Tab Two
DRAFT: Overview of the Alaskan Way Viaduct and Seawall Replacement Project

What is the purpose and need of the project?

What is the function and role of the Alaskan Way Viaduct corridor and Alaskan Way Seawall?

The Federal Highway Administration (FHWA), the Washington State Department of Transportation (WSDOT), and the City of Seattle are proposing major improvements to the Alaskan Way Viaduct Project corridor and to the Alaskan Way Seawall. Both the Viaduct Project corridor and the Alaskan Way Seawall are located in downtown Seattle, King County, Washington, as illustrated in Exhibit 2-1. As defined for this project, the Project corridor extends north from approximately South Spokane Street to Roy Street. The seawall extends from South Washington Street to Broad Street along Elliott Bay on Puget Sound. From South Washington Street to approximately Pike Street, the seawall supports the viaduct. The entire length of the seawall supports surface streets and utilities.

The Alaskan Way Viaduct corridor is part of State Route (SR) 99 and runs parallel to Interstate 5 (I-5). These highways are the two primary north-south routes to and through downtown Seattle. The Alaskan Way Viaduct corridor currently carries about 110,000 vehicles a day and serves through trips and trips accessing the downtown business district and nearby neighborhoods. This corridor provides the quickest and most convenient route to and through downtown Seattle for communities located to the northwest and southwest of downtown. The corridor plays a vital role in freight mobility, providing a major truck route through downtown and providing access to the Ballard-Interbay and greater Duwamish manufacturing and industrial centers. It also serves as a transit route for local and express bus service.

Access to SR 99 along the southern and central parts of the corridor is via ramps at select locations. North of the Battery Street Tunnel access is via right turns from intersecting city streets. North and southbound traffic is physically separated to increase traffic flow and to minimize conflicting left-turning traffic movements. Congestion that currently develops is typically the result of incidents or back-ups at access ramps.

WSDOT studies in 1995 and 1996 concluded that the soils on which the Alaskan Way Viaduct is constructed are vulnerable to soil liquefaction and may lose their ability to support the structure. Studies concluded that if a significant earthquake occurred close to Seattle, the Alaskan Way Viaduct could be rendered unusable or even collapse.

The February 28, 2001, Nisqually earthquake (magnitude 6.8, located 35 miles from Seattle and deep below the surface) damaged the Alaskan Way Viaduct. The structure was closed for inspection and repairs intermittently for several days over a period of several months. The extent of damage and loss of the heavily traveled corridor heightened awareness of the need for immediate improvements to the corridor. A Structural Sufficiency Report was prepared after the earthquake, and it concluded that continued reliance on the existing viaduct is not prudent.

In addition to the viaduct, the seawall supports Alaskan Way (the surface street), a waterfront streetcar, and a variety of utilities. The fills retained by the wall provide lateral support for some of the foundations of the Alaskan Way Viaduct. The King County Metro Waterfront Streetcar provides trolley access to various waterfront locations. Alaskan Way provides access to waterfront businesses and to Colman Dock, which supports vehicle and passenger ferries.

Following the Nisqually earthquake, field investigations and liquefaction analyses were performed for a portion of Alaskan Way where settlements of the roadway had occurred. These investigations concluded that a portion of the loose fills liquefied and settled in areas where the seawall structure has been heavily damaged by marine borer activity.

What is the purpose of the proposed action?

The main purpose of the proposed action is to provide a transportation facility and seawall with improved earthquake resistance. The project will maintain or improve mobility, accessibility, and traffic safety for people and goods along the existing Alaskan Way Viaduct corridor as well as improve access to and from SR 99 from the Battery Street Tunnel north to Roy Street.

What is the need for the proposed action?

The Alaskan Way Viaduct and Alaskan Way Seawall are both at the end of their useful lives. Improvements to both are required to protect public safety and maintain the transportation corridor. Because these facilities are

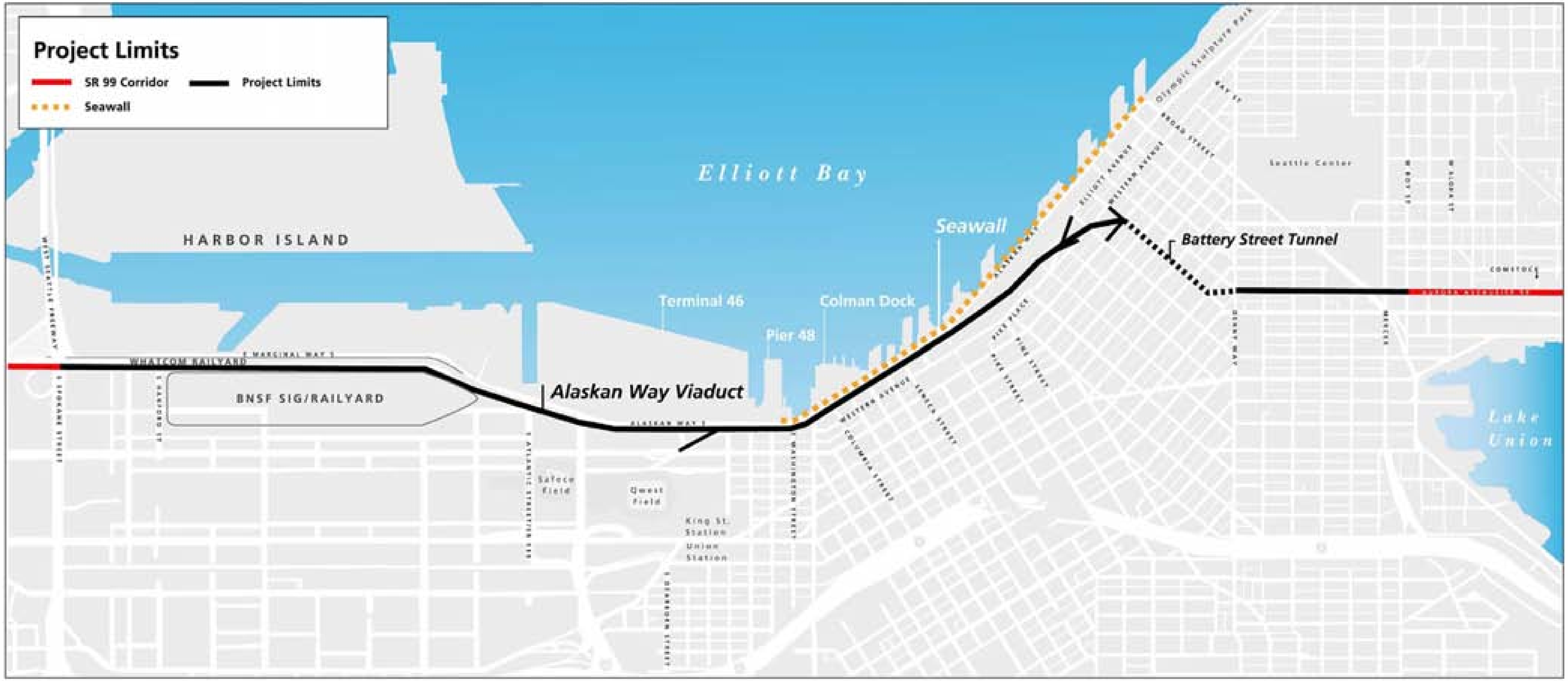

Exhibit 2-1. Alaskan Way Viaduct and Seawall Project

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at risk of sudden and catastrophic failure in an earthquake, FHWA, WSDOT and the City of Seattle seek to implement these improvements as quickly as possible. Improvements between the Battery Street Tunnel and Roy Street will be needed to improve access to and from SR 99 and to improve local street connections once the viaduct is replaced. FHWA, WSDOT and the City of Seattle have identified the following underlying needs the project should address.

Seismic Vulnerability

The ability of the viaduct and seawall to withstand earthquakes needs to be improved. The viaduct is vulnerable to earthquakes because of its age, design and location. Built in the 1950s, the Alaskan Way Viaduct is at the end of its useful life and does not meet today's seismic design standards. Additionally, the soils around the foundations of the viaduct consist of former tidal flats and alluvial deposits covered with wet, loose fill material. The seawall holds these soils in place along the majority of the Viaduct Project corridor. The seawall is also vulnerable to earthquakes.

Traffic Safety

Traffic safety along the Alaskan Way Viaduct corridor needs to be improved. Traffic incident data for the years 1998 through 2000 indicate that high levels of traffic crashes occur in some portions of the Alaskan Way Viaduct corridor. Many locations on the corridor meet WSDOT criteria for a notably high level of vehicle crashes.

Roadway Design Deficiencies

The Viaduct Project corridor does not meet current roadway design standards and has several types of deficiencies, including lane width, which need to be improved. Narrow lane width affects roadway capacity and operating speeds as well as safety. In addition, substantial sections of the viaduct have minimal or no shoulders. Lack of shoulders or narrow shoulder width can adversely affect roadway operations, safety, and capacity.

The on- and off-ramps of the viaduct and at the south end of the Battery Street Tunnel also do not meet current WSDOT roadway design standards. Short acceleration and deceleration lane lengths may affect the ability of drivers to safely enter and exit the freeway system. Nonstandard ramp tapers may not provide drivers with adequate length to exit or enter into through traffic.

The lane widths and vertical clearance within the Battery Street Tunnel do not meet current WSDOT design standards. Fire/life safety systems within the Battery Street Tunnel are also deficient.

Limited sight distances within the Battery Street Tunnel may contribute to rear-end collisions. North of the Battery Street Tunnel, several local streets connect directly to the corridor. Drivers entering and exiting SR 99 may not have room to accelerate or decelerate without adversely affecting traffic flow or safety.

Bicycle and Pedestrian Safety and Accessibility

Bicycle and pedestrian safety, mobility, and accessibility need to be maintained or improved as part of the surface improvements to Alaskan Way. The Seattle waterfront is the center for Seattle's well-developed comprehensive Urban Trails System. Regional trails from the north, east and west converge on Alaskan Way. Every day, thousands of tourists, recreational walkers and joggers, shoppers, bicyclists, ferry users and office workers utilize Alaskan Way. In addition, the project corridor north of Battery Street Tunnel has inadequate pedestrian crossings. This part of the project corridor is identified as a high pedestrian accident location. Pedestrian and bicycle facilities to provide safe passage across SR 99 will be accommodated with the proposed surface street connections between the Battery Street Tunnel and Roy Street.

What are the project goals and objectives?

In addition to the project purpose and need, the following goals and objectives will guide project development.

System Linkage

One project objective is to support an integrated regional transportation system. WSDOT is currently planning to extend SR 509 south from its current terminus near S. 188th Street to connect with I-5 and improve access to and from communities south of Seattle-Tacoma International Airport. SR 509 connects to SR 99 at the First Avenue S. Bridge and serves as a major route from the south to downtown Seattle and nearby port facilities and industrial areas.

Changes proposed as part of the SR 519 Intermodal Access Project in the vicinity of Safeco Field would improve east-west connections between the waterfront and I-5 and Interstate 90 (I-90), both of which are principal corridors in the regional transportation system. A portion of the SR 519 Intermodal Access Project has been completed.

Washington State Ferries are a division of the State Department of Transportation, and the ferry system is part of the state highway system. The Colman Ferry Dock connects downtown Seattle with ferry service to Bremerton, Bainbridge Island, and passenger ferry service to Vashon Island. Over 10 million passengers and three million vehicles currently use these ferries annually. Service expansion is included in the State's long-range plan for the ferry system.

The City is currently exploring options for improving mobility in the South Lake Union area, including east-west mobility between SR 99 and I-5. Improved connections are needed to provide access to and from SR 99 and the local arterial network.

The City is also planning to widen the Spokane Street Viaduct. The Spokane Street Viaduct provides the major link between I-5 and West Seattle (via the West Seattle Bridge). The major transit route from West Seattle to downtown Seattle is by way of the West Seattle Bridge and the Alaskan Way Viaduct.

Seattle's Plans for the Downtown Waterfront

Improving the Alaskan Way Viaduct and Alaskan Way Seawall needs to be integrated with and supportive of existing activities and land use plans for the Seattle waterfront. The downtown waterfront has been transformed from its origins as a working waterfront – characterized by shipping, warehouse and industrial uses – to an important area for tourism and recreation. The central waterfront now has a vibrant mix of uses that include office, retail, hotel, residential, conference center, aquarium, museum, parks, cruise ship terminal, ferry terminal, and various types of commercial and recreational moorage. Land use plans and policies for downtown Seattle and the waterfront will help guide improvements in the corridor to provide an improved surface street and opportunities for access to and along the waterfront for freight, pedestrians and bicyclists.

Plans for Habitat Improvement

The existing Alaskan Way Seawall provides poor habitat for chinook salmon (listed as threatened under the Endangered Species Act) and other marine species. Reconstructing the seawall offers an opportunity to improve habitat where practicable and feasible. Elliott Bay is an important link for juvenile salmon migrating from the Duwamish River toward the Pacific Ocean. The vertical bulkheads of the seawall and other features of the waterfront provide minimal habitat for numerous young chinook and chum salmon that migrate across the Seattle waterfront to the north shore of Elliott Bay during their critical rearing period. This project will consider measures to enhance habitat.

What alternatives are currently being considered?

In late 2004, the project partners narrowed the range of viaduct and seawall replacement alternatives down to two: the Tunnel and Elevated Structure Alternatives. Exhibit 2-2 shows the two alternatives and choices currently being considered for the project. Choices can be mixed and matched within an alternative. The most recent plan set showing these alternatives, referred to as the Basic Configuration Drawings, was assembled in June 2005.

The Viaduct Project team has explored many alternatives over the life of the project that have been eliminated from further consideration. Please see a summary of these options under "What alternatives were considered and rejected – and why?" at end of this Tab.

How is the project area defined?

The project area is defined in two different ways: project limits and construction area.

The project limits were established by the project partners in the purpose and need statement. The project limits represent logical end points for transportation improvements and environmental review based on identified project needs. These identified needs include addressing seismic deficiencies and maintaining or improving mobility, accessibility, and traffic safety for people and goods in the Alaskan Way Viaduct corridor, which includes SR 99 and the Alaskan Way surface street. For the purposes of this project, these logical end points are defined at major intersections in the corridor beginning in the south at S. Spokane Street and continuing north to Roy Street. The Alaskan Way Seawall is located within these boundaries, extending from S. Washington Street to just north of Broad Street.

