, 4, 5, or 6 will come up, but you don't know which for any particular roll. It's the same with the variables that have a known range of values but an uncertain value for any particular time or event (e.g. interest rates, price of concrete, rates for contractors based on when equipment is available, etc).