ALASKAN WAY VIADUCT AND SEAWALL PROJECT
DEVELOPMENT AND PRELIMINARY, ENGINEERING AND ENVIRONMENTAL ANALYSIS AND DOCUMENTATION
PHASE 2 SCOPE OF WORK

JANUARY 11, 2002

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PROJECT DESCRIPTION

Background

There is an urgent need to replace the 48-year old Alaskan Way Viaduct (SR99) because of its age, seismic vulnerability, and critical role in the region's transportation system. WSDOT and the City of Seattle have joined to conduct an intensive and expedited study of options to either retrofit or replace the viaduct as soon as possible. The study results, including environmental impact information, will be used to make project decisions and begin preliminary design with an aggressive goal of entering a design-build RFP contract in 2004.

The Alaskan Way Viaduct carries significant traffic in and out of downtown Seattle and also serves as a major corridor for through-traffic. Build in 1953 with a capacity of 65,000 vehicles per day, the viaduct today carries up to 110,000 vehicles per day. That is almost a third of the volume of traffic on I-5, the other major corridor through downtown Seattle. Shippers and haulers, transit riders, and auto commuters all rely on the viaduct.

Age and obsolescence are major issues for the viaduct. Damage to the viaduct from the Nisqually earthquake in February 2001 underscored its seismic vulnerability and created widespread recognition of the urgent need to retrofit or replace the structure. Also of concern is the relationship between the viaduct and the City of Seattle seawall area along the city waterfront; the seawall's condition could have an effect on how the viaduct program should be defined and carried out.

Following the earthquake both WSDOT and an independent expert panel conducted a structural review and seismic assessments of the viaduct that was delivered in June 2001. Meanwhile, WSDOT contracted for emergency repairs to be performed at a cost of approximately $2 million. The repair program, largely complete, necessitated vehicle weight restrictions and frequent traffic closures on the viaduct that inconvenienced the public, especially truckers and bus riders who were displaced from their normal routes for extended periods.

A Unique Community Planning Process

WSDOT Secretary Doug MacDonald and Seattle Mayor Paul Schell formed a partnership and convened a volunteer leadership team of civic, business, freight, and neighborhood representatives to serve as a sounding board in an expedited process. This process will develop and refine engineering and design solutions for the corridor in parallel with preparation of an environmental impact statement. Both agencies have a stake in the outcome and have come together to coordinate efforts, make decisions jointly, and work with the public on transportation, neighborhood, and urban design issues.

Some of the important planning issues include the connections that the viaduct makes to north and south sections of SR 99, as well as to critical arterials serving downtown and neighborhoods. The Colman Dock ferry terminal, and rail, truck, and ocean freight shipping terminals and yards are among the important transportation facilities the viaduct serves. The viaduct planning process involves many opportunities for public participation. This includes public meetings and workshops, community briefings, information materials, and this website.

Project Goals

Together the WSDOT and City of Seattle have developed a set of goals to guide the project. They include:

- Addressing 2030 travel demand
- Fixing the central waterfront seawall
- Integrating urban design throughout the project
- Enhancing the environment
- Improving safety and seismic performance
- Connecting to SR 519; Interbay and SR 99 to the North; and potentially Spokane Street to the South
- Maintain traffic on the existing viaduct during construction

What is being done to protect the environment?

Preparation of an Environmental Impact Statement is now underway as part of the overall study and planning effort. Various discipline studies (e.g., noise impacts, air quality impacts) will be commenced shortly and their results made available to the public and to decision-makers. Particular emphasis in the planning study is also being placed on urban design and land use considerations so that they can be clearly evaluated and understood as part of the basis for decisions about the final direction of the project.

Development Process

This project is also unique in the methods to carry out the activities of the project. The urgency of the replacement requires parallel activities rather than linear. The conceptual engineering, environmental analysis and assessments and preliminary

engineering will overlap in order to complete the project at a faster pace (contingent on funding). New environmental processes with state and federal agencies will be developed and utilized whenever possible. Community involvement will be ongoing and design will be prepared for inclusion in a design build contract.

Due to the level of uncertainty on the flow of funding and the potential for scope modification when the preferred alternative is selected, the contract will be treated as an "on call" contract. The consultant will provide a full projected cash flow by task by month. Monthly cash flow reports will be provided.

ITEM 1 PROJECT MANAGEMENT / ADMINISTRATION

1.1 Project Management and Coordination

The CONSULTANT shall provide the management services to effect overall supervision of the CONSULTANT's work, as follows: Provide primary liaison with the designated representatives of the STATE and maintain a close working relationship between the STATE and CITY in all contract matters. Overview the allocation of work to subconsultants, and, as needed, to other offices of the CONSULTANT. Maintain the management information system reports, as needed, to correct or adjust Project activities which are diverting from the established scope, quality, schedule, or cost baselines. In general, carry out by allocation and delegation all authorized work in accord with the established and agreed upon direction from the STATE.

The CONSULTANT shall manage project design and environmental documentation; verify that regular detailed work reviews are performed; monitor the cost and progress of design against the baseline budget and schedule; direct the development of technical work scopes, budgets, and schedules for additional work requests and subcontracts. Where work has been subcontracted, direct and monitor the subconsultants' work activities with regard to conformance with established criteria and design directives: monitor budget, progress, and cost.

Additionally, key members of the CONSULTANT team shall function as interagency/intergovernmental advisors to the project steering committee with respect to the leadership group, interdisciplinary team, appointed and elected officials, and other important stakeholders.

1.2 Project Management Plan

The CONSULTANT shall prepare a Project Management Plan (PMP). The PMP will articulate a set of project instructions, controls and communications protocol that will provide professional standard of care and allow the STATE, CITY, all stakeholders and design team to understand and agree on essential project information and expectations. Included in the PMP will be:

- An organized scope with a work breakdown structure in which a specific budget, schedule, and dates for products are identified for each individual item.
- The plan will identify the interrelationships among the items in the work breakdown structure, and define the key project management activities as they relate to work assignments, reporting, responsibilities, schedule, and cost control.
- The schedule will include all items identified in this scope of work to be conducted by the CONSULTANT, identify their duration and sequencing, and

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- The schedule will include all items identified in this scope of work to be conducted by the CONSULTANT, identify their duration and sequencing, and

identify the critical path. The project schedule will identify review periods to be allowed for the STATE, CITY, FHWA and other cooperating agencies.

- The plan will include:
  - Project Summary
  - List of Products
  - Work Statement
  - Item Plan and Schedule
  - Procedures Guide
  - Budget and Cost Control Summary
  - Organization Plan
  - Documentation Format and Filing Guidelines
  - Reporting and Review Procedures
  - Project Risk Summary
  - Design and Software Standards

PRODUCT:
- Draft Project Management Plan (15 Copies)
- Approved Project Management Plan (100 Copies)

1.3 Contract Administration

The CONSULTANT shall plan, organize, and coordinate the administrative aspects of the Project, including supplements to the contract as a result of change orders, and the application of performance criteria and any other contract administration activities. Review and assign actions for STATE originated changes. Coordinate completion of actions with the appropriate managers and implement revisions to respective Contract Supplemental Agreements. It is anticipated that twenty-four (24) supplemental agreements will be required.

1.4 Invoicing / Progress Reports

The CONSULTANT shall prepare monthly progress reports describing the status of the project. These reports will:

- Highlight significant accomplishments
- Target potential problem areas needing special attention or coordination
- Compare actual work progress with contractual obligations
- Show the current and cumulative financial status

The progress report will be presented in a task oriented format and will include

updated scheduling reports (see Item 1.7.2), indicating all progress to date and resources expended. This update will include any changes in schedule, sequence, or resource loading. If any schedule slippage has occurred, a plan for bringing the work back on schedule and budget will be included.

Project billings will be prepared by the CONSULTANT and submitted on a monthly basis. It is assumed that twenty-four (24) progress reports will be prepared. These will be supported by detailed record keeping sufficient to closely track the project budget and expenditures and support the billings.

1.5 Subconsultant Administration

The CONSULTANT shall apply the terms of the Contract, and making use of appropriate available procedures of the STATE, develop the contract language that will be used between the CONSULTANT and its subconsultants. Coordinate the development of the individual scopes of each subcontract with the respective lead representative, and negotiate and execute subcontracts with team members. Anticipate on a monthly basis any new requirements for additional subcontracts or additions / deletions to existing subcontracts and, as necessary, gain STATE approval of such work. Maintain the subcontracts, making certain that insurance requirements are kept current. Provide the coordination of the technical and administrative staff for its review of all subconsultant invoices on a monthly basis. It is assumed that up to twenty-five (25) subconsultant contracts will be executed.

1.6 Document Control

The CONSULTANT shall provide a document controls system for the duration of the project. The system will include:

- Support of multiple scanners and other input methods.
- Custom WBS coding and searching.
- File output from search results as well as archive and store of files to Zip, CD, Network drive or other back-up storage methods.
- Smart search for all common profile fields such as subject, to, from, dates, and key words.
- Full text index search for the contents of all scanned documents.
- Custom data input and management of scanned images.
- Security for individual documents up to two (2) different levels of security.

PRODUCT:
• Electronic document control system

1.7 Project Scheduling

1.7.1 Schedule Development

The CONSULTANT shall prepare a Project Baseline Schedule in the form of a computer-generated CPM schedule network covering the entire design and environmental phase and identifying the critical paths for interim completion dates.

Prepare or show on the CPM schedule network the following:

- A computer-generated time-phased plot of the CPM schedule network showing all logic ties.
- Computer generated CPM Schedule Reports that contain the following data for each work item: identification, description, duration, early start and early finish, and total float. The work items shall be sorted by float, early start, contract, or other sorts as requested by the STATE. The reports shall also show the logic ties of all work activities and items.
- A resource-loaded schedule for design and environmental documentation. Plot planned versus actual progress, in accordance with the STATE's procedures and direction.
- A schedule basis and assumptions document which sets forth the logic, rationale and assumptions used in determining durations for work activities, production rates, etc.

At such times as it seems warranted, propose revisions to the Project Baseline Schedule using the most current revised network diagram and submitting a narrative description of the changes proposed, together with the justification for the proposed change and an update of the schedule basis and assumptions. Recognize that all Project Baseline Schedule changes which impact Project milestones or contract milestones must be approved in writing by the STATE.

PRODUCT:
- CPM schedule network for project baseline in SCITOR PS8

1.7.2 Schedule Monitoring and Reporting

The CONSULTANT shall maintain the Baseline Schedule and a current schedule with schedule impact reports throughout the duration of the project. Updates to the schedule will be done on a bi-weekly basis and reported monthly per Item 1.4 for a twenty-four (24) month period.

PRODUCT:
- Fifty-two (52) bi-weekly "rolled-up" schedule status reports
- Twenty-four (24) monthly schedule status reports for progress reporting

1.8 Project Delivery Strategy

The CONSULTANT shall assist the STATE in identifying and analyzing critical policy related issues and decisions, relating to project delivery, that must be addressed in order to meet the critical timeline for the Alaskan Way Viaduct Project. The CONSULTANT shall consider the guidelines set forth in "Guidebook for Design-Build Highway Project Development, November 2001" as the basis for assistance to the STATE and shall assist the STATE in determining the most appropriate procurement method given the complex nature of this project. Both accelerated design-bid-build and design-build will be considered for the various project components.

1.8.1 Project Benefit Assessment

Per Section 2.2 of the Guidebook, the CONSULTANT shall assist the STATE in assessing project benefits in design-bid-build and design-build contracting as appropriate for the Alaskan Way Viaduct Project. Completion schedule, complexity, traffic management, project size, workload leveling, long term operations and maintenance costs (of alternatives including construction impacts) and funding all will be evaluated and benefits identified.

1.8.2 Project Risk Assessment

Per Section 2.3 of the Guidebook, the CONSULTANT shall assist the STATE in assessing project risks for design-bid-build and design-build delivery approaches for the Alaskan Way Viaduct Project. Risk assessment for individual issues that affect the design-build contracting approach will be evaluated and documented for consideration. These issues include:

- Construction administration
- Permit requirements
- Utility relocations
- Impacts to WSF operations
- Operation and maintenance requirements
- Coordination with other projects
- Funding
- QA / QC responsibilities
- Labor disputes
- Weather conditions
- Inflation
- Hazardous materials
- Third party involvement
- Third party claims
- Schedule
- Incremental acceptance of work
- Performance guarantees / warranties
- Force majeure
- Design reviews / approval
- Liability for design

- Site conditions / Differing site conditions
- Contract changes
- Liquidated damages
- Performance schedule
- Ability to compete
- Ownership of ideas
- Cost of proposing
- Contract terms
- Payment methodology
- Incentives / disincentives
- Assignment of risk
- Bonding requirements
- Errors and Omissions Insurance and other insurance requirements

1.8.3 Final Decision Documentation

As summarized in Section 3.11 of the Guidebook, the CONSULTANT shall assist the STATE in documenting all information necessary for presentation to the Secretary of Transportation for final decision to proceed per RCW 30.10.030.3 with a project delivery strategy.