The project's construction area is slightly larger than the project limits because it includes areas where construction would occur. The project's Supplemental Draft EIS evaluates the effects of the project's entire construction area. The 4.1-mile construction area extends from S. Hanford Street in the south to Comstock Street in the north. The construction area has been divided into six sections for discussion purposes in the Supplemental Draft EIS, as described below:

- **South –** S. Spokane Street to S. Dearborn Street
- **Central –** S. Dearborn Street to Pine Street
- **North –** Pine Street to Battery Street Tunnel

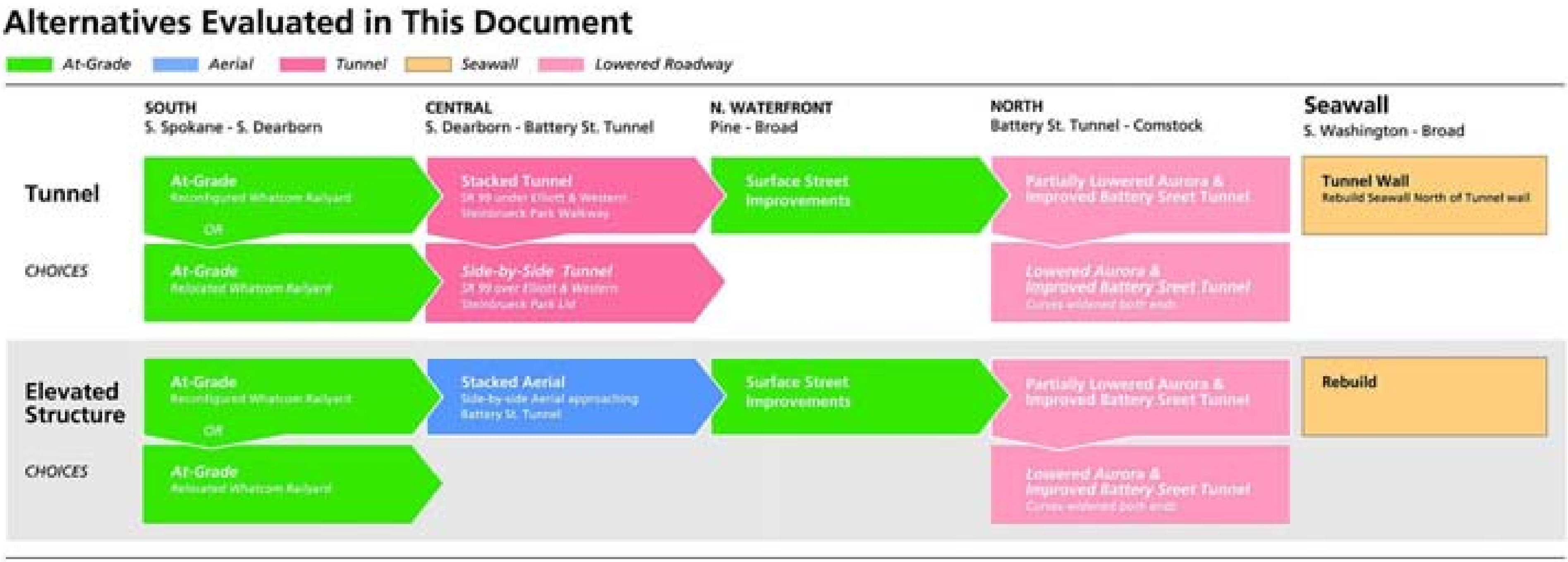
- **Seawall –** For the Tunnel Alternative, Union Street to Broad Street; For the Elevated Structure Alternative, Washington Street to Broad Street
- **Battery Street Tunnel**
- **North of the Battery Street Tunnel –** Lowered Aurora Retained Cut

What is the scope of the project?

In looking at the various approaches to finance a project of this magnitude, the project partners have considered various funding alternatives. The “full” project funding alternative provides for the entire project scope. The “core” project funding alternative provides for building the main portions of the project scope while deferring construction of the remainder. Unless otherwise stated, the information provided in this Tab of the notebook refers to the “full” project.

Additional information on the finance plan for the Tunnel and Elevated Structure Alternatives, which includes a discussion of the core projects, can be found as a separate document in this Tab of the notebook.

Exhibit 2-2. Alternatives Evaluated in the Supplemental Draft EIS



This chart shows the alternatives and design choices evaluated in the Supplemental Draft EIS.

What are the definition and costs of the Tunnel Alternative?

What is the definition of the Tunnel Alternative?

The components of the Tunnel Alternative are shown in Exhibit 2-3 and summarized below. Note that this exhibit is based on the June 2005 plan set. Additional detail on the Tunnel Alternative can be found in Chapter Four of the Supplemental Draft EIS.

- **South –** Replaces the existing viaduct with a six-lane, at-grade roadway that bridges over the railroad tracks and provides a new aerial interchange near the stadiums at S. Atlantic Street and S. Royal Brougham Way.
- **Central –** Replaces the existing viaduct with a stacked, six-lane tunnel (three lanes in each direction) from approximately S. Dearborn Street to Pine Street.
- **North –**
    - From Pine Street to Virginia Street, SR 99 would transition from a tunnel to an aerial structure and retained cut roadway.
    - A portion of the aerial structure that connects from Pine Street to the Battery Street Tunnel would have a walkway built over the top, creating a pedestrian connection between Victor Steinbrueck Park and the waterfront.
    - SR 99 would pass under Elliott and Western Avenues, connected by ramps, and link to the Battery Street Tunnel.
- **North Seawall** – The Tunnel Alternative also rebuilds the seawall. The tunnel's outer wall would replace the seawall from S. Washington Street to Union Street. From Union Street to Broad Street the seawall would be replaced with a new structure and strengthened with soil improvements.
- **Battery Street Tunnel Improvements** – The Tunnel Alternative would improve the Battery Street Tunnel by increasing the vertical clearance and updating the safety systems for fire, ventilation, and emergency exits.
- **North of Battery Street Tunnel –** The Tunnel Alternative would lower SR 99 in a retained cut from the Battery Street Tunnel to approximately Republican Street, with roadway improvements and widening up to Aloha Street. The street grid would be connected over the top of SR 99 by building two new bridges at Thomas and Harrison Streets. Mercer Street would continue to cross under SR 99 as it does today, but it would be widened and converted to a two-way street.

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Exhibit 2-3. Tunnel Alternative and Cross Section

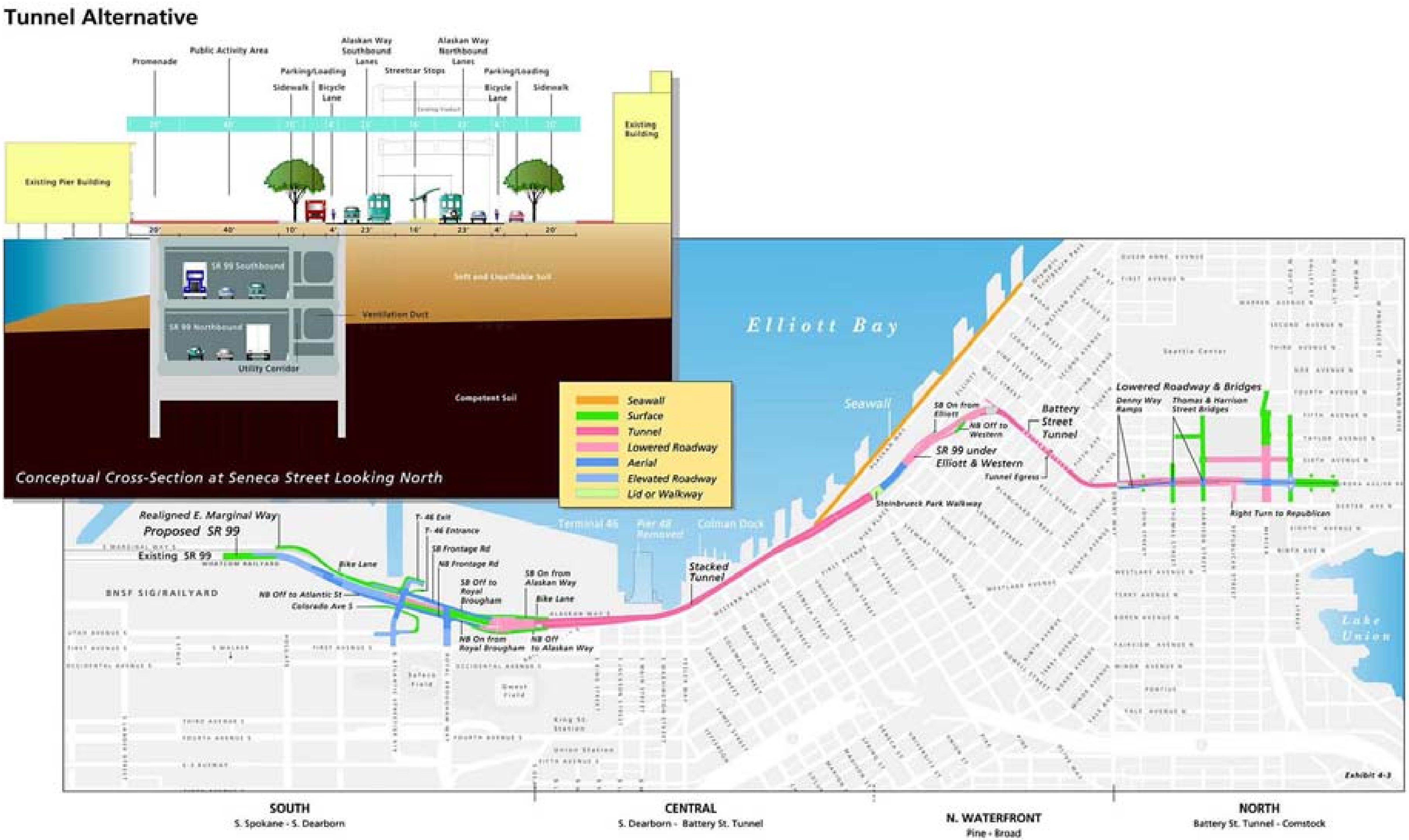

Exhibit 2-3 shows the Tunnel Alternative and a cross section of the Alaskan Way surface street.

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Design Choices

There are a number of design choices that can be mixed and matched with the components of the Tunnel Alternative. They are discussed in detail in Chapter Four of the Supplemental Draft EIS.

"Core" Tunnel Project

The "core" tunnel project differs from the "full" alternative as described above in the following ways:

- **South –** No difference between the full alternative and core project
- **Central –** No difference between the full alternative and core project
- **North –** SR 99 would pass over Elliott and Western Avenues (as opposed to under)
- **Battery Street Tunnel –** No difference between the full alternative and core project
- **North of the Battery Street Tunnel –** There would be no improvements north of the Battery Street Tunnel
- **Seawall –** Work on the seawall from Union Street to Broad Street would be deferred

What is the cost of the Tunnel Alternative?

The estimated total project cost for the full Tunnel Alternative using the October 2005 WSDOT Cost Estimate Validation Process (CEVP, as described in Tab One) is \$3.7 to \$4.5 billion, based on escalating costs to year of expenditure. The estimate for the core tunnel project is \$3.0 to \$3.6 billion.

What are the definition and costs of the Elevated Structure Alternative?

What is the definition of the Elevated Structure Alternative?

The components of the Elevated Structure Alternative are shown in Exhibit 2-4 and summarized below. Note that this exhibit is based on the June 2005 plan set. Additional detail on the Elevated Structure Alternative can be found in Chapter Four of the Supplemental Draft EIS.

- **South –** As previously described for the Tunnel Alternative, the Elevated Structure Alternative replaces the existing viaduct with a six-lane, at-grade roadway that bridges over the railroad tracks and provides a new aerial interchange near the stadiums.

- **Central –** The Elevated Structure Alternative would replace the existing viaduct with a stacked aerial structure along the central waterfront. It would have three lanes in each direction, with wider lanes and shoulders than the existing viaduct.
- **North –** The roadway would transition to side-by-side bridges over the BNSF railroad tracks from Pine to Virginia Streets. SR 99 would pass over Elliott and Western Avenues and connect with the bridges by ramps.
- **Battery Street Tunnel Improvements –** The Elevated Structure Alternative would improve the Battery Street Tunnel by increasing the vertical clearance and updating the safety systems for fire, ventilation, and emergency exits.
- **North of the Battery Street Tunnel –** The Elevated Structure Alternative would lower SR 99 in a retained cut from the Battery Street Tunnel to about Republican Street, with roadway improvements and widening up to Aloha Street. The street grid would be connected over the top of SR 99 by building two new bridges at Thomas and Harrison Streets. Mercer Street would continue to cross under SR 99 as it does today, but it would be widened and converted to a two-way street.
- **Seawall –** The Elevated Structure Alternative would replace the seawall from S. Washington Street to just north of Broad Street and includes soil improvements.

Design Choices

There are a number of design choices that can be mixed and matched with the components of the Elevated Structure Alternative. They are discussed in detail in Chapter Four of the Supplemental Draft EIS.

Exhibit 2-4. Elevated Structure Alternative

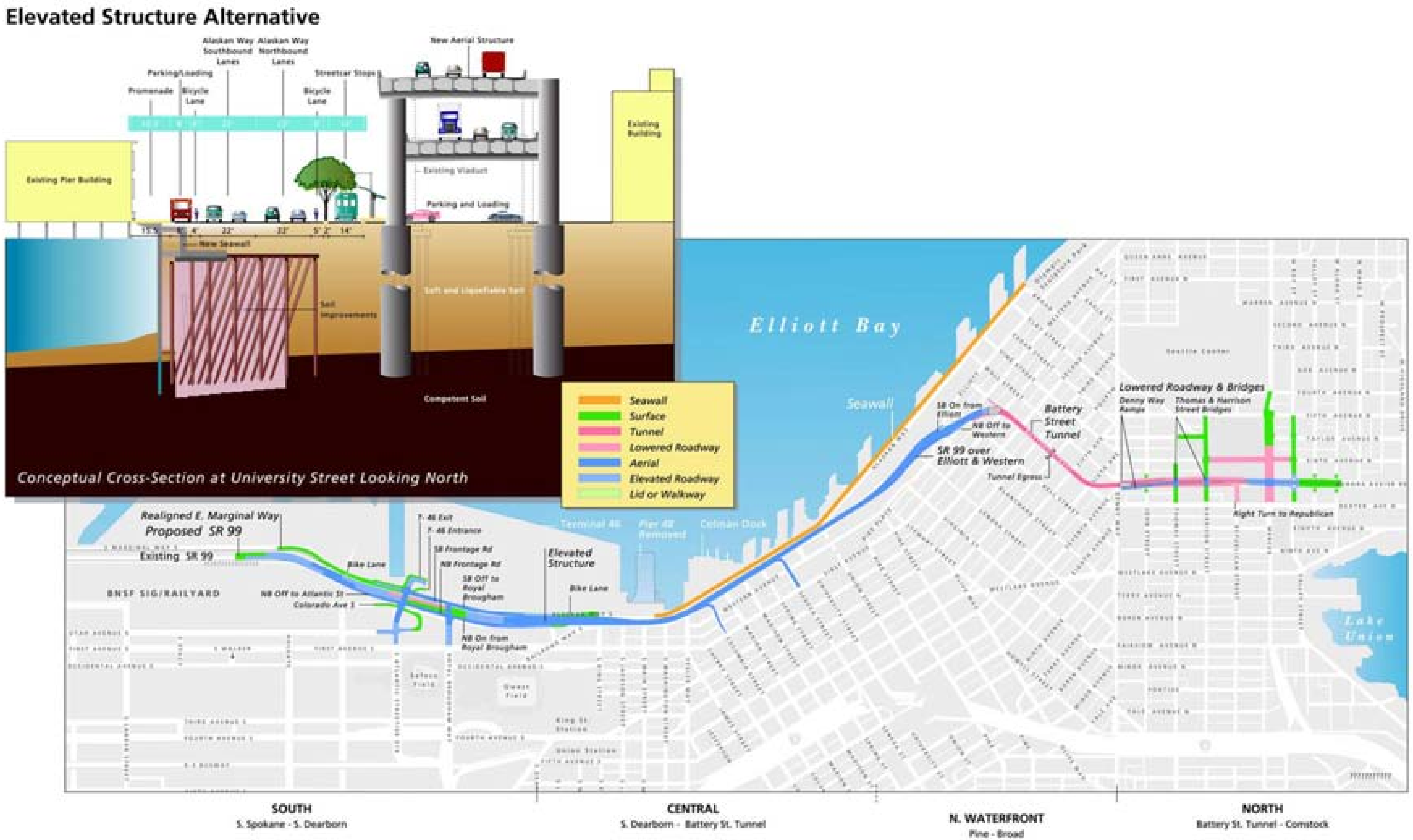

Exhibit 2-4 shows a map and cross section of the Elevated Structure Alternative.

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“Core” Elevated Structure Project

The “core” Elevated Structure project differs from the “full” alternative as described above in the following ways:

- **South –** No difference between the full alternative and core project
- **Central –** No difference between the full alternative and core project
- **North –** No difference between the full alternative and core project
- **Battery Street Tunnel –** No difference between the full alternative and core project
- **North of the Battery Street Tunnel –** There would be no improvements north of the Battery Street Tunnel
- **Seawall –** Work on the seawall from Union to Broad Street would be deferred

What is the cost of the Elevated Structure Alternative?

The estimated total project cost for the full Elevated Structure Alternative using the October 2005 WSDOT CEVP is $2.6 to $3.1 billion, based on escalating costs to year of expenditure. The estimate for the core elevated structure project is $2.0 to $2.4 billion.

What are the project’s key assumptions?

What are the global assumptions for the project?

- The completed project would at least maintain existing roadway capacity.
- Project scheduling and cost estimates assume unconstrained flow of funds.
- Construction and right-of-way cost inflation for the fall 2005 CEVP are based on the WSDOT Cost Risk Estimating and Management (CREM) Office draft memo dated October 6, 2005.
- Cost estimates include the cost of relocating public utilities but no cost for relocating private utilities.
- The cost estimates include allowances for mitigating construction effects on traffic. A budget of $100 million was included in the base cost for the construction traffic management plan (CTMP).
- Right-of-way acquisition costs are based on parametric appraisals and include the cost of Port and City of Seattle properties that may be acquired.

- Utility relocation designs are based on current criteria for separations and cover, with deviations from criteria as required.
- Vehicle and pedestrian access to Colman Dock would be maintained.
- There are additional cost estimate assumptions used for the October 2005 CEVP that can be provided.

What are the assumptions for the tunnel?

South (S. Spokane Street to Dearborn Street)

- Design speed for this segment would be 55 mph.
- Typical lane configuration would be 10-foot right shoulders, 12-foot travel lanes, and four-foot (minimum) left shoulders.
- The tail track would cross S. Atlantic Street at grade and be grade-separated as it crosses S. Royal Brougham Way.
- Frontage roads would facilitate traffic movements between S. Atlantic Street and S. Royal Brougham Way.
- The tail track would be located on the east side of SR 99 north to the vicinity of King Street.
- Whatcom Yard would remain in its current location. Whatcom Yard connection to the tail track would be re-aligned.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.
- Access via south entrance of Terminal 46 to and from the south would be at grade.

Central (Dearborn Street to Pine Street)

- SR 99 would be configured as a six-lane stacked tunnel.
- Design speed for this roadway section is 50 mph.
- Maximum vertical grade of SR 99 would be seven percent.
- Typical lane configuration would be 10-foot right shoulders, 11- and 12-foot travel lanes, four-foot (minimum) left shoulders, and a seven- to nine-foot Utilidor.
- There would be seven-foot (minimum) depth of cover over the stacked tunnel.
- No on- or off-ramps would be located within the waterfront tunnel.
- Emergency egress to the surface would be provided on the east and west sides of the waterfront tunnel at approximate spacing of 600 feet (maximum) in the vicinity of the Seattle Aquarium in the north and Madison Street in the south.

- Pedestrian bridges would be provided near Marion Street and Pike Street.
- A portal building for the northbound roadway would be located near the south tunnel portal. A portal building for the southbound tunnel would be located near the north portal.
- A traffic control center and other tunnel support facilities would be located near the south portal.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

North (Pine Street to Battery Street Tunnel)

- From Pine Street to Virginia Streets, SR 99 would transition from a tunnel to an aerial structure and retained cut roadway.
- Design speed for this segment is 40 mph.
- SR 99 would be aligned under Elliott Avenue and Western Avenue.
- Maximum vertical grade would be seven percent.
- Typical lane configuration is 10-foot right shoulders, 11- to 12-foot travel lanes and four-foot (minimum) left shoulders.
- A partial lid structure would connect Victor Steinbrueck Park to the waterfront.
- The southbound Elliott Avenue on-ramp would be an add lane and the northbound Western Avenue off-ramp would be a drop lane.
- The existing off-ramp to Battery Street and on-ramp from Western Avenue would be maintained for emergency/maintenance vehicle access only.
- The pedestrian bridge at Lenora Street would be rebuilt.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

North Seawall (Union Street to Broad Street)

- The seawall would be rebuilt from Union Street to Broad Street.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

Battery Street Tunnel and Aurora (Battery Street Tunnel Improvements and Lowered Aurora)

- The Battery Street Tunnel invert would be lowered to provide vertical vehicular clearance of 16.5 feet (minimum).
- Battery Street Tunnel would receive seismic and fire/life safety upgrades.

- Emergency egress to the surface would be provided on the north and south sides of the Battery Street Tunnel at 600-foot (maximum) spacing.
- Portal buildings would be located near the south tunnel portal for the northbound roadway and near the north portal for the southbound tunnel.
- Additional tunnel support buildings may be required in the vicinity of Battery Street and Western Avenue.
- An incident response facility would be located in the vicinity of Aurora Avenue and John Street.
- North of the Battery Street Tunnel, SR 99 would be re-profiled along a lowered alignment from near Denny Avenue north to approximately Republican Street, with roadway improvements and widening to near Aloha Street.
- The street grid would be connected with new bridges at Thomas and Harrison Streets.
- Mercer Street would be widened and would continue to pass underneath SR 99, and would be configured as a two-way roadway.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

What are the assumptions for the Elevated Structure Alternative?

South (S. Spokane Street to Dearborn Street)

- Assumptions in the South section are the same as for the Tunnel Alternative.

Central (Dearborn Street to Pine Street)

- The existing viaduct would be replaced with an elevated structure along the central waterfront.
- The elevated structure would have three lanes in each direction.
- Design speed for this segment is 50 mph.
- Maximum vertical grade would be seven percent.
- Typical lane configuration is 10-foot right shoulders, 12-foot travel lanes, and two-foot (minimum) left shoulders.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

North (Pine Street to Battery Street Tunnel)

- SR 99 would be a six-lane aerial structure transitioning to a four-lane Battery Street Tunnel.
- Existing ramps at Elliott and Western Avenues would be rebuilt.
- SR 99 would be rebuilt over Elliott and Western Avenues.
- Design speed for this segment is 40 mph.
- Maximum vertical grade would be seven percent.
- Aerial Lane configuration would be 10-foot right shoulders, 12-foot travel lanes and two-foot (minimum) left shoulders with a transition north of the ramps from Elliott Avenue to Western Avenue.
- The pedestrian bridge at Lenora Street would be rebuilt.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

Seawall (Pier 48 to Broad Street)

- The seawall would be rebuilt from Washington Street to Broad Street.
- Drainage would be designed using a combination of Convey and Treat and Best Management Practices.

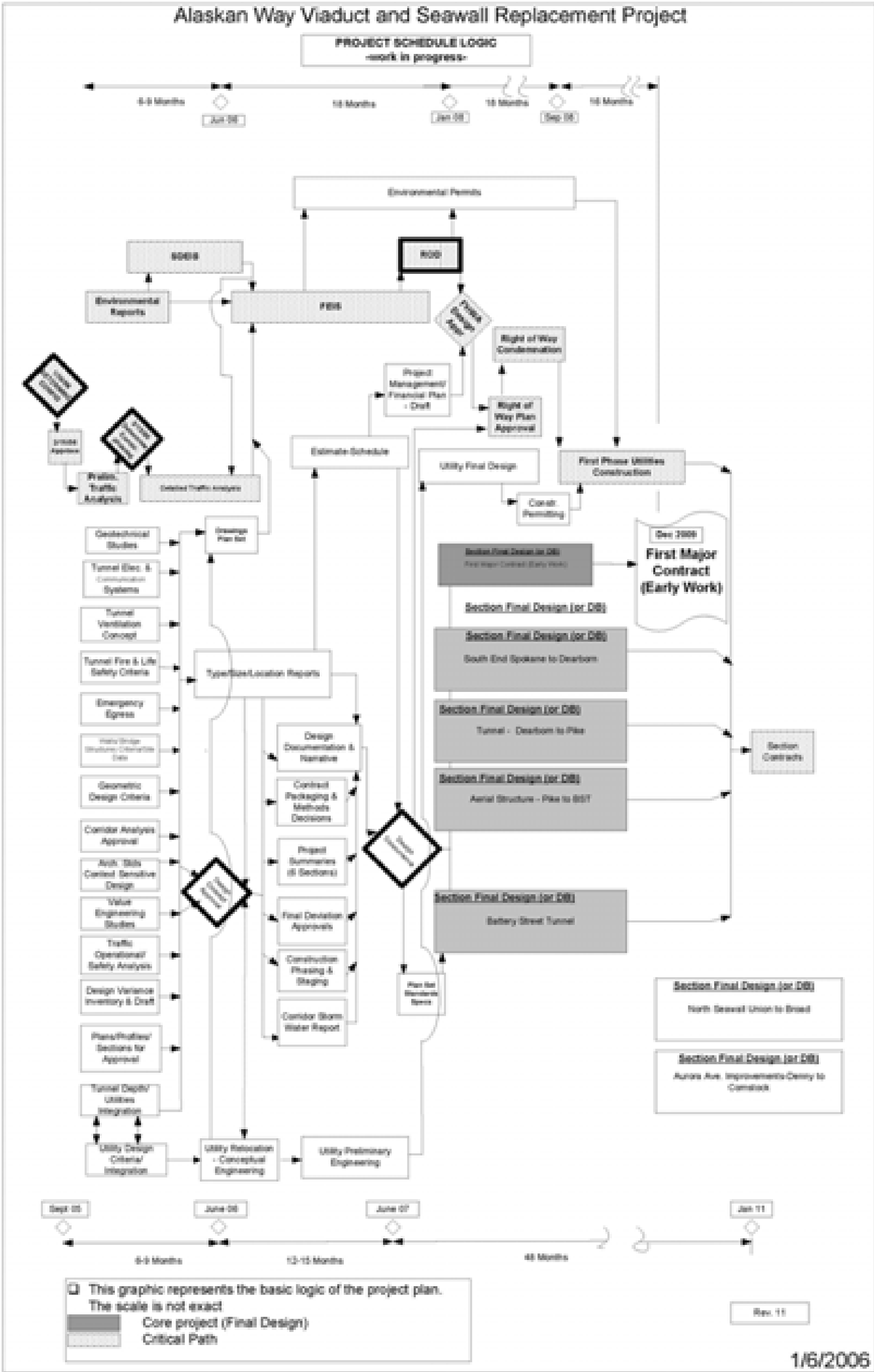
Battery Street Tunnel and Aurora (Battery Street Tunnel Improvements and Lowered Aurora)

- Assumptions for the Elevated Structure Alternative in this area are the same as for the Tunnel Alternative.

What is the project’s implementation plan?

Project implementation balances the urgency of public safety concerns related to the viaduct and seawall with the cost and long-term consequences of design decisions. Roadway design would proceed in parallel with urban planning, utility relocation design, environmental analysis, transportation planning, and state and local political processes. Exhibit 2-5 shows design activities leading up to the construction contract award.

Exhibit 2-5. Viaduct Project Design Activities Flow Chart



WSDOT's Cost Estimate Validation Process (CEVP®)

The project partners estimate construction durations and costs for the project using CEVP. This process helps estimate a construction duration range and cost range by considering preliminary engineering plans and potential construction risks. CEVP is not a casual look at a project; rather, CEVP is the outcome of an intense workshop process, resembling the design review process called value engineering. CEVP examines the project by using top engineers from private firms and public agencies around the country who are experienced in project management delivery. WSDOT, FHWA, and City of Seattle engineers are also involved in the workshop process. CEVP helps determine overall project costs and construction durations by considering preliminary engineering plans, project risks, individual unit costs, and inflation.

Risk Management, Value Engineering and Constructability Workshops

The risk register developed for the CEVP workshops forms the basis of the project risk mitigation plan. Designers and construction planners identify means to mitigate the likelihood and impact of identified risks, the measures to be tracked through drawings and contract specifications, and unmitigated risks to be assigned to the party best able to control them.

Two value engineering workshops have been conducted on early versions of the project design. Additional workshops will be conducted as the design proceeds through preliminary and final design. The project team includes a number of staff with experience in the construction field. In addition, the project team convened four workshops with outside construction experts, including active and recently retired contractors. These workshops looked at overall tunnel construction approaches, closed corridor construction, the depth of tunnel cover, and construction of the tunnel's west wall. The project team plans to continue holding similar workshops.

Construction Plans

A number of construction plans have been evaluated for the project. The Draft EIS assumed that two lanes of traffic in each direction would remain open through Seattle on SR 99, the Alaskan Way surface street, or on an identified detour route during the majority of the construction period. The Supplemental Draft EIS evaluates three construction plans for the Tunnel Alternative and the Elevated Structure Alternative.

- **Shorter Construction Plan –** Both directions of SR 99 would be closed for up to 42 months (3.5 years) during construction.
- **Intermediate Construction Plan –** Both directions of SR 99 would be closed between S. Spokane Street and Denny Way for 18

to 27 months. In addition, there would be times when one direction of SR 99 would be closed while the other would remain open.

- **Longer Construction Plan –** Both directions of SR 99 would be closed from S. Spokane Street to Denny Way for three months. For the rest of the construction period, at least two lanes would be provided in each direction on SR 99 or on an alternate route.

See the Draft EIS and the Supplemental Draft EIS for additional discussion on construction plans.

Construction Traffic Stages

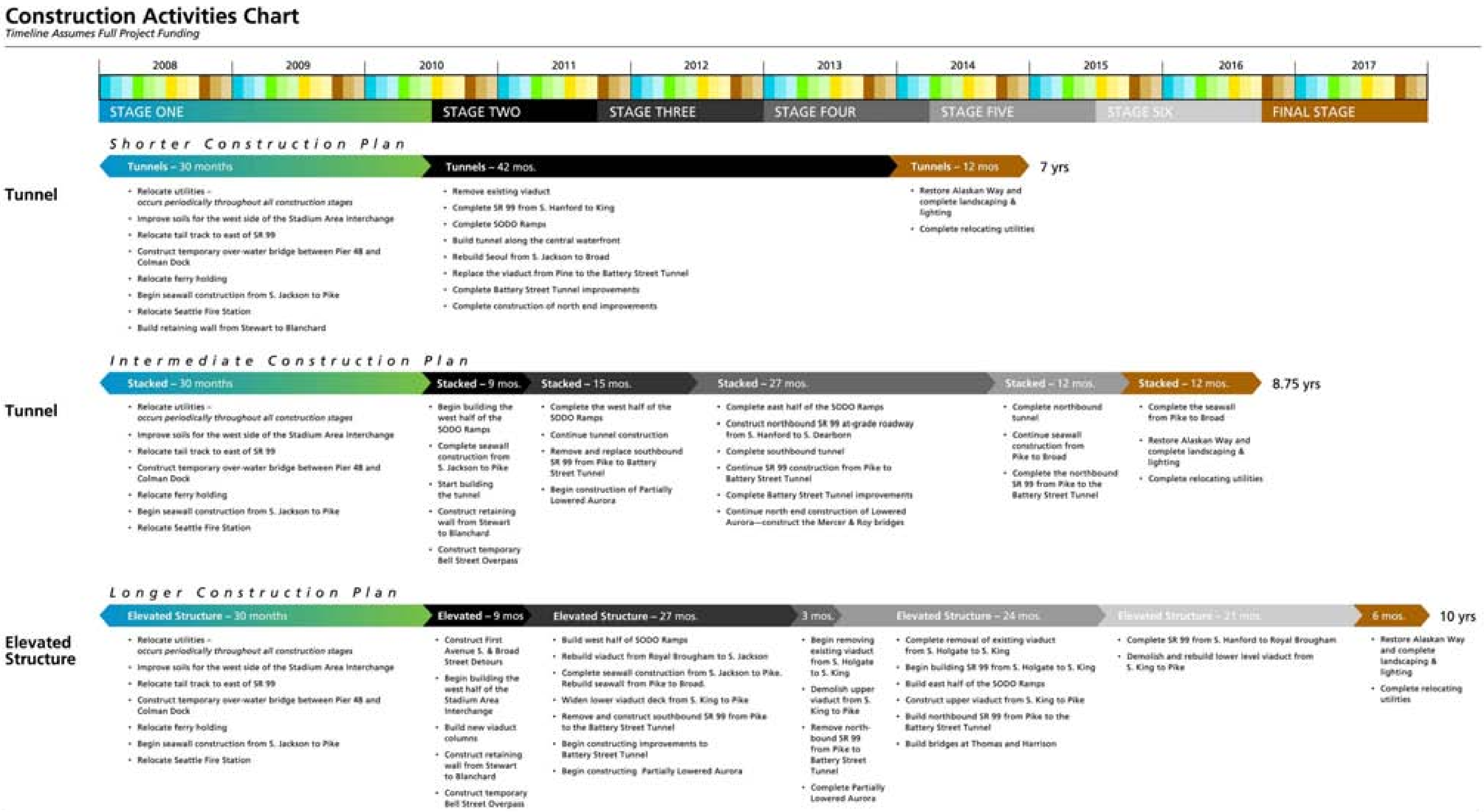
Construction activities for the alternatives have been organized into several stages based on proposed traffic detours, as shown in Exhibit 2-6. With SR 99 closed according to the Intermediate Construction Plan, six traffic stages are proposed for the Tunnel Alternative. For the Elevated Structure Alternative, seven traffic stages are proposed. For all of the construction plans evaluated, similar construction activities and traffic detours are proposed for stage one and the final stage. Differences between the alternatives and construction plans occur in the stages between stage one and the final stage. See paragraphs below and the Supplemental Draft EIS for additional discussion on traffic stages.