1.9 Project Management Website

The CONSULTANT shall implement and maintain a web-based Project Management System (ProjectSolve) to facili tate coordination and communication of project activities and materials between the CONSULTANT, STATE and the CITY.

1.9.1 Web Site Development

This website deployed by the CONSULTANT for the Project Team will provide the following functionality:

Secure Login

- Access to the ProjectSolve Team Collaboration Web Site will provided only to authorized Team members who have been provided a UserID and password.
- Team members may include representatives of the CONSULTANT, the STATE and the CITY.

Configurable User and Group-based Security for Web Site Areas

- Security access to the various content elements within the Web Site will be configurable by the site administrator. Access permissions will assignable to both individual Users and to defined Groups.

Team Directory

- The Team Directory will provide contact information for all individuals for whom a UserID has been granted and whose registration remains active.

Calendar

- Support for multiple Project Calendars
- Synchronization with individuals' Microsoft Outlook Calendars
- Management & archiving of Meeting related attachments (Agenda, presentation materials, minutes).

Communications

- Threaded discussions with polling/voting capabilities
- Home Page Announcements
- Alerts
- User-defined Notification setup (Send me an e-mail when this item or document is updated).

Real Time Collaboration for Users in different locations[1]

- Shared, online whiteboard collaboration
- Desktop application sharing
- On-demand and Calendar-event based scheduling
- On-demand invitations and invitation requests

Map-based Information Menu System

- The CONSULTANT shall provide a Map-based Information Menu System in consultation with the STATE and the CITY with the following objectives:
- The System will provide the user with easy access to project-specific informational documents, standards, graphics, and deliverables.
- The Menu System will be designed such that content accessed through it will be stored and maintained in the Folders area of the site. This will allow the content to be regularly updated (weekly or daily) without programmatic changes to the Menu System.
- The CONSULTANT shall coordinate with the Team so that electronic documents and graphics accessed through the Menu System conform to standards that will allow all Team Members to view the items. For such items, Acrobat .pdf format will be the preferred and most common format.

[1] These features may be used to facilitate conference calls and "webinars" where some or all participants may be at different locations. This feature set includes on-screen presentation/communication but does not include any facility for voice communication. As a result, conventional telephone conference call facilities will still be needed.

- Over the long term, the evolution of the Project will in all likelihood require periodic adjustments to the Menu System. The CONSULTANT shall plan and execute these adjustments quarterly.
- The Menu System will include an Interactive Map that will be developed by the CONSULTANT. The Interactive Map will facilitate user navigation of project information that is location-specific, e.g. Photo Simulations at different locations up and down the corridor.
- The Menu System will be developed using Macromedia Flash Version 5.0. The CONSULTANT shall provide a detailed mockup of the map graphics for client approval prior to developing the actual Menu System.

Work Plan

The CONSULTANT shall execute, manage and coordinate the following Work Plan in providing and supporting the ProjectSolve Team Collaboration Web Site.

Requirements Analysis

The CONSULTANT shall perform a detailed Requirements Analysis with a key group of individuals from the CONSULTANT, the STATE, and the CITY. This Analysis will result in the following deliverables –

- Organizational plan for the Content elements of the web site
- Security plan for the web site
- Detailed Requirements Specifications for the Map Based Menu Information System

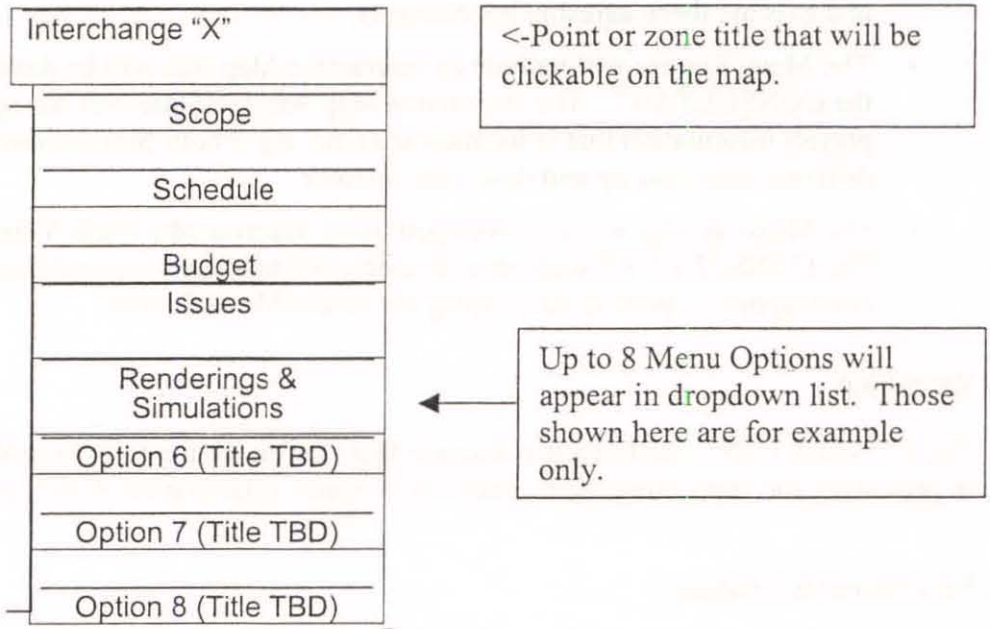
This Analysis will require approximately two (2) days effort on the part of the individuals involved. The Requirements Analysis will be coordinated by the Web Project Manager/CONSULTANT assigned to the Project.

Map Based Menu Information System Design

The CONSULTANT's web development group will use the Detailed Requirements Specifications for the Map Based Menu Information System to prepare one (1) static mock-up/prototype of the Map Based Menu Information System, and one (1) Technical Design Specification. The mock-up/prototype and the Technical Design Specification will be presented in preliminary form for review and comment by key staff persons of the CONSULTANT, the STATE and the CITY. Review comments will be incorporated into the final Technical Design Specification.

Up to ten (10) points or zones on the Map shall be active. When one of these points or zones is clicked, the user shall be presented with a single-tier dropdown menu of up to eight (8) options. The selection of one of these menu options shall result in the display of the content item associated with the selected option.

The selection of options shall be the same for all active Map points or zones. Example:



PRODUCT:
- One (1) static mock-up/prototype of the Map Based Menu Information System
- Preliminary Map System Technical Design Specification
- Final Map System Technical Design Specification

Map Based Menu Information System Development & Testing

The CONSULTANT's web development group will use the Final Map System Technical Design Specification and the comments provided on the mock-up/prototype to develop the Map System. The Map System will be developed using Macromedia Flash 5.0. Prior to deployment, the Map System will be thoroughly and systematically tested by a QA engineer within the web development group.

PRODUCT:
- Completed Map System
- QA engineer's test plan
- QA engineers completed test report (10 Copies)

1.9.2 Deployment & Hosting

The CONSULTANT shall host the ProjectSolve Team Collaboration Web Site from its secure hosting facility in Denver, Colorado.

The Site will be hosted on servers in a Level 3 Communications collocation facility

(or equivalent provider).

The servers within the facility will be supported with bandwidth scalable from T1 to T3.

The CONSULTANT shall use automated tools to monitor server performance uptime 24/7/365.

Hosting services will be provided for a period of twenty-four (24) months.

1.9.3 User Training and Website Support

User Training

The CONSULTANT shall provide end-user training/orientation sessions, and monthly online training sessions as described below:

- Within thirty (30) days of deployment, the CONSULTANT shall conduct three (3) orientation sessions in Seattle. These sessions will accommodate twenty (20) to twenty-five (25) users each, will last approximately two (2) hours, and will be scheduled during a single week so as to minimize travel expenses for the trainer. Training materials tailored to the needs of the Project Team will be provided.
- During the second month, and each month thereafter, the CONSULTANT shall offer one (1) on-line "webinar" for Team Members new to the Project and for Users who might have missed the initial training in Seattle. Participation in these online webinars will require pre-registration, and access to a web-enabled workstation and speakerphone.
- Additional training services can be provided on an as-needed basis, but are not included in this scope.

Website Support

The CONSULTANT shall provide telephone and e-mail help-desk support as follows:

The help desk's targeted maximum response time for non-critical issues will be four (4) working hours during normal business periods. Working hours are defined as Monday through Friday, 7:00 a.m. to 4:00 p.m. Pacific. Holidays excluded.

For critical items, e.g. total unavailability of major Site functions, the help desk's targeted maximum response time will be two (2) clock hours during normal business periods.

1.9.4 On-going Site Maintenance

Through the course of the project, the CONSULTANT shall perform maintenance on the Map Based Information System so that the system stays current with the needs of the Project Team. The CONSULTANT shall perform these updates quarterly.

1.9.5 Closeout

At the closeout of the project, and prior to shutting down the site, the CONSULTANT shall create an electronic copy on CD or other similar media of all site content that has been uploaded to the site.

PRODUCT:
• Web Site Content CD (10 copies)

ITEM 2 MEETINGS

2.1 WSDOT Project Management Team Meetings

Project Management Team meetings with the STATE will be held on a biweekly basis to discuss unresolved project issues and provide strategic guidance. It is assumed that there will be fifty-two (52) regularly scheduled meetings and will include in attendance three (3) staff persons (on average) from the CONSULTANT at each meeting. The STATE will develop both the agenda for each meeting with input from the CONSULTANT and meeting notes for Team distribution. It is assumed that meetings will be held at the downtown Key Tower office of the STATE for approximately one and a half (1.5) hours each.

2.2 PB Team Coordination Meetings

The CONSULTANT team shall meet to review the progress of the design and environmental documentation. The meetings shall be conducted weekly and held at the CONSULTANT's office for approximately one (1) hour each. It is assumed that there will be one-hundred and four (104) Coordination Meetings and will involve four (4) CONSULTANT Team staff persons (on average) in addition to a representative from each subconsultant with major current involvement (5 on average).

2.3 Project Team Coordination Meetings

Project Team Coordination meetings with the STATE/ CITY will be held weekly at the office of the CONSULTANT for approximately two (2) hours each. Upcoming project activities, review of the technical activities under development, and scheduling issues will be discussed. Unresolved issues will be discussed, and if necessary, elevated to the WSDOT Project Management Team meeting for resolution. It is anticipated that there will be one-hundred four (104) Coordination Meetings and will involve six (6) CONSULTANT Team staff persons (on average) in addition to a representative from each subconsultant with major current involvement (6 on average).

PRODUCT:
• One-Hundred four (104) Coordination Meeting Notes (15 Copies)

Meeting notes should include:

- brief meeting purpose statement
- brief list of meeting discussions
- list of action items

2.4 IDT (Inter-Disciplinary Team) Meetings/Subcommittee Meetings

IDT Meetings will provide a forum for key representatives from the CONSULTANT'S technical staff persons and members of cooperating agencies to discuss the development of alternatives. The intention of these bi-weekly meetings is to work through important issues that will affect transportation and business operations within or adjacent to the project corridor. It is assumed that fifty-two (52), two-hour long IDT meetings will be held at downtown Seattle locations. Also, it is assumed that there will be five (5) subcommittee meetings – traffic, environmental, public outreach, fire/life safety and seawall held monthly. A total of one hundred twenty (120) subcommittee meetings will be held at downtown Seattle locations for two (2) hours each. Two (2) staff persons (on average) of the CONSULTANT Team will participate in each overall IDT meeting and three (3) staff persons (on average) will participate in each of the subcommittees. All meeting notes will be the responsibility of the STATE.

2.5 Steering Committee Meetings

One (1) staff person from the CONSULTANT team shall attend these biweekly meetings in order to provide interface between the project activities and the policy decisions that will be made at these meetings between the STATE and the CITY. It is assumed that fifty-two (52) meetings, two (2) hours long, will be held at downtown Seattle locations.

2.6 Other Agency Meetings

The CONSULTANT shall meet with third parties such as Federal, County officials, Port of Seattle, FHWA, FTA, and other consultants as directed by the STATE. Up to fifty-two (52) meetings, three (3) hours long, for up to three (3) CONSULTANT staff persons and three (3) subconsultant staff persons (on average) shall be held. Each meeting will also require three (3) hours of preparation time.