What are the design and construction schedules for the Tunnel Alternative?

What is the design schedule for the Tunnel Alternative?

The WSDOT Design Manual is used as the basis for organizing the work of designing the Viaduct Project. However, the project has some features and aspects that will stretch the framework provided in the Design Manual. Outlined below is the strategy for delivering the design of the Viaduct Project. This strategy is applicable to both the Tunnel and Elevated Structure Alternatives.

Exhibit 2-6. Construction Activities Chart



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Design Concept Approval

The Design Manual does not use the term "design concept approval," but this step will need to be taken for the Viaduct Project. In this stage, the project team will document key design decisions and define the preferred alternative sufficiently so that later stages of design can move forward with confidence, especially since design will progress in parallel with the EIS process. This step should include:

- Design narrative for each geographic section, including key decisions
- Constraint studies for each geographic section
- Decisional white papers and other decisional reports or references
- Corridor analysis with all addenda
- Design variance inventory
- Draft and/or final deviation packages
- Design criteria documents: structural, civil, architectural, utilities, other (or references)
- Concept Level Traffic Summary Report
- Concept Level Summary Geotechnical Report
- Reference to utility concept design
- Updated configuration drawing set
- Reference to value engineering studies
- Geometric alignment

The project team's target for design concept approval is summer 2006. The WSDOT Headquarters State Design Engineer's signature is required for design concept approval.

Design Concurrence

Design concurrence constitutes all of the design documentation required for design approval, minus FHWA signatures, because this step would occur prior to the Record of Decision.

This step includes identifying and prioritizing specific design projects within the overall viaduct program so that final project summaries can be developed and approved. In addition, project contracting methods will be established, documented and approved. Once the project summaries are approved and the contract methods established, design packages will be developed to complete "section design handoff." Section design handoff will allow the Plans Specifications & Estimate (PS&E) phase (or design/build) to commence by section design teams. This step would include:

- Updated design package

- Project summaries for the defined projects
- Type, Size, and Location (TS&L) and other studies
- Updated drawing set, including approved interchange plans
- Updated cost estimate and CEVP
- Definition of the overall contracting and construction delivery approach
- Updated schedule reflecting the order and sequencing of the various construction projects
- Final deviation approvals
- Corridor stormwater report approval
- Request for Qualifications and Request for Proposal packages if design build delivery is chosen

The target date for design concurrence is May 2007. The WSDOT Headquarters State Design Engineer's signature is required for design concurrence.

Design Approval

Design approval refers to the formal FHWA approval after the Record of Decision is completed. The approval process documents all the major design decisions and becomes part of the project file WSDOT keeps for 75 years. Some common components of the Design Documentation Package are as follows:

- Updated design concurrence package
- Project definition
- Design decision summary
- Environmental review summary
- Design variance inventory
- Cost estimate
- Washington State Environmental Policy Act (SEPA) and National Environmental Policy Act (NEPA) documentation
- Design clear zone inventory
- Interchange plans, profiles and roadway sections
- Corridor or project analysis
- Traffic projections and analysis
- Accident analysis
- Record of survey
- Right-of-way plans
- Work zone traffic control plan
- Documentation of decisions to differ from WSDOT design guidance
- Documentation of decisions for components for which there is no WSDOT design guidance

When the Design Documentation Package is complete, it is submitted for approval. In the case of the Viaduct Project, WSDOT Headquarters and FHWA are the final approving authorities. Local agency concurrence through the Seattle Department of Transportation (SDOT) is also required. The target date for design approval is February 2008.

Plans, Specifications and Estimates

The project team currently envisions multiple consultant contracts (section designers) to prepare the PS&E documents that will be used to advertise and award the construction contracts. The Design Documentation Package, supplemented with additional Project File information, will provide direction to the section designers to ensure that the separate projects are compatible, consistent, well defined and integrated.

Guide specifications will ensure consistency among the specs prepared by separate consultants. Preparing the engineer's estimates prior to advertising may also be centralized and standardized to ensure consistency. Furthermore, to procure the section designs, WSDOT will need a Request for Proposal, source selection process, and award for each consultant contract. WSDOT plans to give Notice to Proceed to the initial section designer in late 2007. Currently, WSDOT anticipates making the first major roadway construction contract award in April 2010.

The Expert Review Panel will be briefed on the current design schedule for the Tunnel Alternative.

What is the construction schedule for the Tunnel Alternative?

The construction plan being considered for the Tunnel Alternative is the Intermediate Construction Plan. Based on the fall 2005 CEVP calculations, it could take nine to 11 years to build the Tunnel Alternative using this plan. This duration represents the 10 to 90 percent probability range for estimated construction duration. This means that there is a 10 percent chance that it would take less than nine years to build the Tunnel Alternative and a 90 percent chance that it would take less than 11 years.

Construction activities are expected to begin in January 2008, though the start date depends on project funding. The construction durations represent the project partners' current thinking about how the project would be built, and the durations assume that all funding needed to build the project would be available at the time indicated on the overall project construction schedule. If the project partners do not have all of the money needed, construction durations and the order in which project components would be built may change. Certain portions of the project (such as rebuilding the seawall north of Pike Street) might get delayed until additional funding could be secured.

The Intermediate Construction Plan would close SR 99 from S. Spokane Street to Denny Way for 27 months. There would be times during construction when the southbound lanes would be closed and the northbound lanes would be open. Conversely, there would also be times when the northbound lanes of SR 99 would be closed and the southbound lanes would be open. The construction stages are shown in Exhibit 2-7.

What are the design and construction schedules for the Elevated Structure Alternative?

What is the design schedule for the Elevated Structure Alternative?

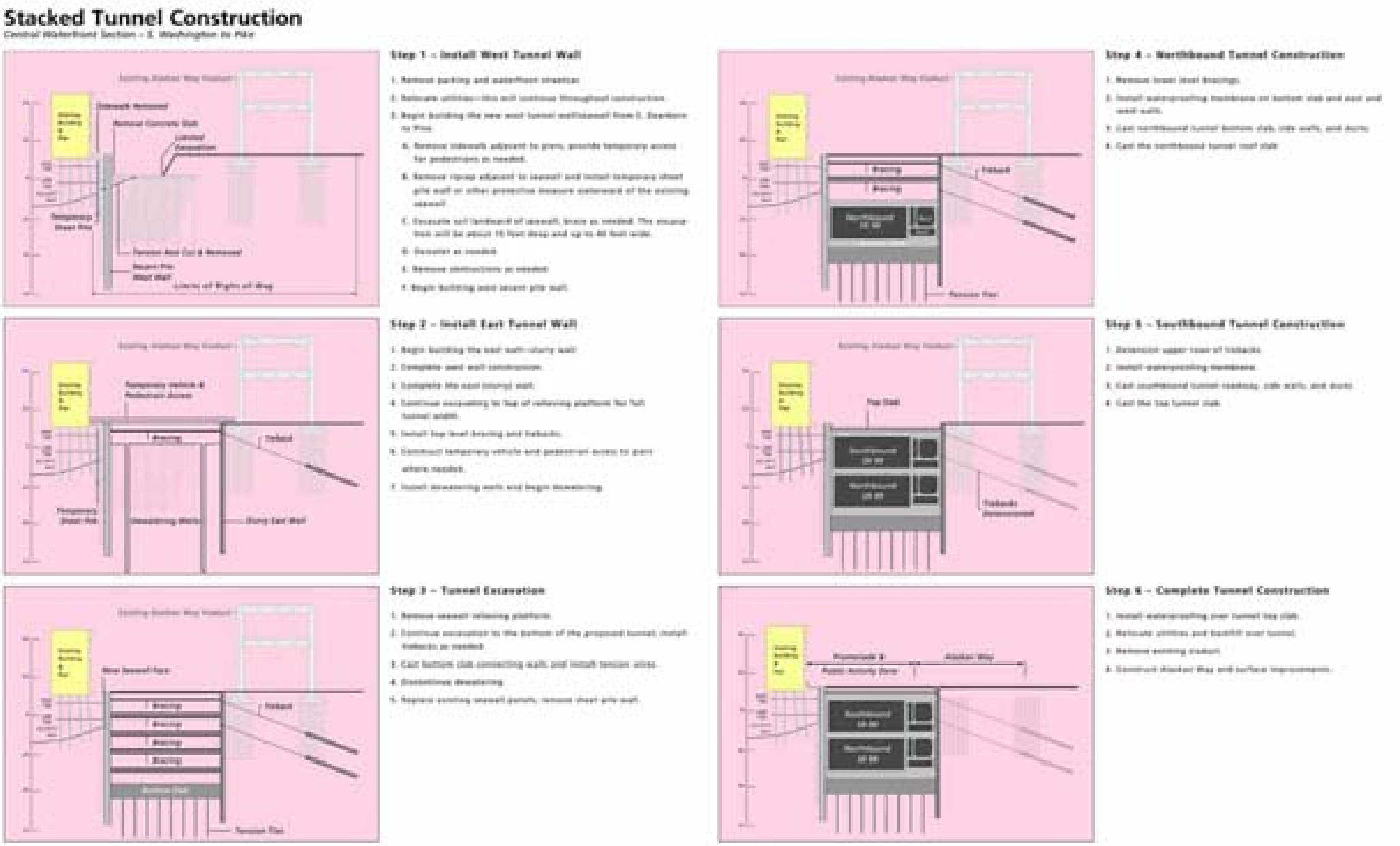
The strategy for delivering the design of the Elevated Structure Alternative would be the same as that covered previously under the Tunnel Alternative. The Expert Review Panel will be briefed on the current design schedule for the Elevated Structure Alternative.

What is the construction schedule for the Elevated Structure Alternative?

Like the Tunnel Alternative, the construction approach being considered for the Elevated Structure Alternative is the Intermediate Construction Plan. Based on the fall 2005 CEVP calculations, it could take 10 to 11 years to build the Elevated Structure Alternative using the Intermediate Construction Plan. This duration represents the 10 to 90 percent probability range for estimated construction duration. This means that there is a 10 percent chance that it would take less than 10 years to build the Elevated Structure Alternative and a 90 percent chance that it would take less than 11 years.

As with the Tunnel Alternative, construction activities are expected to begin in January 2008, though the start date depends on project funding. The construction durations represent the project partners’ current thinking about how the project would be built, and the durations assume that all of the money needed to build the project would be available at the time indicated on the overall project construction schedule. Also, since the Elevated Structure Alternative conflicts with the City of Seattle’s stated preference, delay would be anticipated to arrive at this decision.

Exhibit 2-7. Stacked Tunnel Construction



Under the Intermediate Construction Plan approach, SR 99 would be closed for approximately 18 months to all traffic between S. Spokane Street and Denny Way. During the rest of the construction period, at least two lanes would be maintained on SR 99 or on a detour route. The construction stages are as shown in Exhibit 2-8.

What is the mitigation strategy for the tunnel?

What are the project's effects?

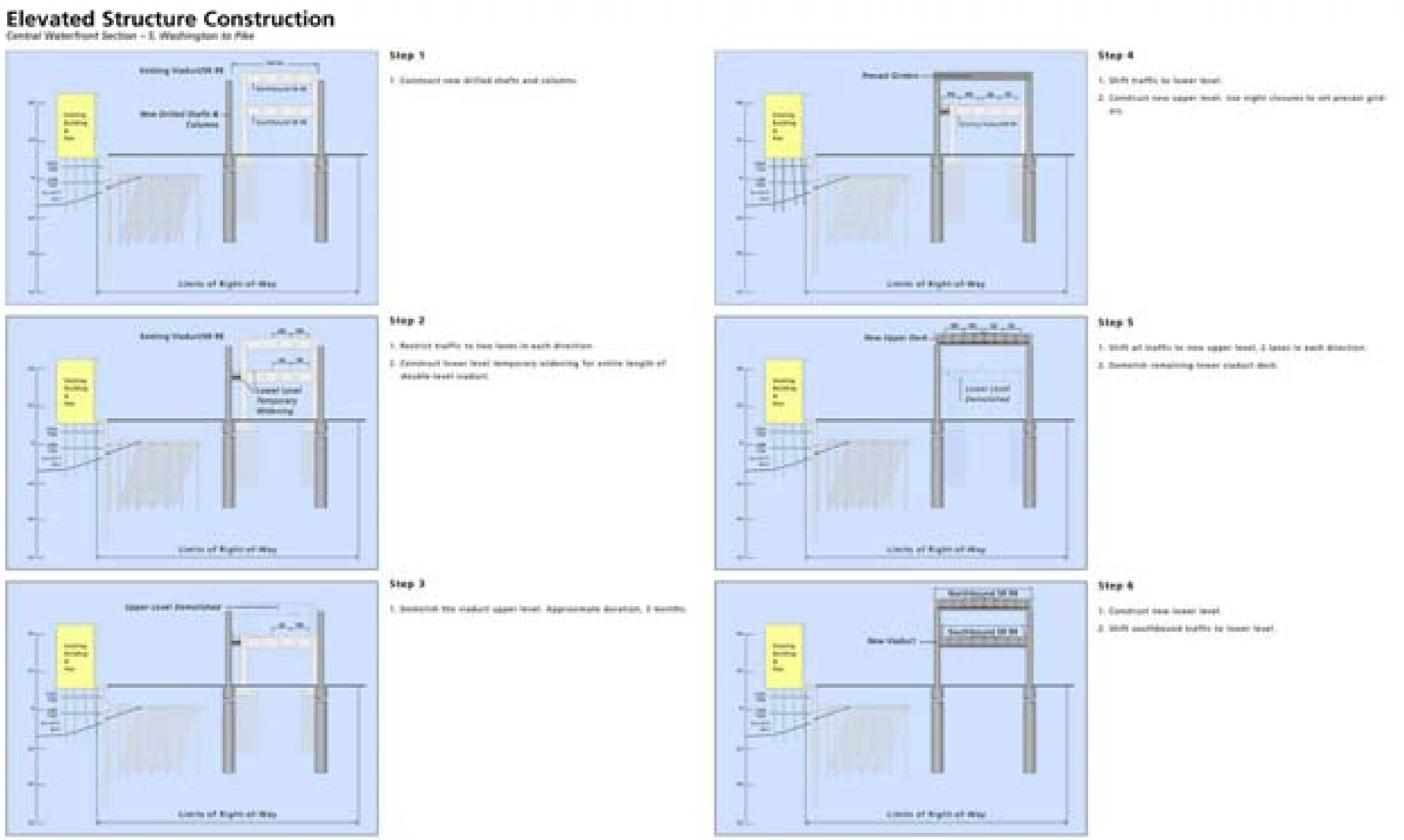
The project's operation and construction activities will create environmental effects. Most project effects are related to construction because the new facility would operate in a similar way to the existing grade-separated facility in the project corridor.

Operation
The optimal way to mitigate "operational" effects of a project is through design. The Tunnel Alternative itself substantially mitigates effects along the central waterfront by removing the viaduct structure, which will reduce noise levels, reconnect the shoreline to downtown, improve community and neighbor connectivity and accessibility, open up views from downtown streets to Elliott Bay and the Olympic Mountains, and provide for improved pedestrian and non-motorized mobility through a pedestrian promenade and other improvements along the central waterfront.

In terms of noise effects, the fans for the tunnel vent buildings can be designed to meet the City's noise ordinance. In the transition area where the central waterfront tunnel (where the tunnel rises from the ground) meets the Battery Street Tunnel, noise effects could be reduced with a small noise wall near the Waterfront Landing condominiums. The project team will continue to explore these and other design measures in the coming months, with specific commitments contained in the Final EIS.