PRODUCT:
• Fifty-two (52) Agency Meeting Notes (8 Copies)

Meeting notes should include:

- brief meeting purpose statement
- brief list of meeting discussions
- list of action items

2.7 Utilities Meetings

In association with the STATE, the CONSULTANT shall meet separately with Seattle City Light, Seattle Public Utilities - Drainage and Wastewater, and Seattle Public Utilities - Water on a monthly basis up to selection of the Preferred Alternative. The CONSULTANT shall meet separately with Seattle City Light,

Seattle Public Utilities - Drainage and Wastewater, and Seattle Public Utilities - Water on twice monthly after selection of the Preferred Alternative. It is assumed that up to one hundred twenty six (126), three (3) hours long, meetings shall be held, with up to two (2) CONSULTANT staff persons and two (2) subconsultant staff persons (on average) in attendance.

PRODUCT:
• One hundred twenty six (126) Public Agency Utilities Meeting Notes (8 Copies)

Meeting notes should include:

- brief meeting purpose statement
- brief list of meeting discussions
- list of action items

2.8 Urban Corridors Office Coordination Meetings

The CONSULTANT shall attend Urban Corridors Office (UCO) coordination meetings on a monthly basis, twenty-four (24) in all. Each meeting will be two (2) hours in length, with two (2) hours of preparation each. The overall purpose will be to coordinate the project communication efforts of UCO's projects. It is anticipated that there will be one (1) CONSULTANT staff person, on average, in attendance.

ITEM 3 CONCEPTUAL ENGINEERING FOR EIS ALTERNATIVES

This group of work elements will be performed concurrently with the EIS preparation. The CONSULTANT shall perform Conceptual Engineering to a level sufficient to support the NEPA EIS through the issuance of the Record of Decision over the planned twenty-four (24) month schedule. The Conceptual Engineering work will involve preparing layouts of the alternatives under consideration for the AWV. These alternatives will be evaluated in sufficient detail in plan and in profile to determine their feasibility with respect to meeting engineering, environmental, and economic constraints. It is assumed that four (4) build and the No Action alternative will be developed to a level of detail to allow analysis in the EIS. One retrofit alternative will be developed to an equivalent level of detail as the build alternatives, but will not be evaluated in detail in the EIS. Each build alternative may have several variants as determined by the CONSULTANT regarding termini, connections, and ramp configurations. The description of the alternative design concepts will be in sufficient detail to allow identification of the specific characteristics of each design concept to be evaluated in the EIS. These characteristics include project layout in plan and profile, roadway and connection configurations, structural measures, typical sections and other related road facilities. This will include maps, alignment drawings, road sections, structural layouts and sections along with construction cost estimates, operations, maintenance and long-term preservation costs and a proposed construction schedule with milestones developed in Item 12.1.

The "design snapshot" for this scope is defined as the point in time when the alternatives to be analyzed in the EIS have been developed to a level of detail that will allow the environmental impacts to be determined. This level of detail is assumed to be plan and profile definition; connection details, construction phasing, and cost estimates, at a conceptual level. Following completion of the design snapshot for the purpose of the EIS, additional Preliminary Engineering will be performed for the Preferred Alternative under Items 4 and 5. It is assumed that there will be only one (1) preferred build alternative for Preliminary Engineering. It is assumed that the design snapshot point for the purposes of EIS-level of detail for the alternative will be five (5) months after Notice to Proceed (NTP), the Draft EIS will be published twelve (12) month after NTP with a Preferred Alternative, the Final EIS will be published twenty-two (22) months after NTP, and the Record of Decision will be published twenty-four (24) months after NTP.

The objective of this item is to determine the conceptual configurations and layout of the various project alternatives to a sufficient level to support the preparation of the EIS, associated cost estimates, public involvement program, and the decision making process. These alternatives may include: surface boulevards, bored or mined tunnels, cut and cover tunnels, cut and cover portals, cut and cover ramps and other surface access structures, ventilation and access shafts, retained cut sections, retained fill sections, aerial highway structures, ramps and connections, at-grade highway sections, and appropriate seawall solutions. Structures supporting or housing system-wide elements, (ventilation fans, lighting facilities, substations, signals,

ITEM 3 CONCEPTUAL ENGINEERING FOR EIS ALTERNATIVES

This group of work elements will be performed concurrently with the EIS preparation. The CONSULTANT shall perform Conceptual Engineering to a level sufficient to support the NEPA EIS through the issuance of the Record of Decision over the planned twenty-four (24) month schedule. The Conceptual Engineering work will involve preparing layouts of the alternatives under consideration for the AWV. These alternatives will be evaluated in sufficient detail in plan and in profile to determine their feasibility with respect to meeting engineering, environmental, and economic constraints. It is assumed that four (4) build and the No Action alternative will be developed to a level of detail to allow analysis in the EIS. One retrofit alternative will be developed to an equivalent level of detail as the build alternatives, but will not be evaluated in detail in the EIS. Each build alternative may have several variants as determined by the CONSULTANT regarding termini, connections, and ramp configurations. The description of the alternative design concepts will be in sufficient detail to allow identification of the specific characteristics of each design concept to be evaluated in the EIS. These characteristics include project layout in plan and profile, roadway and connection configurations, structural measures, typical sections and other related road facilities. This will include maps, alignment drawings, road sections, structural layouts and sections along with construction cost estimates, operations, maintenance and long-term preservation costs and a proposed construction schedule with milestones developed in Item 12.1.

The "design snapshot" for this scope is defined as the point in time when the alternatives to be analyzed in the EIS have been developed to a level of detail that will allow the environmental impacts to be determined. This level of detail is assumed to be plan and profile definition; connection details, construction phasing, and cost estimates, at a conceptual level. Following completion of the design snapshot for the purpose of the EIS, additional Preliminary Engineering will be performed for the Preferred Alternative under Items 4 and 5. It is assumed that there will be only one (1) preferred build alternative for Preliminary Engineering. It is assumed that the design snapshot point for the purposes of EIS-level of detail for the alternative will be five (5) months after Notice to Proceed (NTP), the Draft EIS will be published twelve (12) month after NTP with a Preferred Alternative, the Final EIS will be published twenty-two (22) months after NTP, and the Record of Decision will be published twenty-four (24) months after NTP.

The objective of this item is to determine the conceptual configurations and layout of the various project alternatives to a sufficient level to support the preparation of the EIS, associated cost estimates, public involvement program, and the decision making process. These alternatives may include: surface boulevards, bored or mined tunnels, cut and cover tunnels, cut and cover portals, cut and cover ramps and other surface access structures, ventilation and access shafts, retained cut sections, retained fill sections, aerial highway structures, ramps and connections, at-grade highway sections, and appropriate seawall solutions. Structures supporting or housing system-wide elements, (ventilation fans, lighting facilities, substations, signals,

communications, control rooms, etc.,) are not included in the conceptual scope except for their approximate location, size and feasibility.

For design purposes the alignment will be divided into three (3) approximate geographic areas as follows: (see Table 3-1) South – from Spokane Street to King Street; Central – from King Street to Pine Street; North from Pine Street to Broad Street. Conceptual alternatives will include the following components by area:

Table 3.1

Facility	APPROXIMATE GEOGRAPHIC AREA		
	South	**Central**	**North**
Boulevard	At-Grade	At-Grade	At-Grade
Sea-Wall (See Scope Item "SW")	NA	1.Vertical Face 2.Wharf 3.Buttress Fill	1.Vertical Face 2.Wharf 3.Buttress Fill
Viaduct	1. At-Grade 2. Aerial	1.At-Grade 2.Aerial 3.Cut & Cover Tunnel 4.Bored Tunnel	1.At-Grade 2.Aerial 3.Cut & Cover Tunnel 4.Bored Tunnel 5.Mined Tunnel

For the purposes of scope development, the above components for the project will be arranged into up to four (4) replacement alternatives shown in Table 3.2. Two (2) additional alternatives, the "No-Action" and retrofit alternative, are also assumed.

Table 3.2

Alternatives	South	Central	North
1	At-Grade or Aerial	At-Grade to Cut & Cover Tunnel	Mined Tunnel to At-Grade
2	At-Grade or Aerial	Bored Tunnel	Bored Tunnel to At-Grade
3	At-Grade or Aerial	Aerial	Cut & Cover to At-Grade
4	At-Grade or Aerial	1 way Aerial, 1 way Cut & Cover	Bored Tunnel to At-Grade

In addition to the four (4) build alternatives above, one sub-alternative of each for1 and 2 will be developed that contain an additional aerial component in the Central area.

ASSUMPTIONS:

- Four (4) build, one (1) retrofit, and the No-Action alternatives will be analyzed in the EIS.
- The design snapshot will occur approximately five (5) months after NTP.
- Following the design snapshot, only one (1) build alternative will be carried into Preliminary Engineering.
- The Draft EIS will be published approximately twelve (12) months after NTP; the Final EIS approximately twenty-two (22) months after NTP; and the Record of Decision approximately twenty-four (24) months after NTP.
- Drawings will be produced using software of the CONSULTANT's choice. Upon selection of the Preferred Alternative, drawings will be converted to MicroStation (.dgn) format.

3.1 Data Collection, Compilation, Review and Verification of Existing Conditions

The CONSULTANT shall collect, review and assess the available data that is necessary to develop conceptual-level designs for the civil, systems and structures work elements as follows:

- Gather contract drawings or as-built plans of the existing structures within the project limits. Electronically input key data from these plans that will affect the placement of new structures or retrofit of existing structures (foundations, limits of structures, etc.)
- Review of available existing reports including Bridge Condition Reports, Seismic study reports, geotechnical data and geotechnical investigation reports.
- Review and coordinate with existing and ongoing projects within or adjacent to the project.
- Review utility requirements that may have impacts on the structures within the project area.
- Review the WSDOT plans for communications, systems integration, and traffic management for the NW region for the project area.

The CONSULTANT shall conduct field reconnaissance of the existing viaduct structure to become familiar with the site and to provide an exterior visual assessment of the as-built conditions of the existing structures. (This effort will not include video condition assessment.) The location of the existing structures and adjacent topographic features shall be reviewed and field verified for inclusion in the project.

PRODUCT:

- Electronic data entry of key existing information for structures and features within the project limits.

3.2 Design Criteria

The CONSULTANT shall determine the appropriate WSDOT and AASHTO design manuals which will form the basis for design. For the design of structures or facilities not directly referred to in these manuals, the CONSULTANT shall propose other relevant design criteria and coordinate them with STATE Bridge and Structures group and the CITY.

The CONSULTANT shall establish criteria for the functional performance of facilities; the range of acceptable construction materials, assemblies and facilities for mechanical/electrical systems; and materials for landscaping.

Civil and structural design and performance criteria shall be developed at a Conceptual Engineering level. Design criteria shall be consistent with applicable AASHTO and WSDOT standards and guidelines. The criteria shall consist of the currently adopted:

- Design codes (AASHTO, WSDOT BDM)
- Design methods (LFD, LRFD, etc)
- Material specific parameters
- Design loads
- Deflection and settlement criteria
- Seismic design criteria
- Electrical
- Fire/Life Safety
- Utilities

Where conflicts exist between criteria, the CONSULTANT shall use its professional judgment to resolve the differences. Due to the size, importance and uniqueness of the structures on this project, a special seismic design criteria study shall be conducted to determine the applicability of WSDOT's current seismic design criteria. The study shall incorporate recommendations from the Geotechnical earthquake engineering studies (Section 6.7.2.4 and 6.7.3.4) and other pertinent information related to the seismic design of structures.

PRODUCT:

- Structural Design Criteria (10 Copies)

- Seismic Design Criteria (10 Copies)
- Civil Design Criteria (other than WSDOT Design Parameters) (10 Copies)
- Systems: Fire/Life Safety Design Criteria (10 Copies)
- Electrical Lighting Design Criteria (10 Copies)

3.3 Conceptual Design Development for the Build Alternatives

This item includes developing four (4) build alternatives to a point that they can be compared in the EIS and a Preferred Alternative selected.

3.3.1 Civil

The CONSULTANT shall prepare conceptual plans and profiles for the alternatives (up to 4 build alternatives,) shown in Table 3.2. It is assumed that the build alternatives will include combinations of tunnel, surface, and aerial components. Each build alternative will also include options for addressing the seawall which are part of Item SW.4 and modifications to the Alaskan Way/East Marginal Way surface street. Details to be shown include, but are not limited to, the proposed profile grade line with stationing; right-of-way limits; cut and fill side slope limits; lanes, median and shoulders; connections and connection layouts; major drainage facilities; potential retaining wall locations; bridge structures; and tunnel structures. Typical sections will be developed for AWV at key locations (generally up to six (6) for each alternative) to an appropriate scale to show the lane configuration, shoulder widths, pavement details, cross slopes, bike lanes, sidewalk widths, side-slope details, retaining walls, and proposed right-of-way widths. Details will also be developed for key connections along the AWV. Key connections for each alternative consist of the northern termini, the southern termini, SR 519, mid-town, and Ballard/Interbay. It is assumed that no more than three (3) connection variations will be developed for each connection point in each alternative.