Several operational project effects would persist after construction is complete. On-street parking would be reduced from existing levels (loss of some 376 short-term on-street and 430 long-term on-street parking spots for the Tunnel Alternative). The short-term on-street spots are largely in the Pioneer Square and central waterfront areas. Additional right-of-way would also be needed for new ramps and other improvements included in the project. A decrease in habitat in Elliott Bay due to some fill in the vicinity of Colman Dock may create the need for aquatic habitat mitigation.

Exhibit 2-8. Elevated Structure Construction



Once the project is built, stormwater runoff generated within the project area will be less than the current volume due to reduced impervious surface area. The stormwater that is collected will receive improved treatment in compliance with current stormwater codes.

Construction

Most of the project's environmental effects are related to construction. The construction duration for the Tunnel Alternative (nine to 11 years) and the project's high visibility in a dense urban area contribute to the need for mitigation measures for businesses, residents, and travelers during this time.

The Draft EIS and the Supplemental Draft EIS analyze the effects of construction. While those effects spread across all elements of the environment, they are especially notable in the areas of noise (up to 24 hours per day of construction activity), transportation (loss of SR 99 capacity and Alaskan Way surface street capacity; business and residential access constraints; loss of short-term and long-term on-street and off-street parking), historic and archaeological resources (effects on historic structures and potential effects on archaeological resources), aquatic habitat effects along Elliott Bay, and business effects (changes in access, parking, and visibility).

Details on the effects of the Tunnel Alternative due to construction can be found in the Draft EIS, the Supplemental Draft EIS, and EIS Technical Reports.

What mitigation is required?

NEPA and SEPA require identification of effects and mitigation to minimize significant adverse project effects. In addition, various federal, state, and local laws and regulations specify certain levels of required mitigation for construction and/or operational effects. Examples include Section 106; Environmental Justice statutes; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Resource Conservation and Recovery Act (RCRA) at the federal level and City noise ordinances and Shoreline Master Use permits at the local level.

What mitigation strategies or opportunities have been identified?

The mitigation strategies or opportunities identified to address the project's environmental effects in the areas of operation and construction are identified below.

Operation

Operational effects resulting from the project include short-term parking loss, residential and business relocations, potential habitat loss in Elliott Bay, and changes to stormwater runoff management.

Short-Term Parking Loss

A formal parking mitigation strategy for the loss of short-term on-street parking is being developed. Among measures being considered are the following: the use of other existing parking facilities in the area, leasing all or part of an existing parking facility and converting it to short-term parking, or purchasing property and building new short-term parking.

Relocations

The lead agencies will provide relocation assistance and compensation to affected property owners and tenants as mitigation. Compensation will comply with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

Loss of Elliott Bay Habitat

Additional design work is helping the project team identify opportunities to reduce or eliminate habitat effects in Elliott Bay. If effects remain, efforts to mitigate habitat loss could include removing some existing fill to restore habitat and/or designing innovative surface treatments for the new seawall face that mimic natural characteristics where possible. A specific plan for addressing habitat loss will be developed in cooperation with the appropriate resource agencies including the National Oceanic and Atmospheric Administration (NOAA) Fisheries, the United States Fish and Wildlife Service (USFWS), the United States Army Corps of Engineers (Corps), Washington Department of Fish and Wildlife (WDFW), Washington Department of Natural Resources (DNR), Department of Ecology (Ecology), and Seattle Department of Planning and Development (Seattle DPD).

Stormwater Runoff

Stormwater runoff generated within the project area will be either directed to the combined sewer system, routed to the West Point Treatment Plant, or treated using Best Management Practices consistent with applicable stormwater codes. This would be an improvement over existing conditions, where only a portion of the stormwater from SR 99 and the Alaskan Way surface street is treated before it is discharged. The project will also provide some detention to help moderate peak flows in the combined sewer system and reduce the likelihood of overflow events.

Additional details on these and other operation-related mitigation measures can be found in the Draft EIS and Supplemental Draft EIS.

Construction

The Draft EIS and the Supplemental Draft EIS present menus of potential measures that could be used to mitigate the project alternatives' adverse effects. In developing the mitigation plans, effects on adjacent and nearby properties will be examined in terms of the severity and length of effects. Mitigation measures will be tailored to the various construction phases and varying levels of effect over time, as appropriate.

Noise

Mitigation requirements would be defined by the project's noise variance and will be included in contractor specifications. A management and monitoring plan that sets noise limits will be developed as part of the variance process. Potential mitigation measures include constructing temporary noise barriers or curtains around equipment or work areas, using vibratory pile driving methods, and equipping construction equipment engines with adequate mufflers and intake silencers. Additional mitigation strategies are found in Chapter Eight of the Draft EIS, Appendix F.

Water Quality

A variety of construction activities could affect water quality. The effects include potential erosion in construction and staging areas; seawall, in-water and over-water work; soil improvements; and dewatering. To avoid and minimize possible effects to water quality, a temporary erosion and sediment control plan will be developed. See the Draft EIS, Appendix S, for additional details.

Transportation

A CTMP is under development to help keep traffic moving during construction. The objectives of the plan are to:

- Maintain reliable transit service to retain and increase transit use.
- Improve and expand transit service in affected corridors to provide a viable alternative to single occupant vehicles.
- Maintain or increase roadway capacity on local streets.
- Manage traffic effectively to prioritize movement of people and goods.
- Enhance traveler information to help people make informed choices.
- Manage transportation demand effectively to provide all travelers with more choices related to mode, location, route and time of travel.

Over 130 ideas have been developed to potentially address these objectives. See section 6.5 in the Draft EIS, Appendix C, for the complete list. More than 30 key strategies have been identified as having the most potential to provide effective mitigation. These can be found in the Supplemental Draft EIS, section 7.7.

Parking

Approximately 3,700 parking spaces would be removed during construction. In addition, construction worker parking would be needed in close proximity to the project corridor. Mitigation measures could include purchasing, leasing, or constructing additional short-term parking in the Pioneer Square and central waterfront areas to reduce effects on businesses and/or providing parking south or north of the project and shuttling construction workers and visitors downtown. A mitigation plan for parking effects during construction is being developed and will be included in the Final EIS.

Air Quality

Dust from construction and demolition activities would affect air quality directly adjacent to the construction area. Dust would be minimized by watering down the construction site and containment areas and by incorporating other management practices. Using clean fuels and/or retrofitting a portion of the construction equipment fleet may also be needed to mitigate construction effects on air quality. See Section 9.2 of the Draft EIS, Appendix Q, for additional details.

Historic/Archaeological Resources

Several historic structures will be affected by project construction, including the viaduct, the seawall and the Washington Street Boat Landing. Prior to construction a memorandum of agreement (MOA) between SDOT, FHWA, and the State Historic Preservation Officer (SHPO) will be developed to detail how these resources will be documented. The historic Washington Street Boat Landing will be removed and stored during construction. Once construction is completed, it would be restored and relocated on the edge of the new shoreline. Before demolition of the existing viaduct takes place, the historic buildings adjacent to the structure will be evaluated to determine vulnerability to damage. Where necessary, the contractor will be required to use less hazardous demolition and construction methods.

Archeological resources may also be affected by the project, especially along the Elliott Bay shoreline. Mitigation measures for historic and archaeological resources will be described in an MOA or a Programmatic Agreement between the City of Seattle, WSDOT, the SHPO, and FHWA. Details can be found in Appendices L (historic) and M (archaeological) in the Draft EIS and Supplemental Draft EIS. Additional studies are being conducted to identify potential areas of concern. An Inadvertent Discovery Protocol will be developed and concurrence by interested tribes will be obtained prior to construction.

Business

Potential construction effects on businesses from traffic detours, congestion, noise, dust, loss of parking, and changes to access would vary throughout the construction period. A primary goal of construction planning is to maintain adequate access to all businesses so they can continue to operate. Mitigation measures under consideration include:

- Conducting a public information effort and operating a project construction hotline.
- Providing signage, lighting and other information.
- Maintaining vehicular and pedestrian access.
- Implementing measures to reduce noise, dust, and vibration.
- Providing mitigation for short-term parking loss.

How will mitigation decisions be made?

The Draft EIS and the Supplemental Draft EIS present menus of potential measures that could be used to mitigate the adverse effects of the project alternatives. After reviewing public and agency comments on both documents, the project team will prepare more specific mitigation measures to address the identified construction effects. Opportunities for public and/or resource agencies to review mitigation elements will be provided. Mitigation commitments will be included in the Final EIS and in FHWA's Record of Decision.

Several mitigation plans are also described in the Draft EIS and Supplemental Draft EIS, many of which have incorporated specific agency and stakeholder review processes that are discussed below.

Transportation and Parking

A draft CTMP will be prepared. The plan will address a number of elements including transit, traffic operations, traveler information, freight, emergency response, transportation demand management, and parking. An extensive public review and involvement process is planned during the coming months, with input reflected in the draft CTMP and the mitigation commitments in the Final EIS.

Noise

Construction noise mitigation will be developed through the City of Seattle's noise variance process. The project team will prepare a draft noise variance application that will contain specific mitigation measures.

(Note: The noise variance application will only address the preferred alternative.) This draft application will then go through an intensive public input and review process. The project team will revise the application, including the mitigation measures, based on input and formally submit the application to the City of Seattle DPD. The mitigation measures included in the formal application will also be included in the project's Final EIS. DPD will then independently analyze the application and present the studies and mitigation measures to the public for a formal review and comment period.

Business and Residential Mitigation Plans

A business mitigation plan will be developed to mitigate the effects associated with project construction on the businesses both within the area of immediate effects and those that are indirectly affected due to traffic displacement from the SR 99 corridor. The plan will build on the effects identified and mitigation measures developed for other disciplines, including air quality, noise, economics, land use, transportation and parking. The plan will address general business issues (access to greater downtown Seattle) and specific segment issues (such as the central waterfront, Pioneer Square, etc.).

Over time, the plan will be fine-tuned to address specific businesses with unique characteristics (such as water-dependent businesses on the central waterfront). Elements of the plan will be reviewed with representative stakeholders over the next year. The Business Mitigation Plan, reflecting this input, will be included in the Final EIS.

Likewise, a Residential Mitigation Plan will be prepared to consolidate in one location the mitigation measures developed to mitigate construction effects on residences located within the area of immediate effects. The major issues identified to date include access, parking, noise, and air quality.

Aquatic Resources/Stormwater

An aquatic resource mitigation plan, addressing construction-related effects on Elliott Bay habitat and water resources, will be developed in conjunction with the appropriate resource agencies. This plan will be reviewed by the agencies that are Signatory Agency Committee (SAC) members for their concurrence before it is finalized and included in the Final EIS. The SAC is described in more detail in Tab One.

Section 106 and Historic Resource Mitigation

Section 106 of the National Historic Preservation Act requires agencies to consider the effects of federal actions on historic properties. The project team will continue to consult with the SHPO, tribes, and other interested parties to developing mitigation measures. The team will develop programmatic agreements to deal with known and unknown effects, and will then develop structure- and resource-specific MOAs to document and mitigate effects. The project team has already begun to develop documentation for known effects (e.g., viaduct, seawall, Washington Street Boat Landing). The team is also completing in-depth cultural resource and archeological analysis to identify a three-dimensional area of potential effects for the project.

Depending on the type of resource, mitigating adverse effects can involve documentation, excavation, and/or relocation. Other appropriate measures are developed on a case-by-case basis with the SHPO. When the parties agree on how the adverse effects will be resolved, an MOA will be signed and implemented. This agreement will outline mitigation measures, identify responsible parties, and bind the signatories. In consultation with the SHPO and tribes, the project team will also develop an Inadvertent Discovery Protocol and construction monitoring plan. Section 106 documentation will be included in the Final EIS.

Mitigation measures and plans will continue to be updated through the life of the project. Compliance with the terms of the mitigation plans will also be monitored through the life of the project. A key component of all plans is an intensive and interactive communications strategy, including a construction hotline, a rapid response mechanism to resolve problems identified through the hotline and other sources, and frequent communications about construction activities with affected businesses and residents.

What is the mitigation strategy for the Elevated Structure Alternative?

What are the project's effects?

Environmental effects of the project will be related to both operation and construction. The effects are described below.

Operation

As with the Tunnel Alternative, most Elevated Structure Alternative effects are related to construction since there is already a grade-separated facility through the SR 99 project corridor. This alternative would replace the aging facility with a new, elevated structure.

The optimal way of mitigating a project's "operational" effects is through design. For instance, the design of the fans for the vent buildings (Battery Street Tunnel improvements) can be designed not to exceed decibel levels stipulated in the City's noise ordinance. Noise generated on the lower deck of the new, elevated structure may also be mitigated to some extent by including sound-absorbing materials to reduce the reflected noise. Effects of the elevated structure on historic buildings could be lessened through designing the new structure to compliment historic surroundings. These and other design measures will continue to be examined in the coming months. Ideas will be presented to the public through the ongoing public involvement process, with specific commitments contained in the Final EIS

Several project effects would be ongoing after construction is complete. On-street parking would be reduced from existing levels (by 68 short-term and 276 long-term on-street spaces). The short-term on-street spots are largely in the Pioneer Square and central waterfront areas.

Additional right-of-way would be needed for new ramps and other improvements included in the project. Decreasing habitat in Elliott Bay due to fill in the vicinity of Colman Dock would create the need for aquatic habitat mitigation.

Once the project is built, stormwater runoff generated within the project area will receive treatment, which will improve water quality of runoff discharges. Stormwater runoff will be handled consistent with applicable codes.

Current effects of the existing structure would continue, such as limiting neighborhood connectivity and views. In addition, pedestrian mobility would be degraded as the waterfront sidewalk would be narrower than the existing condition. There would be no improvement in non-motorized access or mobility.

Construction

Most of the project's environmental effects are related to construction. The construction duration for the Elevated Structure Alternative (10 to 11 years) and the fact that the project is being built in a dense urban area contribute to a heightened public awareness of related effects and the need to provide mitigation for businesses, residents and travelers during construction.

The Draft EIS and the Supplemental Draft EIS analyze the effects of construction. While effects are spread across all elements of the environment, they are especially notable in the areas of:

- Noise – Up to 24 hours per day of construction activity
- Transportation –
    - Loss of SR 99 capacity and Alaskan Way surface street capacity

  - Business and residential access constraints
  - Loss of short-term and long-term on-street and off-street parking
- Historic and archaeological resources – Effects on historic neighborhoods and structures and potential effects on archaeological resources
- Aquatic habitat – Effects along Elliott Bay
- Business effects – Changes in access, parking, and visibility

Details on the effects of the Elevated Structure Alternative due to construction can be found in the Draft EIS and related Technical Reports, as well as in the upcoming Supplemental Draft EIS and Technical Reports.

What mitigation is required?

Like the Tunnel Alternative, the Elevated Structure Alternative must comply with mitigation requirements in NEPA and SEPA, and applicable regulations contained in Section 106, Environmental Justice statutes, CERCLA, RCRA, and state and local laws and regulations.

What mitigation strategies or opportunities have been identified?

The mitigation strategies or opportunities identified to address the environmental effects of the Elevated Structure Alternative in the areas of operations and construction are similar to those described earlier for the Tunnel Alternative.

How will mitigation decisions be made?

Mitigation decisions for the Elevated Structure Alternative will be made in the same way as described earlier for the Tunnel Alternative.

What is the permitting strategy?

Establishing a Permit Team

In 2004, the project partners established a Permit Strategy Team. The team was tasked with identifying permits required for the project and developing a strategy to obtain them. To date, the Permit Strategy Team has developed an Environmental Permits and Approvals Guide (April 2006), which lists the major environmental and land use permits the project will need, and has created preliminary timelines for obtaining these permits.

Identifying Permits

The Permit Strategy Team established the following list of environmental and land use permits required for the construction and operation of this project to meet federal, state and local regulations. The team will continue to refine this list as construction scenarios are developed.