Construction phasing shall be examined for each of the build alternatives and the retrofit alternatives. Accommodation of traffic during construction and identification of fatal flaws in the maintenance of traffic concepts shall be specifically addressed. Detailed traffic detour plans are assumed not to be included in this phase of work.

It is assumed that basemaps will be developed from ortho-corrected photographs and profiles will be developed from contours/elevations obtained from CITY GIS database.

ASSUMPTIONS:

- No more than four (4) build alternatives shall be analyzed.
- No more than three (3) connection variations will be developed for each connection point.
- Basemap images will be developed from information contained in the

CITY GIS data base.

PRODUCT:
- Plan and Profile at 1" = 100' scale – approximately 8 sheets for each alternative
- Connection schematics for each build alternative
- Typical cross-sections at 1" = 20' scale – approximately 6 sheets for each alternative

3.3.2 Structural

The CONSULTANT shall determine the conceptual structural configurations and layout of the various facilities of the four (4) build alternatives. These facilities shall consider: bored or mined tunnels, cut-and-cover tunnels, shafts, retained cut sections, retained fill sections, and aerial structures. Structural configurations will be developed to accommodate known physical constraints and geological conditions. Connection layouts will also be developed for key connections along the AWV. Key connections for each alternative include the northern termini, the southern termini, SR 519, mid-town and Ballard/Interbay.

Structural analysis will be performed to determine the approximate size of major components of the aerial and underground structures. These analyses will incorporate initial soil design parameters based on geotechnical borings and existing site specific soils data. Ground stability during excavation and initial and final liner thickness will be estimated and used as a basis for the preliminary design to follow.

Ground settlements and lateral soil movements will be estimated for anticipated excavations based on generalized subsurface conditions along the alignment using the finite difference software FLAC. The potential impacts of the ground movements on adjacent existing structures and facilities will be also be evaluated using FLAC.

The construction phasing for structural will be coordinated with the overall construction phasing effort in Item 12. This will include initial construction phasing layouts of the structural elements.

ASSUMPTIONS:
- No more than four (4) build alternatives shall be analyzed.

PRODUCT:
- General Layout at 1" = 100' scale – approximately 8 sheets for each build alternative
- Connection Layouts for each build alternative – approximately three (3) connection variations per connection for each alternative.

- Cross-sections at 1" = 10' scale – approximately 6 sheets for each build alternative
- Structural construction phasing plans and details – five (5) plan sheets and three (3) section sheets for each build alternative.

3.3.3 Tunnel Systems

For the tunnels in each of the EIS alternatives, the CONSULTANT shall develop a conceptual design to a level that allows determination of:

- Space requirements for ventilation ducts
- Location and size of ventilation structures
- Emergency exit and access locations
- Overhead space for signs and signals
- Control rooms, mechanical and electrical rooms, etc.
- Maintenance access, parking and storage facilities
- Environmental impacts (air and noise)
- Visual impacts (ventilation buildings and stacks)
- Support for construction staging
- Support for capital cost, start-up and operation and maintenance opinions of cost
- Fire/Life Safety needs
- Traffic management concepts

Coordination among other disciplines will occur to resolve design, environmental and construction issues. The CONSULTANT shall provide schematic layout plans of the major facilities that are located outside of the tunnel envelope.

PRODUCT:
- Input for structural plans of tunnels
- Conceptual space layouts for tunnel systems (10 Copies)
- Operational scheme for tunnels
- Schematic layout plans for major facilities that are located outside of the tunnel envelope

3.3.4 Urban Design

The approach for the integration of urban design objectives into the alternative development will be an iterative one which will continue to develop solutions at

increasingly higher levels of detail to optimize the design criteria established for all aspects of the transportation project and to, at the same time, screen out less attractive options. The CONSULTANT shall continue to integrate urban design considerations as the alternatives are more fully developed and assessed and as a Preferred Alternative emerges.

Conceptual Urban Design

Within the time frame ending at the design snapshot point, the CONSULTANT shall continue to refine up to four (4) conceptual urban design alternatives (one (1) for each of the build alternatives) for use in the EIS. The CONSULTANT shall focus on the surface manifestations of the alternatives and how they integrate with the local streets, the tunnel portals, other modes of travel and adjacent districts. The CONSULTANT shall also consider how the alternatives can be configured to meet visual and open space opportunities and other urban design criteria. As part of this work, the CONSULTANT shall review previously prepared plans, projects, and proposals city-wide and district policies to determine how they are affected and/or how they can inform the development of the conceptual alternatives. Regular work sessions will be held with the STATE/CITY staff persons and other public agencies regarding city-wide and district policies. Conceptual plans will be prepared in MicroStation format, cross-sections will be developed to illustrate key relationships of proposed improvements on the surrounding area and illustrations will be prepared to describe the three-dimensional implications for selected areas.

Urban Design Assessment Revision and EIS Support

The Urban Design Assessment prepared in the Early Action phase, in addition to providing background information for the urban design alternatives, also provides (although at perhaps a more general level) background information for several sections of the EIS. During this phase of the work, the Urban Design Assessment will be updated and refined so that it not only serves the further development of the urban design alternatives, but also serves as a resource document for the EIS team. The CONSULTANT shall first provide a draft of the report to the STATE/CITY. Following their review, the CONSULTANT shall prepare a final draft and will brief members of the team on relevant considerations related to the land use and urban design, parks and recreation and visual quality portions of the EIS. In addition, the CONSULTANT shall meet with members of the EIS team to discuss and review potential considerations related to environmental impacts of the proposed improvements in each of these areas.

ASSUMPTIONS:

- Up to four (4) conceptual urban design alternatives will be developed (one (1) for each build alternative.)

PRODUCT:

- Plans and sections for the surface treatments for the build alternatives
- Revised Urban Design Assessment Report (10 Copies)

3.4 The No Action Alternative

The No Action alternative will be to continue to operate, repair, and maintain the existing structure (including the Battery Street tunnel) until either a seismic event or normal aging create a public safety risk to the extent that the facility must be taken out of service. The No Action alternative will include a description of the existing AWV, traffic safety deviations, maintenance requirements, pavement conditions, seismic vulnerabilities and damage sustained from the Nisqually earthquake, anticipated remaining service life of the structure, and maintenance and repair requirements to meet the remaining service life. Conceptual opinions of cost for maintenance, repair, and operation are included in Item 3.6.

PRODUCT:

- Structural Vulnerability Report for existing structure (10 Copies)
- No Action Alternative Technical Memorandum (10 Copies)
- Operational Vulnerability Report (10 Copies)

3.5 Retrofit Alternative

The Retrofit Alternative will include a proposed description of the structure in the North and South portions, viaduct and Battery Street tunnel retrofit concepts, and potential new traffic connections. This will include the review of past studies and relevant project issues. The construction sequencing and staging and the conceptual opinion of cost is included in Items 12 and 3.6 respectively.

This item will include a workshop to brainstorm a range of possible retrofit schemes. Up to three (3) schemes developed will be further refined so that a constructibility and traffic phasing assessment can be determined.

Utilizing GT STRUDL and other non-linear push software, elastic and plastic capacities and demand for typical bridge frame units will be determined. This frame unit will then be utilized to add the preferred retrofit scheme, prior to the design snapshot, to determine the approximate quantities for the retrofit. The sizes of retrofit elements to satisfy current seismic criteria will also be determined.

PRODUCT:

- List of retrofit concepts with narrative description (10 Copies)
- Plan and section for proposed roadway alignments
- Connection details for one (1) retrofit alternative

- Typical sections and elevations for proposed retrofit alternatives
- Structural analysis of as-built condition (10 Copies)
- Typical frame from both North and South sections with retrofit concepts incorporated
- Technical Memorandum of proposed retrofit actions (10 Copies)

3.6 Opinions of Cost

Conceptual estimates of cost shall be developed to support each of the four (4) build alternatives, the No Action, and the retrofit alternative. The opinions of cost shall include construction, operation and maintenance, and long-term preservation costs. Following the narrowing of alternatives after the design snapshot, a more detailed cost estimate will be developed for the Preferred Alternative as described in Item 5.7.

Preliminary quantities for major elements of the project shall be determined and an opinion of cost shall be developed, based on the Standard Item Table, Bid Tabulations, R.S. Means cost and productions rate standards, WSDOT bridge square-yard costs, and other representative data as appropriate. For budgeting purposes, the level of effort presented for evaluation of the minor and major consideration alternatives shall be considered conceptual and sufficient to support the EIS.

PRODUCT:
- Conceptual opinion of cost for each of the four (4) build alternatives, No Action alternative, and retrofit alternative analyzed in the EIS.

3.7 Alternatives Considered But Rejected

During the narrowing process, many alternatives will be considered but rejected for a variety of reasons. Each alternative that is considered but rejected will be documented. A narrative report will be prepared that documents the proposed alternative and the reasons for excluding it from further analysis. The rationale for rejecting an alternative will be discussed in terms of the previously agreed screening criteria.

PRODUCT:
- Draft Technical Memorandum for each alternative considered but rejected (10 copies)
- Final Technical Memorandum for each Alternative Considered but Rejected (10 copies)
- Notebook with a compilation of all alternatives considered but rejected

3.8 Response to DEIS Comments and Other EIS Support

Additional analysis of the four (4) build alternatives may be required to respond to comments on the Draft EIS. An allowance of 1600 hours has been included in this level of effort to respond to comments on the draft EIS. This may not be sufficient to respond to unknown issues.

ASSUMPTIONS:

- It is assumed that the four (4) build alternatives will be advanced more or less equally to the point that the Preferred Alternative is selected.

PRODUCT:

- Written responses to DEIS comments pertaining to the EIS alternatives
- Design clarification in support of the EIS analysis

ITEM 4 DESIGN FILE FOR PREFERRED ALTERNATIVE

The Design File is a formal documentation of design considerations supporting only the Preferred Alternative, and shall be prepared concurrently with the environmental documentation and Preliminary Engineering. However, due to the accelerated schedule and overlap of project design phases, project documentation must begin at the conceptual design stage. Preparation of the Design File elements shall not begin until the Preferred Alternative is determined with the exception of the Design Parameters Form and Project Item Log. The Design File shall be developed only to the point that Preliminary Engineering of the Preferred Alternative is advanced at the time of the Record of Decision; approximately 25%-30% of full design.

The Design File shall record the various disciplines' evaluations which result in design recommendations. These recommendations, after review and approval by the STATE, and other regulating agencies, shall provide the approved design. The Design File shall be completed in English units. The environmental documentation preparation and Design File development will be conducted concurrently.

ASSUMPTIONS:

- The Design File shall only be developed for the Preferred Alternative
- The Design File will be developed to a degree commensurate with the Preferred Alternative; i.e., 25-30 %
- The Design File scope of work for this phase does not include obtaining design approval or Design File approval.
- Preparation and submittal of Final Interchange Plans for Approval are not included in this scope.
- Paving Plans and Pavement Design will not be a part of the Scope of Services.

4.1 Design File Contents

The CONSULTANT shall prepare the Design File using the Northwest Region Design Guide, April 1999. The CONSULTANT shall prepare the Design File to reflect and document the level of completeness of the Preferred Alternative's design at the time of the ROD. The CONSULTANT shall also prepare the following items for the Design File:

- Vicinity Map
- Project Item Log
- Design Decisions Narrative
- Design Matrix
- Design Parameters Form

- Design Variance Inventory Form
- Justifications, Deviations and Evaluate Upgrades

4.1.1 Vicinity Map

The CONSULTANT shall prepare a project Vicinity Map to be included with the Design File. The 8-1/2" x 11" map shall be prepared for the purpose of identifying the project's location.

4.1.2 Project Item Log

The CONSULTANT shall begin preparation of the Project Item Log prior to the determination of the Preferred Alternative in order to document the project's various design decisions. Only one (1) Project Item Log will be prepared for this project. During the conceptual design stage, the Project Item Log shall annotate project level decisions and coordination only. Alternative-specific decisions and coordination shall be documented separately under this item but not as a formal part of the Project Item Log. After determination of the Preferred Alternative, all decisions and coordination recorded for that alternative shall be transferred to the Project Item Log. The Project Item Log shall then serve as the vehicle to document design decisions and coordination through project and Design File approval. Items on the Project Item Log which the CONSULTANT deems not applicable shall be annotated via a statement explaining the basis for this decision and included in the Project Item Log. The Project Item Log shall be developed to the level that Preliminary Engineering has progressed at the time of the ROD and shall not be completed during this phase of work. For budgetary purposes, it is estimated that approximately 50% of the Project Item Log elements will have some degree of activity to report and the other 50% not yet started or not applicable.