Federal Permits:

- Corps – Clean Water Act Section 404/River and Harbors Act, Section 10 Individual Permit

State Permits:

- Ecology – Model Toxics Control Act, Removal of Underground Storage Tanks
- Ecology – Clean Water Act, Section 401 Water Quality Certification
- Ecology – National Pollutant Discharge Elimination System, Individual Construction Stormwater Permit
- Ecology – National Pollutant Discharge Elimination System, Individual Wastewater Discharge/State Waste Discharge Permit
- Ecology – Coastal Zone Management Act, Consistency Certification
- WDFW – Hydraulic Project Approval
- DNR – Aquatic Lands Use Authorization or Aquatics Land Lease

Local Permits:

- Seattle DPD – Master Use Permit, including Shoreline Substantial Development approvals
- Seattle DPD – Stormwater and Drainage Control Review
- Seattle Department of Neighborhoods and Pioneer Square Preservation Board – Pioneer Square Historic District Approval
- Seattle, Department of Neighborhoods and Pike Place Market Historic District Commission – Pike Place Market Historic District Approval
- Seattle, Department of Neighborhoods and Landmark Preservation Board – Landmark Building Approval
- Seattle DPD and SDOT – Noise Variance

- Puget Sound Clean Air Agency – Clean Air Act, Air Quality Conformity Review and Prevention of Significant Deterioration
- Puget Sound Energy (Bonneville Power Administration) – Electrical Transmission Outage Request

Other non-environmental and non-land use permits will be required to complete this project. The Permit Team will continue to investigate additional permit requirements. The following have been identified to date:

- Seattle City Light (SCL) – Transmission Clearance Permit
- SCL – 13 kV Network Distribution Clearance Permit
- SCL – 26 kV Radial Distribution Clearance Permit
- SCL – Utility Relocation Approval
- Seattle DPD – Grading Permit
- SCL – Substation Modification Approval
- Seattle DPD – Demolition Permit
- Seattle DPD – Side Sewer Permit
- SDOT – Street Use Permit(s)
- King County – Discharge of Construction Dewatering Approval

Obtaining Permits

In general, permits and approvals will be applied for and managed by the Permit Team in close coordination with other project teams, appropriate federal and state agencies, and the City of Seattle. Currently, the team is working closely with the Right-of-Way, Utility, and Design Teams to identify permits required at every stage of construction. Permit leads from project teams will interact closely with the Permit Team, assisting with completing permit applications and providing design and graphics support for application preparation.

In addition, the Corps, NOAA Fisheries, USFWS, WDFW, Ecology, Seattle DPD Staff, SDOT, SCL, Seattle Public Utilities (SPU), and members of King County Wastewater Treatment Division and Department of Transportation have already been involved in developing and reviewing mitigation measures proposed for the Draft EIS and Supplemental Draft EIS. These agencies will continue to assist in refining mitigation measures that will eventually be included in permits and contract special provisions.

To streamline the permit application and review process, the City of Seattle funds dedicated staff at the DPD and SDOT Street Use Division to assist with reviewing applications and ongoing management of permits. WSDOT has dedicated staff at Ecology, WDFW, USFWS, NOAA

Fisheries, and the Corps to assist with early project coordination and permit application review. Interagency agreements will be developed by the Permit Team to further facilitate this work.

The Viaduct Project will affect many adjacent properties for an extended period of time because of the length of the alignment and duration of the construction schedule. During the construction period, other development will also occur in the vicinity. The Viaduct Project partners will work with SDOT and Seattle DPD permit coordination groups to identify other planned developments and street use activities in the project area. This will help phase project permitting and minimize potential conflicts and cumulative effects from projects working in the area.

How is the project complying with environmental regulations?

The project is meeting environmental regulations in a number of ways. First, the project is undergoing a thorough evaluation of potential project effects through the NEPA/SEPA environmental review process. In 2004 the project completed the Draft EIS. The Draft EIS identified and evaluated significant effects from five alternatives. A Supplemental Draft EIS will be completed over the summer of 2006, and will analyze new significant effects from changes in project alternatives. A Final EIS is due in fall 2007, which will include public comments received on both the Draft EIS and Supplemental Draft EIS, and will provide more detailed mitigation measures.

NEPA, SEPA, and other regulations also require implementation and monitoring of mitigation measures to reduce or eliminate adverse environmental effects. Many of these mitigation measures will be incorporated into a NEPA public Record of Decision. FHWA will issue the Record of Decision for this project. Future project permits will incorporate mitigation measures identified during the NEPA/SEPA process.

The project design will incorporate requirements found in other federal, state, and local regulations. For example, the project drainage system is being designed to meet the City of Seattle Stormwater and Drainage Code. Similarly, the effect of noise on residents in proximity to the project is being evaluated. The project must meet federal and City of Seattle noise requirements.

To meet environmental regulations, the team is also identifying and acquiring required permits. As indicated earlier, the project has established a Permit Team to obtain permits throughout the life of the project. Numerous permits have already been obtained for investigative survey work to gather geotechnical and location information for design. Permits have included street use permits and shoreline exemption permits.

The project team will develop a commitment tracking database to ensure that mitigation measures, commitments made to resource or other permitting agencies, and any other environmental or design commitments made on behalf of the project are being implemented,. This database will also include commitments generated through other processes, including right-of-way acquisition, design, and maintenance.

The project team also plans to build a Compliance Team to ensure that environmental commitments made during the NEPA/SEPA process, during permitting, and included in interagency agreements are identified, logged, and tracked in the commitment tracking database. The Compliance Team, in coordination with the Permits Team, will also determine which commitments are the contractor's responsibility and which are the Project Engineer's responsibility (such as notification and monitoring requirements). The Compliance Team will assist the Permit Team in translating permit conditions into language that is "biddable" by the contractor, buildable in practice, and enforceable in the form of a Standard Specification, a General Special Provision, a Standard Plan, or a Special Provision within the contract.

Finally, to ensure permit conditions are being met, city, state, and independent inspectors will inspect the project.

The major laws and regulations with which this project must comply include:

Federal Regulations:

- Clean Air Act of 1970
- Clean Air Act Amendments of 1990
- Clean Water Act
- Coastal Zone Management Act Certification
- Comprehensive Environmental Response, Compensation and Liability Act
- Department of Transportation Act, Section 4(f)
- Endangered Species Act/Magnuson Stevens Act
- Environmental Justice
- Historic Preservation Act Section 106
- Lead Based Paint Regulations
- Marine Mammal Protection Act
- National Historic Preservation Act
- Native American Graves Protection and Repatriation Act

- Resource Conservation Act and Recovery Act and Hazardous Waste Amendments
- Rivers and Harbors Act Sections 9 & 10

State Regulations:

- Archeological Sites and Resources Act
- Clean Air Washington Act
- Water Pollution Control Act
- Critical Areas Ordinances
- Dangerous Waste Regulations
- Growth Management Act
- Indian Graves and Records Act
- Model Toxics Control Act
- Noise Control Act
- Shoreline Management Act
- Sediment Management Standards
- Underground Injection Control
- Underground Storage Tanks

Local Regulations:

- Seattle Municipal Code
- Title 15 – Street and Sidewalk Use
- Title 16 – Harbor Code
- Title 17 – City Center
- Title 18 – Parks and Recreation
- Title 20 – Public Works, Improvements and Purchasing
- Title 21 – Utilities
- Title 22 – Building and Construction Codes
- Title 23 – Land Use Code (which includes applicable shoreline regulations)
- Title 25 – Environmental Protection and Historic Preservation

What is the project delivery strategy?

How is budget and schedule controlled?

This section briefly describes two aspects of controlling the Viaduct Project budget and schedule:

1. Controlling the overall project budget and schedule related to construction

2. Controlling the budget and schedule related to pre-construction planning and design

While the Washington State Legislature has made replacing the viaduct a top priority through several cycles of transportation funding packages, it is important to realize that this project competes for funding with all major local transportation projects. The state has committed to contributing a given amount of funding to the Viaduct Project. While other sources of funding are available (as described in Tab One and the Viaduct Project Financial Plan in this Tab), the project partners understand the need to control the scope, while keeping in mind the linkage between the scope of work, schedule, and budget.

An important way to control the overall project budget and schedule is the cost estimating process. Tab One describes WSDOT's use of CEVP, which develops a probabilistic cost and schedule model to define the probable ranges of cost and schedule required to complete a project. The process is useful for estimating and communicating ranges of probable costs. For the Viaduct Project, information on the October 2005 CEVP process will be made available for the Expert Review Panel.

Control of the overall project budget and schedule is discussed further in upcoming sections of this Tab.

The second aspect of budget and schedule control for the Viaduct Project focuses on pre-construction planning and design efforts. The team that project partners have convened to implement the Viaduct Project understands the need to control the budget and schedule in this area. The scope of work is assigned by task, with a Task Leader assigned responsibility for accomplishing the task(s) on schedule and within budget. On a set timeframe, Task Leaders estimate the physical percent complete for each task and compare that to the total task budget expended. If any schedule or budget slippage occurs, the Task Leader will develop and implement a plan for realigning the schedule and budget to achieve on-time, on-budget delivery.

Project charge numbers are issued for each task in the scope of work. A work breakdown structure is prepared that maps all project tasks to the lowest level of detail necessary to accomplish the team's mission. The work breakdown structure facilitates tracking of budgeted hours by charge number and according to the schedule.

Additional discussion of budget and schedule control can be found in the Project Implementation Plan (available as a reference document). This plan has been in place and followed since March 2002. A revised Project Management Plan is currently being prepared.

What quality assurance/quality control procedures are in place?

The quality assurance/quality control (QA/QC) procedures for the project are discussed in Chapter V, Project Quality Procedures, and Appendix C, Quality Control System, in the Project Implementation Plan. This plan reflects the policies and procedures that have been in place since 2002 and can be adopted for use as design of a preferred alternative begins.

The goals of the QA/QC procedures are to verify that:

- All documents are properly reviewed before issuance
- All work follows accepted engineering standards
- The project will result in a safe, serviceable facility
- The project complies with all commitments agreed to in the environmental approval process
- The project is constructible
- Cost estimates and planning schedules use reasonable procedures to establish construction cost estimates and durations

What document control procedures are in place?

The project team has implemented a document control process that provides timely information about every project document. The process is described fully in Chapter VI of the Project Implementation Plan, and summarized briefly below.

Hard copy files are maintained at the project offices in the Wells Fargo Building, 999 Third Avenue, Seattle. Each document is assigned a file task number that corresponds to the appropriate task, and is placed in the corresponding file folder. A document control number is assigned to each document, which consists of the project number, task number, and a serial number that is automatically assigned by the document control database.

Electronic files are also maintained for the project. Access is provided to project team members through a Project Solve website. The Project Wise system performs a similar function for CADD files.

See further discussion on document control procedures in Appendix C of the Project Implementation Plan, section QP 7.2, Project Document Control.

How does configuration control and change management occur?

Configuration control is defined as managing, documenting, and gaining the proper approvals for any changes to project features. Configuration control is essential to assure that all parties working on the design – and ultimately construction – are aligned with the current project definition.

The unique nature of the Viaduct Project is important to consider when discussing configuration control and change management. The project corridor includes a city street, a grade-separated State Route, and has freeway characteristics. In addition, a significant number of major city utilities are located in the corridor and will have to be moved during construction.

Many configuration control and change management procedures are already in place as standard steps in the development process WSDOT uses for all highway improvement projects. This process is described in Chapter 140 of the WSDOT Design Manual.

Configuration control and change management accomplishes the following:

- Helps anticipate and identify potential changes and assesses related effects
- Documents the source and reason for a proposed change in the initial configuration
- Provides a process for review and approval/rejection of a proposed change, including documentation
- Provides a process for informing all affected parties of project changes
- Provides a process for revising the work plan and monitoring its implementation

The project partners have recently undertaken a Preliminary Design Decision process to document design decisions made to date on the project. The reports prepared as a result of this process are fully reviewed to ensure that they accurately capture the reasons for the key design decisions. Concurrence from each of the functional managers and final approval by the WSDOT Project Director and the SDOT Project Manager are required for each significant decision.

Change control for the Viaduct Project is also covered in Appendix C of the Project Implementation Plan, section QP 6.10, Change Control.

See also the section on the design schedule for the Tunnel Alternative in this Tab, which discusses the design concurrence and approval process.

How is performance assessed and reported?

Tab One discusses project accountability, which requires that project teams provide timely, relevant information and reports. Accountability also requires alignment of project scope, schedule, and budget linked to a delivery process capable of successfully meeting those goals. Public expectations are high and criticism of poor performance can be expected. Therefore, WSDOT has implemented measurement and reporting systems to support management and executive oversight of progress relative to project goals and objectives. WSDOT abides by the adage: “What gets measured, gets managed.”

Each month, progress and performance meetings are held with the staff to review and report on each contract’s scope, cost, and schedule. The detailed information is then complied and issued as a monthly progress report to the Urban Corridors Office (UCO). On a quarterly, basis a performance meeting is held with WSDOT Headquarters to report on progress and performance.

How will construction be contracted?

A variety of construction contract methods and packaging arrangements can be used to execute the Viaduct Project. These methods were evaluated in a November 2004 Viaduct Project document entitled *Construction Contract Packaging and Methods* (available for review). The project will likely be broken into packages on the basis of manageable size, risk assignment, geography, interfaces, major work elements, and permits. These packaging arrangements are further discussed below:

- Size – Limiting each contract value to no more than $400 million helps ensure that a reasonable number of bidders can get bonding. The project team may want a spectrum of large and small contracts so that regional, local, and small businesses have an opportunity to bid.
- Risk assignment – Work with major inherent risk elements may favor a stand-alone contract, though it may be better to join high-risk work in a balanced package with other, less risky work.
- Geography – The contractor’s ability to control events and to use staging and work areas efficiently makes it logical to package work taking place in one specific location.
- Interfaces – Conflicts can arise at the time or space boundaries between contracts. These conflicts can be mitigated by minimizing the number of interfaces and where they occur, as well as through

defining boundaries where responsibility for scope and quality can be cleanly divided.

- Major work elements – To the extent that a contract involves one kind of work, a contractor may be able to generate efficiencies based on a firm's particular strengths.
- Permits – If meeting specific permit conditions is a concern, one element of critical work (such as dewatering or habitat restoration) could be bundled into one contract.

The available contract methods evaluated to date include:

- Design-Bid-Build (D-B-B)
- Design/Build (D/B)
- General Contractor/Construction Manager (GC/CM)

Each method has advantages and disadvantages. Though the November 2004 document provided proposed contract configurations, no decisions have been made to date on construction contract methods and packaging arrangements. However, there has been discussion about executing the high-risk portions of the project, mainly the tunnels, using design-bid-build to exercise a degree of control over details, risk, and quality that is not realistic in design/build. Other portions of the project will be evaluated for the best contract method and packaging as preliminary design and construction are advanced.

How will construction be managed?

WSDOT will develop a specific construction management plan for each project construction contract. Major variables to consider in developing the plan will include:

- Contract size
- Type of contract – Design-Bid-Build; Design/Build; or General Contractor/Construction Manager
- Payment methods – Lump sum by finished product or measure and pay by material quantity
- Coordination requirements with other contracts in the program and with local agencies
- Assessing the QA/QC approach for each contract

WSDOT may perform construction administration and management services with in-house resources, with consultants, or with a blended team of staff resources.

The contractor will be responsible for:

- Methods and means of construction
- Construction site safety
- Meeting the standards of quality established for each project
- Detailed planning and execution of the construction schedule to meet the project's overall schedule requirements
- Timely communication regarding issues and changes to the project

How will traffic be managed during construction?

Traffic on SR 99 and Alaskan Way will face a number of restrictions during construction. Exhibit 2-9 shows the proposed SR 99 roadway closures and lane and ramp restrictions for the Tunnel and Elevated Structure Alternatives. Duration of roadway closures and restrictions vary depending on the alternative and construction plan selected. SR 99 traffic would be affected for much of the construction period, but not all of it.

The Alaskan Way surface street will also experience periodic closures and lane reductions during construction.