4.1.3 Design Parameters Form

The Design Parameters Form shall be prepared by the CONSULTANT prior to selection of the Preferred Alternative. The form shall be used to document design decisions and identified deviations. For the purposes of estimating the contract budget, it is assumed that a Design Parameters Form will be prepared for the four (4) build-alternatives, and the retrofit alternative and shall be carried to the determination of the Preferred Alternative. After determination of the Preferred Alternative only the Preferred Alternative's Design Parameters Form will be maintained and included in the Design File.

4.1.4 Design Decisions Narrative

The CONSULTANT shall begin preparation of the Design Decision Narrative (DDN) for the Preferred Alternative. The DDN shall summarize the project history and discuss and explain decision in the development of the project design. The CONSULTANT shall provide a draft DDN for that documents the Preferred

Alternative's design decision progress up to the submittal of the Final Environmental Impact Statement.

4.1.5 Design Matrix

The CONSULTANT shall identify the Design Matrix and propose to the STATE the design level to be used for design approval of the Preferred Alternative.

4.1.6 Design Variance Inventory Form

The CONSULTANT shall begin preparation of the Design Variance Inventory Form to document identified variances for the Preferred Alternative. This form shall be used to summarize the effort performed in the item below.

4.1.7 Justifications for Deviations and Evaluate Upgrades

The level of effort estimated for this item is predicated on a collaborative and interactive relationship between the STATE and the CONSULTANT throughout the project development process. Informal discussion with, and agreement by, the STATE on the need and justification of design deviations or negative upgrade evaluations shall precede the preparation of the formal request for deviation approval. Justifications for deviations and evaluation of upgrades shall be prepared for the Preferred Alternative only. For budget estimating purposes this effort shall reflect the level of Preliminary Engineering on the Preferred Alternative up to the ROD. A total of twenty (20) design deviations and/or evaluate upgrades are assumed to require justification during this phase of work with one (1) comment/review cycle per justification.

PRODUCT:

- Vicinity Map (8-1/2" x 11")
- Preliminary Project Item Log
- Draft Design Decisions Narrative
- Design Matrix recommendation
- Design Parameters Form
- Draft Design Variance Inventory Form
- Draft / Final Justifications of identified Deviations and Evaluate Upgrades

4.2 Prepare Interchange Plans for Approval

Proposed and existing interchanges/intersections shall be developed to current design standards. Interchange Plans for Approval for the Preferred Alternative shall be prepared in accordance with the STATE's Design Manual. Channelization Plans for Approval, per the STATE's Northwest Region Design Guide, shall not be prepared

for this project. Where appropriate, proposed intersection channelization developed and agreed upon in Item 14.3.1 shall be shown on the Interchange Plans for Approval. Due to the uncertainty of the type of project delivery vehicle at the time this scope was developed, preparation and submittal of the Final Interchange Plans for Approval is not included.

ASSUMPTIONS:

- This Scope of Service assumes that the STATE will consolidate comments and assumes a maximum of one (1) review cycle.

PRODUCT:

- Draft Interchange Plans for Approval (1 hard copy – full size)

4.3 Stormwater

During the Conceptual Engineering phase, the CONSULTANT shall be responsible for the evaluation of impacts to existing storm drainage systems, development of storm drainage systems for the various alternatives pursued, and preparation of text for inclusion in the project's overall EIS.

The project includes a "No Action" alternative, a retrofit alternative, and four (4) build alternatives for replacement of the Alaskan Way Viaduct and the approaches to the viaduct between Mercer Street and Spokane Street S. in the north-south direction and from the waterfront to First Avenue in the west-east direction. Each alternative will also include a spur connection to the Ballard/Interbay area. The project also includes three (3) seawall replacement alternatives as described in the "SW" sections. However, drainage systems located on or below piers west of the Alaskan Way seawall are not included in the project scope. The overall project approach is as follows and is discussed further in this scope:

- Develop EIS level of detail for up to four (4) build alternatives and one (1) retrofit alternative until the determination of the Preferred Alternative.
- Concurrent with the environmental documentation, perform Preliminary Engineering for the Preferred Alternative.

Culminating the EIS-level development of the stormwater systems for the four (4) build alternatives and one (1) retrofit alternative, a Drainage Concept Technical Memorandum shall be prepared. The technical memo will concentrate on those elements that will assist in the evaluation of the build alternatives in the EIS process.

After determination of the Preferred Alternative, the conceptual design of the alternative selected shall be advanced to produce a Hydraulics Report. The Hydraulics Report shall be based on the level of design completed by this scope of

work.

"Stormwater" includes new conveyance and detention systems exclusively for the retrofit and four (4) build alternatives and pumping and force main parameters for discharge of fire suppression systems for the bored and cut-and-cover alternatives. Detention systems shall be designed for sub-basins within each alternative that connect to the City of Seattle combined sewer system to match existing points of connection. Detention design shall be based on criteria in the City of Seattle Drainage and Grading Control Ordinance. For sub-basins that require new outfalls or connection to systems exclusively conveying stormwater, stormwater quality treatment facilities shall be designed based on the WSDOT Hydraulics Manual, Highway Runoff Manual, and Instructional Letter IL4020.01. Compliance with King County and Washington State Department of Ecology manuals shall not be required. Pump systems may be required for new stormwater conveyance systems, especially for bored or cut-and-cover tunnels. Identification and preliminary design of permanent stormwater treatment BMP's shall be provided.

Design of new outfalls to convey stormwater from the alternatives or to relocate existing outfalls is not anticipated nor included in the project.

4.3.1 Completion of Record Search for Existing Stormwater Systems:

The CONSULTANT shall continue the record search started in the "Early Work" phase for the stormwater systems that will be affected by the retrofit and four (4) build alternatives.

The CONSULTANT shall prepare markup drawings on 1"=100' base map of existing stormwater systems within the proposed alignment corridors based on GIS records and owner record drawings for stormwater systems that are not shown on the GIS. Where GIS records do not provide sufficient detail, construction record drawings will be obtained from the owner to define the existing stormwater system configurations.

The CONSULTANT shall draft existing stormwater system markup drawings on 1"=100' plan and profile from the markup drawings. Up to twelve (12) plan and profile drawing sheets are assumed to be required.

The CONSULTANT shall make field trips to observe existing conditions, as required, and to compile a photo record file.

The CONSULTANT shall interview each agency with stormwater systems in the project area for the following information: missing or conflicting information resolution, design criteria, information on abandoned facilities, future capital improvement plans for up to the next five-years or the time limits of currently approved capital improvement plans, details of policy on rerouting of the stormwater system, estimated cost for proposed realignment, and any special considerations for

phasing temporary construction service. Drawings shall be modified to reflect additional information collected. Public utility interviews will be conducted in accordance with Paragraph 2.6.

The CONSULTANT shall coordinate with the agencies and the surveyor to obtain "pothole" information at up to forty (40) locations.

Existing stormwater system data shall be obtained by survey under Item 11.4 and shall be provided on the stormwater system markup drawings. Plan and profile drawings shall be at 1"=100' for the four (4) build EIS and one (1) retrofit alternatives. Plan and profile drawings shall be at 1"=50' for the one (1) Preferred Alternative. Existing stormwater system cross section locations shall be provided for inclusion with the utility cross sections prepared in Item 10.1. Stormwater system cross sections shall be consistent with the build-alternative cross sections. It is assumed that cross sections shall be cut at approximately 500' intervals along the existing viaduct route between Spokane St. and Mercer St., along the Elliott Avenue connection and elsewhere as appropriate. Up to sixty (60) existing stormwater system cross-sections shall be provided. An existing stormwater system attribute database spreadsheet shall be compiled for facilities within the alternatives' corridors.

A Technical Memorandum with attached appendices shall be prepared to document the search and discovery of existing stormwater systems and drainage design criteria within the build-alternatives' corridor.

PRODUCT:

- Existing stormwater plan and profile drawings at 1"=100',
- Existing stormwater system cross section information.
- Technical memorandum containing drainage design criteria, records of stormwater system owner interviews, existing database field notes and photos as appropriate.

4.3.2 Stormwater Conveyance for the Proposed Alternatives

In advance of the design snapshot, the CONSULTANT shall prepare schematic level plans, profiles and cross-sections of stormwater system relocations for the retrofit and each of the build alternatives. The following shall be evaluated for the four (4) build alternatives and the retrofit being considered:

Cut and Cover Tunnel: This alternative is under consideration in Alaskan Way and Wall, Bell and Battery Streets. Design criteria will be refined and analysis performed as required to define the proposed stormwater conveyance and detention systems. The need for pile support of the stormwater conveyance system will be investigated with the owner(s) in terms of risk and consequences. Design parameters, such as hydraulic grade line, flow rates and length of force main, shall be considered for pumping of

seepage water and / or fire suppression materials. Means of temporary construction drain line support and seasonal timing constraints shall be reviewed. Coordination of crossing utility penetrations of the new seawall and impact of tidal fluctuations on seawall penetrations are included in Work Element SW.

Twin Bored Tunnels: This alternative is under consideration in First Avenue and Western Avenue. Design parameters, such as hydraulic grade line, flow rates and length of force main, shall be considered for pumping of seepage water and / or fire suppression materials. Assessment of the existing stormwater conveyance's ability to tolerate the anticipated levels of settlement, recommendations for relocation of stormwater systems at the portals, and temporary construction service recommendations are included in Work Element 10.

Aerial: This alternative is under consideration above Alaskan Way adjacent to the existing AWV. The required analysis includes recommendations for sequential construction of temporary construction stormwater conveyance that are currently hung from the AWV, and relocation of stormwater conveyance in Alaskan Way based on the proposed footing locations for the new structure.

Aerial / Cut and Cover Tunnel: This alternative is under consideration above Alaskan Way adjacent to the existing AWV. The required analysis includes all of the items for the aerial and cut and cover alternative as noted above.

Retrofit: Proposed relocations will be coordinated with the stormwater system owner(s). Up to six (6) meetings will be held with each private utility owner to review progress, discuss constraints and obtain comments on revisions. Focus will be on critical stormwater system relocations.

Construction considerations will be addressed. Temporary construction utility requirements will be reviewed, particularly for customers that are outboard of the seawall. Potential for discharge of construction dewatering water to existing combined sewer will be investigated.

ASSUMPTIONS:

- City of Seattle drainage design criteria will be applicable for all new conveyance, detention, or water quality treatment systems connecting to the CITY's combined sewer or stormwater drainage systems.
- For areas discharging to the CITY's combined sewer system, detention without water quality treatment will be designed.
- For areas discharging to the CITY's storm drain system, water quality treatment without detention will be designed.
- Design of new outfalls or changing the design to a different agency criteria can be added if directed by the STATE through a scope modification.
- Utilities will be shown in MicroStation format for the conceptual design.
- Conceptual level cost opinions will be expressed as a range and will be to a level of accuracy to allow relative comparisons of alternatives.

PRODUCT:

- Relocated stormwater system plan and profile drawings at 1"=100'
- Relocated stormwater cross section drawings at 1"=10'
- Conceptual level cost opinion.

4.3.3 Drainage Concept Technical Memorandum

A Drainage Concept Technical Memorandum shall be prepared by the CONSULTANT and shall utilize the WSDOT Hydraulics Manual and Highway Runoff Manual procedures. The technical memorandum's purpose is to provide the necessary information to perform environmental impact analysis and determine permitting requirements of the retrofit and the four (4) build alternatives being considered. The work includes the following:

- Discuss existing conveyance systems (ditches, culverts, pipes) including plans and profiles,
- Perform preliminary hydraulic analysis for retention, detention, and storm water quality treatment,
- Identify major drainage basins,
- Provide approximate locations and sizes of Detention Facilities,
- Discuss the proposed conveyance system (and does the proposed system affect adjacent parcels), and
- Identify concept-level Best Management Practices for storm water quality treatment.
- Identify concept-level pumping requirements for tunnels.

ASSUMPTIONS:

- One (1) review/comment cycle each for Draft and Final Technical Memorandum submittals

PRODUCT:
- Draft Drainage Concept Technical Memorandum (10 Copies)
- Final Drainage Concept Technical Memorandum (10 Copies)

4.3.4 Hydraulics Report

A Hydraulics Report shall be prepared by the CONSULTANT for the Preferred Alternative and shall follow the WSDOT Hydraulics Manual and Highway Runoff Manual procedures. The report incorporates the work performed in the Drainage Concept Memorandum and advances the stormwater system design to reflect the Preferred Alternative's design at the time of the ROD. Elements included in the Hydraulics Report include:

- Discussion of the existing drainage system(s) (from the Drainage Concept Technical Memorandum),
- Hydrologic analysis including delineation of drainage basins,
- Hydraulic analysis for retention, detention, and water quality,
- Proposed conveyance system (and impacts, if any)
- Locations and sizes of detention facilities and outfall(s)
- Locations and sizes of pumping facilities if a tunnel system is the Preferred Alternative. This element includes coordination with King County to obtain calculated hydraulic grade lines for up to 20 points for the Elliott Bay Interceptor (EBI) as calculated in hydraulic models prepared by King County.
- Concept-level design of temporary drainage facilities for stormwater management during construction, including temporary conveyance measure and treatment facilities.

ASSUMPTIONS:
- A supplemental Hydraulic Report will be prepared by the CONSULTANT to address hydraulic issues based on the final design.
- King County Department of Natural Resources will provide hydraulic grade line in the 102" Elliott Bay Interceptor for up to twenty (20) points of interest to the project.
- Utilities will be shown in MicroStation version as required by the WSDOT for the Preliminary Engineering drawings.
- At the completion of the Preliminary Engineering work, the final MicroStation drawings will be electronically converted to AutoCAD 2000 format.
- Preliminary level cost opinions will be considered accurate to a level of ±30%.

PRODUCT:

- Relocated stormwater system plan and profile drawings at 1"=50'
- Database spreadsheet
- Relocated stormwater conveyance cross section drawings at 1"=10'
- Temporary construction stormwater plan drawings
- Draft Hydraulics Report (1 hard copy)
- Final Hydraulics Report (1 electronic copy & 3 hard copies)

ITEM 5 PRELIMINARY ENGINEERING FOR PREFERRED ALTERNATIVE

Following completion of the design snapshot for the purpose of the EIS, a Preferred Alternative will be determined. Design criteria will be updated for all disciplines as required. Preliminary engineering shall be performed on the Preferred Alternative up to approximately 25% level. For the purpose of this scope, it is assumed that Alternative 1 as described in Table 3.2 is chosen as the Preferred Alternative.

ASSUMPTIONS:

- The Preferred Alternative will be identified at approximately five (5) months after NTP.
- Alternative 1 from Table 3.2 will be used for budget purposes.

5.1 Civil

The Preliminary Civil Engineering will be developed using the basemaps provided by the CITY and supplemented by CONSULTANT field survey as needed. This phase of work involves refinement of the conceptual alignment for the Preferred Alternative established in Item 3. Plan & profile sheets for each roadway alignment shall be produced. No more than seven major alignments are assumed to be required for the Preferred Alternative: 1 alignment for the aerial segment, 2 alignments for the cut & cover tunnel, 3 alignments for the mined tunnel, and 1 alignment for the boulevard. Ramp and other connection alignments are assumed to be included. No realignment of city streets is assumed. Extensive coordination with the STATE and the CITY is assumed to be required as the design is advanced.

Horizontal scale of 1" = 50' will be used along with the appropriate vertical scale. Drawings will be produced in MicroStation (.dgn) format. At or near the end of the Preliminary Engineering phase of work, the drawing files shall be converted to AutoCAD (.dwg) format for transmittal to the CITY. Interim file conversions (e.g. for SPU or SCL review/coordination) will be considered extra work.

Superelevation transition drawings will be produced for the alignments designed above. For budgetary purposes, approximately 100 curves are assumed for those alignments.

Connection drawings to depict the proposed connections to the city street network shall be prepared For budgetary purposes, five connections locations are assumed.

Cross sections will be prepared for the at-grade sections of the waterfront boulevard at 100' intervals, or more frequently for specific purposes (up to 10 additional).

Roadway plans will be prepared along the waterfront boulevard identifying the impacts and improvements needed to the roadway, curb and gutter, sidewalk and drainage. Utilities will be covered under Item 10.

Preliminary engineering drawings of temporary and permanent vehicle access to the docks and pedestrian access to the waterfront shall be prepared by the CONSULTANT. Preliminary drawings of the trolley rail alignments shall also be included.

Construction phasing drawings shall be prepared. Drawings shall include overall demolition plans, demolition plans at specific locations (e.g. portals and connections), and general and specific location section drawings. Three major stages are assumed to be required for construction.

PRODUCT:

- Plan and Profile at 1" = 50' scale – approximately 16 sheets for the Preferred Alternative
- Superelevation transitions – approximately 20 sheets
- Connection details (five each) - approximately 25 sheets
- Typical cross-sections at 1" = 10' scale – approximately 12 sheets
- Plans of temporary and permanent vehicle dock access – 1 sheet each
- Plan, profile and section drawings of temporary and permanent pedestrian access facilities at 3 locations – approximately 12 sheets
- Plan, profile and section drawings for the trolley – approximately 5 sheets
- Plan and sections of construction phasing at 1"= 50' scale – approximately 52 sheets per stage
- Plan and Profile at 1"=50' scale electronic files in MicroStation format (1 copy)

5.2 Structural

The Preliminary Engineering drawings will define the site-specific configuration as well as the layout, location, and size of all major structural elements. The configurations developed during Conceptual design will be used as the basis for Preliminary Engineering. Preliminary design of the major facility elements will include:

- Aerial Roadways: A typical aerial roadway superstructures will be used throughout the entire alignment.
- Tunnels: Tunnels will consist primarily of cut-and-cover tunnel and mined tunnel. No bored tunnel is anticipated.
- Tunnel Portals: Tunnel portals will include associated retained cut and fill sections and stabilization of the slopes immediately adjacent the tunnels.

- Ramps: Aerial, surface, and underground ramps will be designed as needed to facilitate the movement of traffic to and from the facility.
- Shafts: Ventilation and egress shafts will be designed to meet specific functional needs.

PRODUCT:
- Layout Drawings at 1" = 50' scale – approximately 16 sheets
- Plans and Sections at 1" = 20 scale – approximately 16 sheets
- Structural Details (various scales) – approximately 32 sheets

5.2.1 Structural Site Data

The CONSULTANT shall prepare Structural Site Data for the structures on the preferred alignment. Survey work required for preparation of structural site data will be performed using the project datum. Bridge site data will be prepared in accordance with the Bridge Design Manual and Chapter 1110 of the Design Manual. The structural site data will be used internally by the CONSULTANT, and will be available to the STATE/CITY, but will not be formally submitted.

PRODUCT:
- Structural Site Data for each structure

5.2.2 Structural Design Criteria

Structural design criteria shall be updated to reflect the Preferred Alternative.

PRODUCT:
- Structural Design Criteria for Preferred Alternative

5.2.3 Preliminary Structure Design

Preliminary structure design, up to a 25% level, for the build alternative shall include the following:

- Aerial Structures: Preliminary level design calculations for unique structural features of the bridge. Computer modeling and dynamic analysis to find the seismic demand; Establish the structural types and span layouts; Establish the member sizes for major superstructure elements (girder type and depth, deck slab width and thickness); Establish the member sizes for major substructure and foundation elements (column diameter and heights, pier cap size, pile cap size, shaft or pile size)
- Tunnels: Tunnels may consist of cut-and-cover tunnel, mined tunnel, and/or a combination of the above.

- Permanent Walls: Cut and Fill walls in support of aerial structures, tunnels and roadways.
- Support Facilities: Site-specific designs will be developed for the required facilities for normal and emergency ventilation in the tunnels, emergency surface access from tunnels, tunnel control facility, and portal ventilation structures.
- Construction Phasing Study: Conduct a study to incorporate the structure construction activities into the overall plan for construction phasing and sequencing.
- Construction Method Study: Conduct a study to identify the preferred tunnel construction method and the required staging and setup area requirements.

Preliminary design drawings shall define the site-specific configuration as well as the layout, location, and size of all major structural elements (pile caps or shafts, etc). The configurations developed during Conceptual design will be used as the basis for Preliminary Engineering.

PRODUCT:
- General Structural Notes, Abbreviations, Callouts, Symbols, Drawings
- Structural Plan and Elevation for Preferred Alternative, scale 1"=50'
- Section drawings for Preferred Alternative: Aerial Structures – five (5) sheets, Cut and Cover Tunnel – three (3) sheets, Mined Tunnel – three (3) sheets, Portals – eighteen (18) sheets, Tunnel Support Facilities – fourteen (14) sheets.
- Construction Sequence, Phasing and Method (includes plans at 1"=200' and sections)
- Permanent Wall Plans and Profiles, scale 1"=20'
- Portal Plans and Elevations, scale 1"=10'
- Tunnel Support Facilities plans and sections
- Tunnel Major Details – fourteen (14) sheets
- Connection Details: Aerial Structures – twenty-four (24) sheets, Cut and Cover Tunnel – thirty-two (32) sheets, Mined Tunnels – four (4) sheets

5.3 Traffic

For the selected alternative, develop preliminary traffic engineering plans for the operation of the facility.

- Develop typical details for facility operations (i.e., signage, traffic control, channelization, lighting, signal hardware – assume up to 30 signals require preliminary design).
- Develop preliminary channelization plans (1"=50).
- Develop preliminary signing plans (1"=200).

- Conduct lighting study for surface boulevard and arterial improvements, tunnel (if applicable), and walkways to identify lighting requirements to be included in design specification to design-build contractor
- Develop preliminary traveler information and traffic management report
- Develop preliminary communications system concept
- Develop preliminary telecommunications systems integration report

PRODUCT:
- Preliminary Channelization Plans
- Traffic design technical memorandum documenting the analysis performed, design criteria and design assumption – to be incorporated in the Transportation Discipline Report (Item 14)
- Lighting Study – technical memorandum
- Preliminary telecommunications system concept and integration report
- Preliminary systems integration report

5.4 Tunnel Systems

Refine the design of the tunnel system components for the Preferred Alternative. The design shall include a preliminary ventilation analysis, including the sizing of the ventilation ducts, fans and stacks. A preliminary layout shall be developed for the ancillary facilities, such as space requirements for the fan room, electrical equipment, mechanical and control rooms, etc. required at the various locations along the Preferred Alternative.

PRODUCT:
- Preliminary layouts for tunnel systems
- Preliminary layouts for ventilation structures

5.5 Urban Design and Architecture

Urban Design for Preliminary Engineering

Once the Preferred Alternative has been chosen, the CONSULTANT shall continue to work with the STATE/CITY and CONSULTANT staff persons to refine and develop in greater detail above grade and surface improvements, including local streets, transit, pedestrian and bikeways, development and open space relationships and opportunity areas, potential activity linkages, and landscape and visual character for the Preferred Alternative. Plans for the entire corridor and typical cross-sections will be prepared as well as 3-dimensional illustrations for selected areas.

In consideration of the intent to utilize a design/build process for implementation, the

CONSULTANT shall also prepare, as a part of this phase, urban design criteria associated with the project. The preparation of this criteria will be closely integrated and will rely upon input from a variety of other disciplines described within this scope, including civil, structural and traffic engineering. Within this item, the scope of the urban design improvements to be implemented as a part of the design/build project and those improvements which will be undertaken separately by other related projects will be defined. The criteria developed for the design/build project will be at various levels of detail, depending upon how critical the improvements are to achieving the STATE/CITY objectives and community expectations. Design/build criteria will address programmatic and locational as well as performance requirements. The elements to be included will be fully defined when the Preferred Alternative is fully established, and may include physical modifications to the local street system, open space and landscape improvements, the provision of transit, pedestrian and bicycle ways, on-street parking, loading and transit station areas. It may also include aesthetic considerations related to viaduct structures, portals, stairway exits, pedestrian bridges, ramps, guard rails, ventilation structures, retaining walls and retained fill, and other above-grade elements. Finally, it also may include performance specifications for street tree planting and landscaping, paving, lighting, signage structures and street furniture.

PRODUCT:
- Refined plans and sections for the Preferred Alternative
- Refined illustrative sketches for the Preferred Alternative
- Programmatic and locational criteria and performance specifications for urban design and architecture elements

5.6 Fire / Life Safety

The CONSULTANT shall review, and provide input to Civil, Facility and Systems Equipment designs during Conceptual and Preliminary Engineering from Fire/Life Safety and Security perspectives. Conduct special studies on matters pertaining to fire/life safety and security during Preliminary Engineering. Incorporate all reviews and studies into a comprehensive Preliminary Engineering Fire/Life Safety Plan. Coordinate with Fire/Life Safety Team, Fire Marshal and WSDOT Maintenance and Operations to develop project specific design criteria for:

- Fire detection and fire suppression requirements
- Emergency egress requirements
- Ventilation requirements for normal operations, including air quality standards in tunnels and at exhausts
- Ventilation requirements for emergency conditions
- Power supply for normal and emergency conditions
- Hazardous vehicle and cargo restraints
- Drainage and pollution control

- Noise limitations
- Illumination requirements, regular and emergency conditions
- Traffic control system requirements (including signing and driver information)
- Maintenance requirements, operations during temporary closures
- Emergency operations requirements, such as bypass routes, cross over, U-turns, etc.
- Emergency response vehicles and procedures
- Flooding Conditions

PRODUCT:
- Design requirements for tunnel systems
- Preliminary engineering fire/life safety plan

5.7 Opinions of Cost

The conceptual opinion of cost developed in Item 3.6 will be further refined. Estimates of all facets of the facilities portion of the program will be prepared at the close of Preliminary Engineering. A parallel step toward preparation of the cost estimates will be the assembly of current or recent capital cost information. A preliminary design level of effort, producing an estimate to allow the WSDOT cost-benefit analysis to be conducted, shall be put forth on the Preferred Alternative. The CONSULTANT shall make recommendations as to construction staging, with construction impacts, cost and need requirements considered for each section and termini. Costs will be based on standard bid item tables published by the STATE, WSDOT per square yard bridge costs, R. S. Means cost and production rate standards, and other representative data as appropriate. The CITY and STATE will provide estimated right-of-way costs.