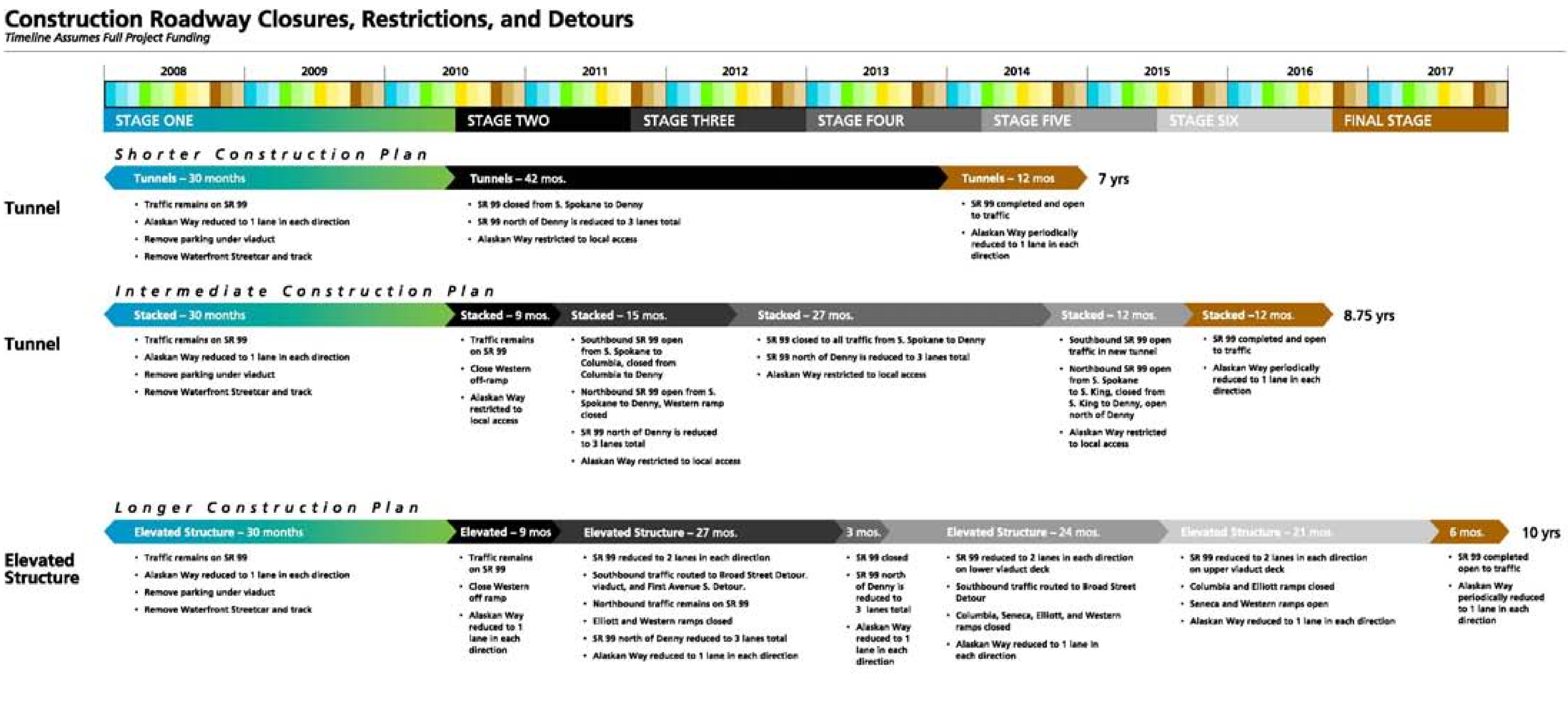
A detailed description of how construction would affect roadway capacity on SR 99 and Alaskan Way, as well as other routes in the area, can be found in Chapter Seven of the Supplemental Draft EIS.

As discussed earlier in this section, the project partners have developed strategies and projects that can minimize effects to traffic during construction. Strategies address the following objectives:

- Maintaining reliable transit service to retain and increase transit use.
- Improving and expanding transit service in affected corridors to provide travelers with viable alternatives to single occupant vehicles.
- Maintaining or increasing roadway capacity on local streets to help absorb traffic shifts during construction.
- Managing traffic effectively to prioritize movement of people and goods.
- Enhancing traveler information so travelers can make more informed choices.
- Managing transportation demand effectively to provide all travelers with more choices related to mode, location, route, and time of travel.

Each of these objectives is described fully in Chapter Seven of the Supplemental Draft EIS.

Exhibit 2-9. Viaduct Construction Closures



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What legislators are involved in the Viaduct Project?

State legislators from the 36th and 43rd districts represent most northwest Seattle neighborhoods with an interest in the Viaduct Project. Legislators from these districts occupy leadership positions in the State House of Representatives, including Speaker of the House, Chair of the House Appropriations Committee, and Chair of the House Transportation Committee. These representatives were instrumental in passing the 2003 and 2005 state transportation funding packages, which together have contributed $2.2 billion toward the viaduct replacement and $552 million toward SR 520.

The project team has regularly met with interests in northwest Seattle since the project began in 2001. Northwest neighborhoods have been very clear in their primary objective for the project: maintain and improve today's capacity and access to and from SR 99. There is not one dominant opinion about which replacement alternative is the best choice. Some believe the tunnel will enhance the City of Seattle, while others believe that another elevated structure will be most like today's conditions and strongly believe that it is the only right solution. Others express no opinion about the replacement, but voice strong concerns about how access to and through downtown will be maintained during construction.

What agencies, jurisdictions, neighborhoods, and special interests are affected by these projects and what do they care about?

The agencies, jurisdictions, neighborhoods, and special interest groups described below view the Alaskan Way Viaduct from different perspectives, which drive and shape strong opinions about the best path forward. The public generally understands the need to replace the seawall and does not debate how to do so. The positions summarized below are based on five years of project meetings, briefings, public involvement efforts, and community input gathered along the way.

Agencies

In addition to the transportation oversight and resource agencies described in Tab One, Washington State Ferries (WSF) and the Port of Seattle are the two primary public agencies involved in the Viaduct Project.

Washington State Ferries

Since 1951, WSF, a division of WSDOT, has provided ferry service across Puget Sound and in the San Juan Islands. WSF is the largest ferry system in North America, operating 10 ferry routes with a fleet of 29 vessels, 20 terminals, and a repair facility.

Colman Dock, a ferry terminal immediately adjacent to the viaduct, is WSF's largest terminal and is used by over nine million riders per year. This number is projected to double by 2030. The number of walk-on passengers using Colman Dock is projected to triple over the next 25 years, with vehicle traffic growing at a slower rate, by nearly 40 percent. A project is underway to expand the terminal and dock, reduce surface street congestion, and potentially add new development on the dock. The City of Seattle will need to grant land use and zoning changes to allow this new development.

Ferry routes operate as extensions of state highways, moving people and goods across Washington's waterways. Colman Dock, located at Pier 52 on Alaskan Way, is located near the southern end of the seawall. WSF is primarily concerned about access for vehicles and walk-on passengers to the Colman ferry terminal, and is working with the project to ensure that the Alaskan Way surface street is re-designed to accommodate projected growth in vehicular traffic. WSF is also concerned about the seawall's condition, as the structure is essential to Colman Dock's stability.

Port of Seattle

In 2004, the Port of Seattle was the fifth largest port on the west coast, serving as the quickest connection between Asian ports and the United States. The Port of Seattle has been an active Viaduct Project stakeholder since 2001. Staff often participate in project team meetings where design decisions are made. Regular briefings are made to Port Commission members who are elected by King County residents.

The Port is most concerned about maintaining grade-separated access over or under SR 99 between Terminal 46 and I-5 and I-90, and is also keenly interested in the seawall replacement. Most Port properties are immediately adjacent to the seawall, and where new facilities have been built, such as Bell Harbor at Pier 66, the Port has already made significant seawall repairs. However, the majority of the original seawall must still be replaced and the Port has a vested interest in that occurring as soon as possible.

Due to the agency's strong interest in the project, the Port Commission allocated $200 million of its 10-year capital improvement program to the replacement project. The commission must vote to approve this amount each year, making it essentially a $20 million contribution each year for the next 10 years. WSDOT, the City of Seattle, and the Port are negotiating a memorandum of understanding among the three agencies about how this money will be used, related conditions, and a process for how the three agencies will work together in the future.

Jurisdictions and Neighborhoods

The City of Seattle, King County, and Tribes – including the Muckleshoot, Suquamish, Tulalip, Snoqualmie, and Yakama – have been actively involved in the Viaduct Project, and their general project interests are described below. Opinions and concerns held by specific Seattle neighborhoods and interest groups are also described.

City of Seattle

The City of Seattle is a co-lead agency, along with WSDOT and FHWA. WSDOT owns and operates SR 99 as a highway, while Seattle (where the project is located) owns the right-of-way where SR 99 sits, as well as many utilities in the corridor. The City of Seattle also owns the seawall, adjacent to the viaduct and along the waterfront from Pier 50 north to Broad Street. WSDOT has a strong interest in maintaining the transportation capacity provided by SR 99, and so far the City is supportive. The City of Seattle, however, has a different primary interest: the future of its waterfront.

The City sees removing the viaduct as a 100-year opportunity to create a new waterfront, improve the draw of this regional destination, and improve the livability of its downtown. Consistent with the jurisdiction's strong interests, in December 2004 the City of Seattle (along with WSDOT and FHWA) selected the Tunnel Alternative as the preferred alternative. The Seattle City Council confirmed this preference with a resolution in January 2005. In conformance with 2006 legislative direction, the council is again discussing the alternatives for the project, with either a council ordinance or vote of the Seattle citizens expected in fall 2006.

Believing the tunnel faces a funding shortfall, some council members have expressed interest in considering a "no replacement" option. These council members have questioned whether the City should continue to have a major freeway running through downtown Seattle. Other council members have expressed support for the elevated structure, in part because it is the lower cost alternative.

Three key city departments are involved in project planning. SDOT provides planning and engineering support, while SCL and SPU are planning with project staff to relocate utilities physically linked to the existing viaduct.

Seattle Neighborhoods

The viaduct links or is adjacent to a variety of Seattle neighborhoods with differing interests in how it should be replaced. As described previously, SR 99 serves as a critical alternate route to I-5. Shaped like an hourglass, Seattle has few north-south routes and neighborhoods on the west side of SR 99/Aurora Avenue. Communities and cities to the north and south rely heavily on SR 99 to move through downtown Seattle. These neighborhoods are pictured in Exhibit 1-15 and their perspectives are summarized below. Although generalized, the content is based on conversations the project team has had with communities over the past several years.

What has the project team heard from northwest Seattle neighborhoods?

Ballard and **Magnolia** are the two northwest Seattle neighborhoods that depend most heavily on SR 99 to travel quickly to and through the downtown Seattle core. Residents in Queen Anne, South Lake Union, Fremont, Greenwood, and Wallingford also rely on the Alaskan Way Viaduct, although I-5 is a closer, more reasonable alternative.

Residents in Ballard can drive a direct route along 15th Avenue and Elliott Avenue to reach the Alaskan Way Viaduct and drive south through downtown Seattle. A trip from Ballard to I-5 is less direct and convenient, can take several minutes longer, and leads to a heavily used highway that is congested for several hours every day. Similarly, residents in Magnolia usually find that traveling to the Alaskan Way Viaduct is also faster than risking the delays of the “Mercer Mess” – a very congested segment of Mercer Street – to reach a busy I-5.

Exhibit 2-10. Neighborhoods in Close Proximity to the Viaduct Project

What has the project team heard from southwest Seattle neighborhoods?

The **West Seattle** neighborhood is isolated from all major freeways in the Seattle area. Residents must travel on the West Seattle Bridge and can only access SR 99 northbound or continue on the Spokane Street Viaduct to I-5, which is congested much of the day. The Alaskan Way Viaduct is the only way into and out of downtown Seattle for West Seattle residents unless they take surface streets through the Duwamish industrial area, a trip known to take an hour in the best of circumstances. When the Alaskan Way Viaduct was closed after the Nisqually earthquake, some trips took more than three hours.

Buses are the only transit options on the viaduct connecting West Seattle to downtown Seattle. Without this critical connection, transit faces the prospect of sitting on surface streets through the south industrial area with significantly longer travel times.

What the project team hears from West Seattle residents is that maintaining access into and out of downtown Seattle during and after construction is critical. People considering buying homes in West Seattle have been known to call the project to inquire as to whether this is a wise choice.

What has the project team heard from downtown Seattle businesses and residents?

In the early 1990s, Seattle was mainly a business-oriented activity zone with office workers, some destination retail, and a small residential community. Since then, a surge in the economy, changed zoning laws, and major investments by retailers has brought new life to downtown Seattle. Seattle's skyline is filled with cranes building residential towers, businesses are moving to Seattle or expanding, and tourists from across the Pacific Northwest and the world flock to the city.

The Alaskan Way Viaduct is critical for bringing shoppers and workers to downtown Seattle every day. Without that access, employees could not reach their jobs and shoppers may choose to visit other regional malls instead of downtown's Pacific Place or Westlake Mall. While the downtown community understands the importance of SR 99 to the economy, they also see an opportunity to do more than simply replace a transportation function. The Downtown Seattle Association and Greater Seattle Chamber of Commerce have written letters of support for the Tunnel Alternative. These associations are concerned with construction effects on downtown businesses and are beginning conversations with the project team about mitigation opportunities.

What has the project team heard from Seattle waterfront businesses and residents?

A subset of the downtown community includes the businesses and residents immediately adjacent to the viaduct to the west and east. Some locations are so close to the viaduct that residents and workers can literally reach out their windows to touch it. Other neighbors are on piers with access limited to crossing under the viaduct or over congested railroad track a mile to the north and south.

While waterfront businesspeople and residents may use SR 99 on a regular basis, capacity is not their only concern. In addition, they are very concerned about construction duration and effects. With the viaduct within touching distance, maintaining access, working conditions, and livability during construction are important issues. When asked about the replacement options, many favor the Tunnel Alternative. They believe a tunnel would significantly decrease the noise, dust, and blocked views they experience with the existing viaduct.

King County

King County has two primary interests in the Viaduct Project. The jurisdiction operates the Metro transit agency, which runs bus routes originating in West Seattle, Burien, Federal Way, and other southern locations that use the viaduct to reach downtown Seattle. Buses originating north of downtown Seattle exit SR 99 using the Denny Street ramps north of the Battery Street Tunnel and do not travel on the viaduct.

King County also is responsible for managing storm- and wastewater. While much of the run-off from the Alaskan Way Viaduct is not treated today, stormwater from the future SR 99 will be treated. The project doesn’t affect King County outfalls but does affect city outfalls and conveyance systems at the downstream end of the drainage system.

Tribes

Five Tribes, including the Muckleshoot, Suquamish, Tulalip, Snoqualmie, and Yakama, are interested in the Viaduct Project and cultural resources that may be discovered during construction. Two tribes, the Muckleshoot and Suquamish, also have treaty rights in their Usual and Accustomed Areas within the project area. Protecting fish habitats and aquatic resources are a primary interest for all of these Tribes. The following specific concerns have been expressed about in-water construction:

- Permanent fill in the Colman Curve area could impact available fish habitat and fish productivity.
- Changes to Pier 48, the Colman curve area, and the proposed changes to Colman Dock could combine to affect areas where fish congregate and could also affect fish productivity.
- Construction barge traffic could interfere with tribal fishing vessels in Elliott Bay.

Interest Groups

The viaduct's unique position along Seattle's waterfront makes it a visible and integral component of the city's cultural and community landscape. Interests ranging from historic preservation and freight mobility to the professional sports industry and the environment are just a few of the voices contributing to community dialogue about the Viaduct Project. In addition, new community groups have been created to advocate for specific project alternatives.

Historic Preservation

The Alaskan Way Viaduct is eligible for listing on the National Register of Historic Places, as stated in the project's Draft EIS. If the viaduct is listed, alteration and demolition would still be possible, as public safety is WSDOT's largest concern. Project documentation is not dependent upon being listed on this register and will preserve the historic engineering record of the structure.

The viaduct passes by two historic resources in downtown Seattle: Pioneer Square and the Pike Place Market. Pioneer Square is a historic district located between the central business district and the stadium area. Impacts on historic buildings are of special concern to the Pioneer Square Historic Preservation Board. Also, the neighborhood council is concerned about traffic impacts during construction as SR 99 traffic uses First Avenue and other local streets to reach downtown. Post-construction, the Pioneer Square Community Association is supportive of the Tunnel Alternative because it reconnects the neighborhood to the waterfront.