PRODUCT:
- Refined opinion of cost for the Preferred Alternative following the design snapshot.

ITEM 6 ENVIRONMENTAL DOCUMENTATION

Environmental documentation for the Alaskan Way Viaduct and Seawall will include preparation of an environmental impact statement (EIS) and related supporting documents and materials as described in the following items. The EIS will be a combined document prepared to meet the requirements of the National Environmental Policy Act (NEPA) and State Environmental Policy Act (SEPA). Primary guidance for the EIS will be FHWA regulations expressed in 23 CFR 771 and Technical Advisory T6640.8A, SEPA rules WAC 197-11, WSDOT Environmental Procedures Manual M31-11, and City of Seattle SEPA Ordinance SMC 25.05.

The work elements described below will be performed concurrently with the conceptual engineering items described in Item 3. The results of the environment analysis for each subject area will be documented in a technical report or section in the EIS. The environmental analysis will address direct and operational impacts, likely construction impacts, and secondary and cumulative effects.

It is assumed that four (4) build alternatives and the no-action alternative will be analyzed in the EIS. A retrofit alternative will be described and evaluated, but is assumed to be infeasible as a build alternative. Each build alternative may include an unspecified number of design variations. The alternatives analyzed in the EIS may include the following design components: surface boulevard, seawall, bored or mined tunnels, cut and cover tunnels, cut and cover portals, cut and cover ramps and other surface access structures, ventilation and access shafts, retained cut sections, retained fill sections, aerial highway structures, ramps, connections, at-grade highway sections, and stormwater management facilities.

6.1 Geology and Soils

Affected Environment

The CONSULTANT shall continue to review readily available geotechnical and geologic data for the project including, but not limited to; Geologic maps from the U.S. Geologic Survey, Department of Natural Resources, Department of Ecology's Coastal Zone, Geologic Hazard and Sensitive Areas maps, WSDOT construction records, soils and geotechnical reports from WSDOT, Federal, Community, City or County officials, groups or individuals, and geotechnical information within the project limits that are in the CONSULTANT's files.

The results of these studies will be used to describe the Geology and Soils along the project alignment.

The Affected Environment relative to the soil conditions along the alignment will be evaluated and described. The project geology will be reviewed and geologic hazards including liquefaction potential, ground motion amplification, and regional faulting

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The results of these studies will be used to describe the Geology and Soils along the project alignment.

The Affected Environment relative to the soil conditions along the alignment will be evaluated and described. The project geology will be reviewed and geologic hazards including liquefaction potential, ground motion amplification, and regional faulting

will be evaluated. A preliminary geological map will be developed based on a review of the information assessed in Items 8 and 9.

In addition to the geology of the project, the CONSULTANT shall also characterize the groundwater resources including sole source aquifer boundaries, regional hydrogeology and aquifer characteristics, and potential groundwater contamination. This information will be incorporated into Item 6.3.

Impact Analysis

Impacts of the project will be evaluated relative to the geology along its alignment. Excavation impacts including ground movements as a result of cut/cover excavation, tunneling, and dewatering operations will be evaluated. Foundation construction impacts including slurry wall, drilled shaft, and driven pile foundations will be evaluated. Impacts on existing structures and groundwater resources as a result of project construction will be assessed.

Temporary construction activity impacts will be evaluated including haul routes, drill spoil, stockpile waste sites, groundwater levels, seawall stability during construction, and stability of adjacent existing structures during construction activities.

Mitigation Development

Appropriate mitigation measures will be determined for potential adverse impacts on the existing environment. Potential impacts where mitigation measures will likely be developed include settlement of adjacent existing structures, groundwater flows, seismic design considerations, and larger scale earth movements such as landsliding as a result of excavations.

Additional FEIS Analysis

Comments by agencies and the public will require additional analysis for the FEIS. For budgeting this is assumed to be 10% of the DEIS effort.

PRODUCT:

- Draft Geology and Soils section for PDEIS
- Technical backup information will provided in other documentation developed in other items.
- Additional analysis and response to comments for the FEIS.

6.2 Air Quality

Issues

The air quality impacts associated with operation and construction of the proposed project alternatives will be summarized in the air quality section of the EIS. The CONSULTANT shall prepare this air quality section, as well as Draft and Final Air Quality Technical Reports, which will describe the methodologies, approaches, and assumptions used in the analysis.

The major ambient air quality issues associated with the project are include:

- Potential impacts associated with emissions from the facility's tunnel ventilation buildings;
- Potential impacts associated with vehicular emissions released through the tunnel exit portals;
- Air quality levels near proposed elevated and/or depressed roadway sections;
- Potential impacts associated with changes in traffic patterns on congested intersections of the local street network, including heavily traveled roadway sections and new or modified entrance/exit ramps highway entrance ramps; and
- Changes in vehicular emissions generated in the study area, and whether these changes conform to the requirements of the State Implementation Plan (SIP).

Also of concern are the potential air quality impacts associated with the construction phase of the project alternatives and measures that can be implemented to minimize these impacts.

Reports and Coordination

The CONSULTANT shall coordinate the analysis with the Puget Sound Clean Air Agency (PSCAA), Puget Sound Regional Council (PSRC), Washington State Department of Ecology, U.S. EPA Region X, and WSDOT to establish methods and assumptions to be used in the study. All analyses shall be conducted in accordance with the requirements of WAC 173-420 and follow EPA guidelines to meet the requirements of 40 CFR Part 93 and WSDOT Environmental Procedures Manual. The CONSULTANT shall review air quality information developed for the SR 519 project to determine if information on existing conditions can be used for the AWV project.

The CONSULTANT shall prepare the Draft and Final Air Quality Technical Reports and an EIS extract. The Final Air Quality Technical Report shall be incorporated as a technical appendix to the EIS.

Pollutants of Concern

The air pollutants primarily associated with the vehicular exhaust that will be considered in the localized (microscale) analyses are carbon monoxide (CO) and particulate matter smaller than ten microns (PM10). CO and ozone precursors (i.e., oxide of nitrogen (NOx) and volatile organic compounds (VOCs)) will be considered in the regional (mesoscale) analysis.

Emission Factors

The CONSULTANT shall coordinate with PSRC to use the latest emission files available at the start of the analysis phase. Either PSRC Mobile 5b with Tier 2 corrections and Part5 files or Mobile 6 files shall be used to estimate CO, NOx, and VOC emission factors, depending on availability of Mobile 6 files at the start of the air quality analysis. Similarly, either EPA's Part 5 model or another approach recommended by PSRC and PSCAA shall be used to estimate PM10 emission factors.

Existing and Future No Action Conditions

Existing air quality in the study area shall be described based on monitored data, land use and topography, and climate. Existing major pollution sources will be identified.

A microscale modeling analysis shall be conducted by the CONSULTANT to estimate existing and future No Action CO and PM10 levels at sensitive receptor locations near elevated and at-grade sections of the current viaduct and at heavily congested intersections that are anticipated to be affected by the proposed project alternatives. The worst traffic hour (assumed to be PM peak) shall be considered at all intersections, the AM peak period shall also be evaluated for up to four (4) of the intersections if AM peak-hour traffic is worse at those specific intersections. It is anticipated that CO levels shall be estimated near four (4) segments along the current or proposed highway right-of-way and twelve congested intersections, and PM10 levels will be estimated near the same four (4) segments and up to four (4) of the intersections evaluated for CO.

This analysis shall be performed as follows:

- CO concentration predictions shall be made at all identified receptors and sensitive receptors for the maximum 1-hour period using the USEPA CAL3QHC Version 2. Eight-hour concentrations shall be estimated using EPA persistence factor guidance.
- Twenty-four (24) hour and annual PM10 concentrations shall be estimated using a modified version of the CAL3QHCR dispersion model and five (5) year of appropriate meteorological data. It is assumed that meteorological data from SeaTac or Boeing Field will be acceptable and available.

Potential Localized Project Impacts

Microscale Mobile Source Analysis

A modeling analysis shall be conducted by the CONSULTANT to estimate Build CO and PM10 levels near the same locations that were evaluated under the existing and future No Action scenarios. It is anticipated that future pollutant levels at these locations will be estimated under four (4) Build alternatives.

Ventilation Facilities

CO and PM levels shall be estimated at sensitive land use locations near proposed locations of the tunnel's exhaust ventilation facilities. A two-tiered approach will be utilized for this analysis.

- A screening level analysis will initially be used to rank potential ventilation facility locations as to their potential air quality impacts. Critical parameters that would be considered in this initial analysis may include preliminary stack design characteristics, estimated pollutant exhaust rates, and the location of nearby sensitive land uses. The USEPA's SCREEN3 model shall be used to conservatively estimate pollutant levels. It is assumed that up to ten (10) ventilation facilities locations will be screened.
- A detailed modeling analysis will be conducted to determine the potential impacts of the selected ventilation facilities once the Preferred Alternative has been selected. Ventilation stacks will be analyzed using either USEPA's Industrial Source Complex (ISC3) for direct plume and wake region impact, and SCREEN3 for the cavity impacts, if necessary (or USEPA's AERMOD, if available by the beginning of the project). It is assumed that up to four (4) facilities will be evaluated.

Tunnel Exit Portals

CO and PM levels shall be estimated at sensitive land uses location near proposed locations of the tunnel's exit portals. It is assumed that up to three (3) portals will be evaluated in detail.

The air quality analysis of tunnel exit portals shall be conducted using a methodology that Parsons Brinckerhoff developed specifically for this type of emissions source using wind tunnel test data developed for several projects, and procedures that were accepted by a number of regulatory agencies in the US and elsewhere.

The CONSULTANT's modeling methodology assumes that the emissions from a portal exit will be in the form of a jet plume that will not disperse (i.e., remains intact) until it is approximately one hundred (100) to three hundred (300) meters from the portals. This jet will be considered to consist of three (3) sections -- each section with uniform characteristics. In addition, contribution from the stretch of roadways

downstream of the exit portals (also modeled using either ISC3 or AERMOD) will be take into account emissions from vehicles traveling outside of the exit portal. The contribution of emissions from roadways adjacent to the tunnel portal (if applicable) will also be considered, using either ISC3 or AERMOD.

Study Area Air Quality

The CONSULTANT shall complete a regional (mesoscale) emissions analysis to compare transportation emissions (CO, NOx, VOCs, and PM10) generated in the study area under each alternative under two (2) future analysis years. It is assumed that up to four (4) Build and one (1) No Action scenarios will be considered.

The analysis shall be for the same study area boundaries utilized in the transportation analysis, and shall determine emissions on a link-by-link basis for each transportation model time period.

Construction Phase Impacts

Air quality impacts related to construction activities primarily occur as a result of fugitive dust impacts from earth excavation, grading and removal activities, the handling and transport of material, and emissions from the operation of heavy-duty diesel and gasoline construction equipment.

Due to large-scale construction activities that will occur in close proximity to sensitive land uses (e.g., commercial and residential areas, bicycle paths, parklands, etc.), the CONSULTANT proposes to perform the following items:

- A modeling analysis to evaluate the potential PM10 impacts of the largest construction phases on the surrounding land uses. Up to three (3) construction areas will be evaluated. This analysis will be performed using the USEPA ISC3 dispersion model (or AERMOD, if available). It will include both fugitive dust sources and emissions generated by heavy-duty diesel construction equipment.
- An emission control plan that will outline a series of dust/emission control measures to maintain dust levels in construction areas as low as reasonably achievable.
- The basic outline for a field inspection program to verify the implementation of these control measures; and an air quality monitoring program using portable battery-powered monitors which would be located in areas where the general public may be exposed. The purpose of the monitoring and inspection programs will be to assess the pollutant levels during major construction stages, and to evaluate the effectiveness of the mitigation practices, so they can be targeted to maintain ambient air quality standards. The specifics of this program will be developed in conjunction with the applicable regulatory agencies.