The Pike Place Market, located just east of the Alaskan Way Viaduct, is a historic resource that attracts 10 million visitors a year, making it the most popular attraction in the Pacific Northwest. Established in 1907 and saved from re-development in the 1970s, the Pike Place Market received historic landmark status. Effects on market access during construction are of most concern to the development authority.

Neither the elevated structure nor the tunnel would change conditions for most historic buildings and neighborhoods in the corridor because their alignment is along the same corridor as today's structure. The elevated structure would continue to block views to and from historic buildings, and in the cases of both the Pioneer Square and Pike Place Market districts, view to, from and within an entire historic neighborhood would continue to be affected. The tunnel would have an added benefit to historic buildings in the central waterfront by reducing noise levels and substantially increased views of and from the historic buildings.

Freight

The Alaskan Way Viaduct connects two of Seattle's major industrial areas: the Duwamish and the Interbay industrial areas. The Duwamish industrial area stretches from Royal Brougham Street south to the City of Tukwila. This area serves as a manufacturing center, including distribution facilities and a growing number of retail businesses. The SODO (South Downtown) Business Association and the Duwamish Planning Committee represent these businesses. Nestled between Queen Anne, Magnolia, and Ballard is the Interbay industrial area. Representing the businesses in this area are the North Seattle Industrial Association and the Ballard Interbay Manufacturing Industrial Council. The Manufacturing Industrial Council serves as a freight interest group for all of Seattle's industrial businesses.

These businesses rely on the viaduct to transport freight, hazardous, and combustible materials through the city, again avoiding I-5 through downtown Seattle. These businesses are most concerned about losing access during construction of the viaduct replacement. When asked to express an opinion about the replacement alternative, opinions range from neutral to support of the Elevated Structure Alternative due to cost reasons and planned prohibition of hazardous/flammable cargoes in the tunnel.

Baseball and Football Stadiums

On the north and south sides of Royal Brougham next to First Avenue are two new sports stadiums: the Seattle Mariners' Safeco Field and the Seattle Seahawks' Qwest Field. Both stadiums were built in the last decade and have created a new pedestrian-friendly neighborhood south of Pioneer Square. Traffic before and after sports events congests the surrounding streets as attendees try to reach SR 99, I-5 and I-90. Representatives from the sports stadiums have participated in numerous community meetings since the project began. Their interests primarily focus on maintaining access to the stadiums during and after construction.

Allied Arts

Allied Arts, an urban environment and arts advocacy group, has been advocating for a "Waterfront for All" since 2003. Relying on volunteers and the active local architecture and design community to create potential waterfront concepts, Allied Arts has created a vision of the waterfront without the viaduct.

People for Puget Sound

People for Puget Sound is an environmental advocacy organization that promotes a healthy Puget Sound through small and major restoration activities. People for Puget Sound advocates for a salmon-friendly seawall replacement, restoration of nearshore habitat, and treatment of wastewater and stormwater before it enters Puget Sound.

Transportation Choices Coalition

Transportation Choices Coalition is an advocacy group that promotes non-single occupant vehicle modes of travel. This group supports increasing transit service in the downtown area and investing in TDM strategies. The board of Transportation Choices Coalition supports the Tunnel Alternative.

Common Sense Elevated Solutions

Magnolia residents and members of the North Seattle Industrial Association and Ballard Interbay Manufacturing Industrial Council have formed a group to advocate for a rebuild or elevated structure solution. Common Sense Elevated Solutions' advocacy centers around three main arguments: 1) tunnels are unsafe in the event of an earthquake; 2) a seven percent grade from the central waterfront tunnel portal at Pine Street up to the Battery Street Tunnel will cause trucks to unnecessarily slow down; and 3) the extra costs for the tunnel cannot be afforded by the citizens of Seattle.

People's Waterfront Coalition

The People's Waterfront Coalition advocates for a no-replacement alternative. While the Coalition has not defined their solution, they speak in favor of not replacing vehicle capacity through downtown Seattle. People's Waterfront Coalition asserts that reduced capacity would be mitigated by individual choices (e.g., the new transportation infrastructure would encourage people to choose to live where they work), increased transit investments, improvements to I-5, and freight-only lanes through downtown Seattle on city streets and/or I-5.

What is the finance plan for the tunnel and elevated structure?

The finance plan for the Viaduct Project is provided as a separate document in this Tab of the notebook and addresses the following questions:

- What is the purpose of the Expert Review Panel funding review?
- How does financing the Viaduct and SR 520 projects fit into the regional picture?
- How much money do we need? (e.g., What are the "uses?")
- Where will the money come from?
- How do we balance sources and uses?
- What will we do to manage uncertainty about revenue amounts or timing?

- After the project has been completed, how will operations and maintenance be covered?

What alternatives were considered and rejected – and why?

Since the project began in 2001, the project partners, project design team, and members of the public were involved in a process to develop and identify viaduct and seawall replacement concepts. WSDOT initiated the process by inviting all interested citizens to submit ideas and participate in the discussion. This extensive public discussion yielded a total of 76 viaduct replacement design concepts and seven seawall concepts. These concepts were carefully and methodically evaluated by the project partners, engineers, and other project team members to determine which concepts were feasible and which were not. The extensive evaluation effort resulted in discarding some ideas and refining others.

What alternatives are evaluated in the Draft EIS?

Six alternatives moved forward for evaluation in the Draft EIS based on the screening process described above. In addition to the No Build Alternative, the project partners evaluated five viaduct and seawall replacement alternatives in the Draft EIS:

- Rebuild – Rebuild the viaduct in its existing location with a new aerial structure similar to what is there now.
- Aerial – Replace the viaduct in its existing location with a new aerial structure. The new structure would provide wider lanes and shoulders to meet current safety standards.
- Tunnel – Replace the viaduct with a six-lane tunnel (three lanes in each direction).
- Bypass Tunnel – Replace the viaduct with a four-lane tunnel (two lanes in each direction).
- Surface – Replace the viaduct and Alaskan Way surface street with a six-lane, at-grade roadway.

Further description of the five alternatives and the options evaluated for each can be found in the Draft EIS.

Based on information presented in the Draft EIS, public comments, and further study and design, the project partners reduced the number of alternatives from five to two: the Tunnel Alternative and the Elevated Structure Alternative. The Elevated Structure Alternative incorporates elements of the Rebuild and Aerial Alternatives evaluated in the Draft EIS.

The Rebuild Alternative evaluated in the Draft EIS proposed to rebuild the existing viaduct in its present location. The rebuilt structure would have been roughly four feet wider than the existing facility, which means it would not meet today's safety standards. The project partners want to ensure that any new facility meets today's standards for safety. Therefore, a new elevated structure would have standard shoulders and lanes, typically four-foot to 10-foot-wide shoulders and 12-foot-wide lanes in most locations.

The Aerial Alternative evaluated in the Draft EIS had lane and shoulder widths that would meet today's safety standards, but it also proposed to replace the existing Seneca and Columbia ramps with much wider structures. The increased size of the ramps would have increased the effects to views along the waterfront. In an effort to meet today's safety standards for roadway widths and to minimize the effects on views in downtown, the project partners have combined the Rebuild and Aerial designs into a single design called the Elevated Structure Alternative. The Elevated Structure Alternative would still be substantially wider than the existing viaduct, but proposes ramps to Columbia and Seneca Streets that would impact views less than the Aerial Alternative evaluated in the Draft EIS.

The Bypass Tunnel Alternative was eliminated from further study because, according to analysis contained in the Draft EIS, it would not meet the project's purpose, which is "to maintain or improve mobility, accessibility, and traffic safety for people and goods along the existing Alaskan Way Viaduct corridor." Traffic information presented in the Draft EIS demonstrated that the Bypass Tunnel increased travel times for through trips, such as trips headed from the Ballard-Interbay area to the stadium area. In addition, the number of hours each day that SR 99 would be congested would have increased by one to two hours per day.

Like the Bypass Tunnel Alternative, the Surface Alternative was eliminated because it did not meet the project's purpose. The Surface Alternative would reduce roadway capacity in the Alaskan Way Viaduct corridor by 40 to 50 percent, causing increased travel times and congestion for drivers on SR 99 and other parallel roadways such as city streets and I-5. For some trips, travel times with the Surface Alternative would double, and traffic on Alaskan Way itself would have increased nearly sevenfold.

What other potential alternatives have been considered?

Since the Draft EIS was issued, the project team has continued to engage the public in the ongoing discussion about (1) what structures could replace the viaduct and seawall, and (2) how the viaduct and seawall would be replaced. Ongoing dialogue has yielded additional ideas from the public, some of which have already been evaluated and discussed in the past. The text below describes ideas that the public has consistently and repeatedly suggested, including:

- Building the tunnel under a different city street
- Fixing the viaduct
- Tearing down the viaduct and replacing it with a four-lane surface roadway

Build the Tunnel Under a Different City Street

In early 2006, at the request of several business owners, the project partners reconsidered the feasibility of building a tunnel under Western Avenue. This idea was first considered in 2003, and was dropped because building a tunnel elsewhere in the city would not replace the city's failing seawall along the waterfront unless a separate seawall construction project were completed. The project partners determined that this idea is problematic because it does not address the seawall's deficiencies, and because Western Avenue is much narrower than Alaskan Way. Therefore, a number of buildings, several of which are historic, would need to be removed to accommodate the alignment. Even if these properties were acquired, the tunnel could not be as wide as a tunnel under Alaskan Way. Extensive property acquisitions would make the cost of a tunnel under Western Avenue significantly greater than one under Alaskan Way. For these reasons, project partners do not plan to continue studying this idea.

Fix the Viaduct

Since the project's beginning in 2001, the public has often asked why the viaduct cannot be fixed or retrofitted. The project partners have extensively studied various retrofitting concepts over the past five years, and all but one have been rejected for not offering a long-term solution that adequately addresses the weakened state of the facility. One viaduct section that engineers think could be retrofitted is a small section just north of Pike Street extending up to the Battery Street Tunnel. Retrofitting this section was evaluated in the Draft EIS. Additional evaluation of retrofitting this portion of the viaduct will be completed to determine the appropriateness of this approach.

Each time various retrofitting concepts have been evaluated, the conclusion has been the same – feasible retrofitting options cost almost as much as replacing the structure, but a new structure would be safer, far more reliable, and last much longer. Replacing the viaduct is superior to retrofitting the facility when seismic performance, aesthetics, cost, and risk are balanced.

To double-check the project team's work and assumptions, the project partners asked an independent panel of engineering experts to examine the feasibility of retrofitting the structure. The independent panel made the following recommendation in its 2002 report[1]: "WSDOT and the City of Seattle should proceed with evaluation of options to replace the Alaskan Way Viaduct. Retrofitting the 50-year old facility is not the technically preferred solution since it is doubtful that retrofitting is an effective approach to fully satisfying current design standards."

Put simply, the viaduct and seawall were not built to withstand major earthquakes, they were damaged during the 2001 Nisqually earthquake, and they continue to rapidly deteriorate. A viaduct study completed in 2005 concluded that the viaduct's deterioration has accelerated since the Nisqually earthquake.[2] The earthquake imposed extreme forces on the viaduct that exceeded what the structure was designed to withstand when it was built in the 1950s.

According to the study, at least two consequences of the extreme forces imposed on the viaduct during the earthquake continue to accelerate deterioration. First, the number and size of cracks found in the reinforced concrete structures supporting the viaduct are increasing, and the viaduct's foundations continue to settle. Additionally, the structure is simply getting too old; the concrete and reinforcing steel are past their useful lifespans. Cracked concrete, foundation settlement, and old components are features that simply cannot be "made new" again through a retrofit. The only way to remove these structural deficiencies is to replace them by building a new facility.

Additionally, the viaduct was not built to withstand major earthquakes. When the viaduct was built more than 50 years ago, engineers had less information about how to design elevated structures to withstand major earthquakes, and they did not know that the Seattle fault ran east-west through the project area near S. Holgate Street. Over the last 50 years, engineers have learned more about earthquake hazards in the Seattle area and how to design and build structures that can withstand them. Engineers now know that to withstand a major earthquake, the viaduct needs to have foundations that extend much deeper into competent soil, and must be built of stronger materials and support components. Again, in the case of

[1] ASCE Expert Team. 2002. *Alaskan Way Viaduct, Phase 1 – Retrofit Option*. April 24, 2002.
[2] T.Y. Lin, 2005. *T.Y. Lin International Independent Engineering Assessment of the Continuing Impacts of the February 2001 Nisqually earthquake upon the Alaskan Way Viaduct in Seattle, Washington*. 2005.

the viaduct, the only way to properly address these deficiencies is to replace the existing structure with a new one.

Tear Down the Viaduct and Replace it with a Four-Lane Surface Roadway

Many people continue to ask the project partners to consider an alternative that would remove the viaduct and replace it with a new seawall and a four-lane surface roadway along the Alaskan Way surface street. This concept is often called the “No Replacement” concept.

In the Draft EIS, the project partners evaluated the Surface Alternative, which proposed removing the viaduct and replacing it with a new seawall and a six-lane surface roadway along Alaskan Way. Traffic projections in the Draft EIS showed that the Surface Alternative would reduce roadway capacity by 40 to 50 percent in the Alaskan Way Viaduct corridor, causing substantial increases in traffic and congestion on SR 99, city streets, and I-5 through downtown.

A four-lane roadway would obviously have less capacity than a six-lane roadway along Alaskan Way; therefore, traffic congestion on I-5 and other downtown city streets would be even worse than projected for the Surface Alternative in the Draft EIS. Specifically:

- Replacing the viaduct with a four-lane surface street would cause gridlock on I-5 and congestion for most of the day and part of the evening on downtown streets and Alaskan Way. This gridlock was predicted to occur even if substantial improvements were made to transit and downtown streets.
- I-5 does not have room for additional trips, since it is already congested through much of the day and into the evening. However, under the No Replacement concept, many trips that currently use the viaduct would shift to I-5, causing it to become even more congested, particularly as the region grows.
- Traffic on Alaskan Way would quadruple to 35,000 to 56,000 vehicles per day compared to about 10,000 vehicles today. This traffic would make it difficult for patrons to get to waterfront businesses and would create more conflicts between vehicles and the many bicyclists and pedestrians that use Alaskan Way.
- Downtown street traffic would increase by 30 percent, though traffic increases to specific areas like Pioneer Square and the waterfront could exceed 30 percent.
- Neighborhoods west of I-5 (Ballard, Queen Anne, Magnolia, and West Seattle) would have less direct connections to and through

downtown; therefore travel times for trips to and through downtown would increase for drivers from these areas.

A four-lane Alaskan Way would create more congestion on I-5 and downtown streets than the Surface Alternative evaluated in the Draft EIS. The project partners dropped the Surface Alternative because it did not meet the Viaduct Project's purpose, which is to "maintain or improve mobility, accessibility, and traffic safety for people and goods along the existing Alaskan Way Viaduct corridor." Because the performance of the four-lane surface alternative would be worse than today's facility, the project partners do not plan to study this idea further.

What reference documents are available?

Document Title	Date Produced
Screening of Initial Concepts Technical Memorandum	January 2002
Project Implementation Plan	March 2002
Final Revised Screening of Design Concepts	June 2003
Final Revised Screening of Design Concepts Addendum	June 2003 – 2006
Draft Environmental Impact Statement (with all appendices)	March 2004
Revised Project Purpose and Need Statement	April 2005
2005 Alternatives Screening, North End Screening Criteria, Update	March 2006
2006 Alternatives Screening, Battery Street Tunnel	March 2006
Basic Configuration Drawings Tunnel Plan	June 2005
Basic Configuration Drawings Rebuild Plan	June 2005
Basic Configuration Drawings North of Battery Street Tunnel Retained Cut Alternative	June 2005
Cost Packages for CEVP	October 2005
Flow Charts for CEVP	October 2005
Risk Register for CEVP	October 2005
SR 99 AWV CEVP Summary Results	November 2005
Draft Executive Summary, Geotechnical and Environmental Studies	April 2006
Environmental Permits and Approvals Guide	April 2006
Draft Supplemental Draft EIS	May 2006