Conformity

The CONSULTANT shall prepare a Project Conformity Statement that evaluates the project as though it is included in the pertinent conforming transportation plan and conforming transportation improvements program (TIP) by PSRC, the project's relation to transportation control measures, and results of the microscale and mesoscale analyses. The CONSULTANT shall note the emissions relationship between Build and No Action alternatives and indicate whether the project contributes to the reduction of frequency and severity of violations of NAAQS. If the project construction is not programmed to occur within the current TIP life, the CONSULTANT shall clarify that, for this reason, the project cannot be included in the TIP analysis for conformity.

The CONSULTANT shall be available to answer technical questions related to air quality modeling/report work for WSDOT staff persons and at project open houses to describe technical issues addressed in the report.

The technical report shall also address secondary and cumulative impacts to the level addressed in the transportation study.

Additional FEIS Analysis

Response to comments on the DEIS will require additional analysis. For budgeting purposes this is assumed to be 25% of the DEIS effort.

PRODUCT:

- Draft Air Quality Technical Report (10 Copies)
- Final Air Quality Technical Report (50 Copies)
- Input and output data for all computer modeling programs (one hard copy and one electronic for each model run)
- Draft Air Quality section for the Draft EIS
- Detailed Conformity modeling for tunnel vents and portals for the Preferred Alternative
- Response to comments for Final EIS

6.3 Water Quality

The water section of the DEIS will include a discussion of water quality impacts from stormwater, groundwater, and temporary impacts from stormwater runoff from construction sites. In addition to stormwater impacts, sedimentation and erosion from new seawall construction will be evaluated and potential mitigation will be developed.

Each section of the DEIS is discussed specifically under each sub-item below.

Affected Environment

Assumptions: The scope and budget for the Affected Environment section of the DEIS assumes the following:

- Existing literature will be used to characterize pollutants in highway runoff.
- The CITY and King County METRO will provide maps of drainage basins, storm and Combined Sewer Overflows (CSO) outfalls.
- The CITY and King County METRO will provide all existing water quality studies and hydraulic modeling performed on the existing drainage systems within the project area and identify all deficiencies.
- The CITY will provide existing monitoring data for the outfalls collected under the NPDES permit program.
- Four (4) site visits will be made.
- Groundwater information will be developed by Item 9.3.

The affected environment subsection will summarize relevant existing water quality information provided by agencies and summarize existing physical conditions.

Impacts Analysis

The impact analysis will focus on long term water quality impacts from each alternative and temporary construction related water quality impacts. Specific methodologies and calculations of this analysis will be documented in the technical memorandum; the EIS impacts section will summarize the results to compare the alternatives.

Long Term Surface Water Quality Impacts

Assumptions

- No sampling will be conducted.
- New areas of impervious surface and pollutant generating impervious surface within the project limits for each alternative will be provided by the design team, including a distinction between those areas which are exposed to rain and those that are not.
- The CITY will identify the existing water quality treatment BMPs within the project boundaries.
- The CITY and King County Metro will identify the frequency of CSO events.
- New major outfalls or relocated outfalls that will be constructed and discharge to receiving water will be limited to three (3).
- Impacts will be evaluated using a comparative analysis of pollutants in runoff generated within the project boundaries. Values for pollutants will be based on those recommended in literature.

- Mixing zone analysis will be conducted on up to three (3) new outfalls. Receiving water quality will not be evaluated.
- Up to two (2) retrofitting scenarios or stormwater runoff configurations will be evaluated (i.e. two (2) discharge alternatives to three (3) outfalls.)
- No subbasins or drainage areas will be modified from existing delineations.
- No hydraulic analysis will be conducted to evaluate downstream capacity.

Construction Water Quality Impacts

- The CONSULTANT shall work with the DESIGN TEAM to identify potential construction methods for the AWV and seawall.
- Two (2) construction methods will be evaluated. One method will use cofferdams to prevent seawater from contacting sediment, and the other method will construct the seawall without cofferdams.
- Potential contaminants present in the sediment shall be provided by another member of the CONSULTANT team.

Mitigation Summary

The mitigation section of the DEIS will summarize BMPs for each alternative. Specific design methodologies and schematic designs will be presented in the technical memorandum.

- Summarize permanent water quality BMPs estimated using methods recommended in the Ecology 2001 Manual.
- Qualitative summary of construction BMPs for sediment and erosion control, and in-water work based on the Ecology 2001 Manual.
- Evaluation of mitigation and BMPs will be limited to the areas within the project limits.

Additional FEIS Analysis

Comments received on the Draft EIS will require additional analysis. For budgeting purposes this is assumed to be 25% of the DEIS effort.

Technical Memorandum

As part of the documentation for the DEIS water quality section more detailed information will be provided in a technical memorandum. The technical memorandum will include documentation and schematic designs of permanent water quality BMPs; technical backup of the CSO evaluation; available maps of the existing stormwater and CSO drainage basins (provided by the CITY and King County Metro); and documentation of the assumptions and calculations used to evaluate long term water quality impacts. The assumptions that will be used to conduct these

analyses are summarized below:

Permanent Water Quality BMPs

- Existing and proposed land use in each drainage basin will be documented.
- Up to five (5) different water quality treatment BMPs will be conceptually designed for the Preferred Alternative using the methods recommended in the Ecology 2001 manual.
- Detention BMPs will be conceptually designed for areas that discharge to CSOs or storm drains as required by CITY Stormwater Code. The standards in the Ecology 2001 Manual will not be applied to this project.
- Water quality BMPs will be limited to areas located within the project boundaries.
- Water quality treatment for fire suppression discharges in tunnels is not included.

CSO Evaluation

- The proposed project will not decrease the volume of runoff draining to the CSOs.
- Water quality BMPs will treat runoff from the project area and decrease the amount of pollutants that are currently discharged from the project area to CSOs.
- CSO effluent will not be evaluated.

Stormwater System Evaluation

- CITY will provide GIS data of the existing stormwater drainage system in the project area including which drainage systems do not have adequate capacity for existing flows. The CONSULTANT shall verify drainage basins and pipelines.
- All stormwater from the project site drains to CSO or storm drains.
- Improvements to the existing system due to decreases in surface water runoff will not be evaluated.
- Evaluation of stormwater runoff will be limited to areas located within the project limits; receiving waters will not be evaluated.

The technical memorandum is intended to support the DEIS and provide backup information for permit applications. Additional technical information that may be required by permit agencies is not included in the scope for this item.

PRODUCT:

- Draft Water Quality Discipline Report (10 Copies)
- Final Water Quality Discipline Report (50 Copies)
- Draft EIS Water Quality section
- Response to comments for FEIS

6.4 Wildlife, Fish and Vegetation

Affected Environment

This work element will collect information that establishes the baseline of existing environmental conditions for the DEIS and on which screening of potential alternatives can be conducted. The baseline conditions will describe listed species and relevant habitat conditions for the action area potentially affected by any of the proposed AWV alternatives. Other prominent aquatic, wildlife and vegetation species potential affected by the alternatives will be identified and baseline conditions described. All descriptions will be based on existing information. In reviewing the existing conditions, the planned changes by the Seattle Aquarium will be accounted for.

A visual survey of intertidal habitat conditions will be conducted along the Seattle seawall area potentially altered by the alternatives. Biologist will tour the existing seawall during an available low tide to observe and photographically record existing intertidal habitat conditions. A diving survey will be conducted at selected locations along the subtidal portions of the seawall. Biologists will directly observe and videotape existing habitat conditions from intertidal elevations to the base of the existing seawall and make general observations of the substrate and aquatic vegetation. Epibenthic and juvenile salmonid monitoring could be required by resource agencies but are not included in the scope at this time.

Impact Analysis

The objective of this item will be to identify potential impacts to fish, wildlife, and vegetation at the site, and conduct analyses of the nature and degree of these impacts. The general assessment of impacts for the Alaskan Way Viaduct alternatives will cover species listed (Chinook salmon, bull trout, bald eagle) under the Endangered Species Act (ESA), potentially listed species, essential fish habitat as identified under the Magnuson Stevens act, and other important habitat characteristics. Impacts of the alternatives will include the effects of potential structures and water discharges on biota and habitat in Elliott Bay and other areas potentially affected by the alternatives.

Impact analysis will include evaluation of potential impacts likely to occur during both construction and the life span of each of the alternatives evaluated

Mitigation Development

This item will involve documentation of habitat mitigation concepts applied to each of the project alternatives. The approach will involve summary of the existing conditions and impacts described above, followed by identification of mitigation concepts that would address the specific impacts to natural resources at the site. If offsite habitat mitigation is required it will be based on available information at a conceptual level. Field studies and a demonstration study of offsite habitat mitigation is not included in the scope at this time.

Working in close cooperation with WSDOT and the CITY, the CONSULTANTS will work with resource agency representatives to identify biological issues of concern and potential habitat measures to address these issues. The primary purpose is to incorporate habitat enhancements into the alternatives, and provide a venue for ongoing participation in the project development process. Resource agencies having permitting or regulatory authority for the biota and habitat include: National Marine Fisheries Service, US Fish and Wildlife Service, US Army Corps of Engineers, US Environmental Protection Agency, Washington Department of Fish and Wildlife, Washington Department of Ecology, Washington Department of Natural Resources, and Seattle DCLU. This scope does not include extensive coordination with other WSDOT research projects being conducted in the area.

Documentation

Descriptions of potentially affected species and habitat, and analyses of impacts will be prepared in a format for incorporation in the DEIS and draft Biological Evaluation.

Additional FEIS Analysis

Review of the DEIS by resource agencies and other entities will produce comments requiring additional analyses and preparation of elements for the FEIS. For budgeting purposes this is assumed to 25% of the DEIS effort.

PRODUCT:
- Technical Memorandum on dive survey results (25 Copies)
- Draft EIS Wildlife, Fish and Vegetation section
- Response to comments for Final EIS

6.4.1 Habitat Demonstration (optional)

Objective

Reconstruction of the City of Seattle seawall as part of the Alaskan Way Viaduct replacement may not allow development of a fill providing sloping intertidal habitat.

Since sloping intertidal habitat is likely to be a high priority for resource agencies involved in permitting the project, it is desirable to explore opportunities to provide the essential habitat characteristics and functions without constructing a major fill. The following identifies a concept we previously developed for a project located in Elliott Bay.

Young salmon commonly undergo a rearing migration as they move through estuaries. They spend weeks to months gradually moving along the gently sloping natural shorelines of estuaries, where they feed and grow rapidly, growing to a size that provides the capacity to move offshore and take up a pelagic life. During this estuarine rearing they feed predominantly in shallow water on epibenthic zooplankton. These small crustaceans live in the water at the substrate surface where they feed on diatoms growing on the substrate. Sloping shallow water habitat provides both these prey resources and the habitat conditions many young salmon prefer. This habitat type has been essentially eliminated across the lengthy expanse of the Seattle waterfront. The resource agencies strongly desire to see these habitat functions restored in this area which is used by the numerous young chinook and chum salmon migrating from the Green-Duwamish River. Their strategy has been to use the Endangered Species Act together with the permitting process to require applicants to restore these habitat features. They can be expected to push hard for development of a fill that provides gently sloping intertidal habitat. The intertidal panel habitat concept is a suggestion for a habitat alternative that can provide the desired functions without providing a major fill along the waterfront.

Background

Previously we have explored habitat restoration alternatives along the face of piers as part of the Southwest Harbor Project conducted for the Port of Seattle along the East Waterway of the Duwamish River. One of the concepts we explored was development of sloping intertidal habitat in the form of precast concrete panels that could be incorporated into the face of a pier or vertical bulkhead. Development of a major fill at the Elliott Bay face of the Southwest Harbor site provided an opportunity to construct intertidal habitat at an alternative location. Thus, the intertidal panels became unnecessary and were not fully developed as an intertidal habitat alternative.

Since this concept has not been constructed nor explored with the resource agencies, it will likely require a demonstration project to convince the agency representatives that it is a feasible concept for replacing the intertidal habitat functions. It will be challenging to develop and permit a demonstration project within the time frame of the Alaskan Way Viaduct project. However, we should at least explore the option as it offers the potential to restore shoreline habitat functions in the absence of a major fill. Most likely construction by late winter with monitoring of biological production and fish use during the spring migration period (mid-March to mid-June) will be necessary to provide agency representatives with the appropriate information demonstrating that this concept will effectively replace the shallow water habitat functions.

Intertidal Panel Concept

This concept was developed to restore intertidal habitat functions serving young salmonids and young marine fishes that rely on the primary and secondary production of gently sloping intertidal habitats. Since natural intertidal habitats include a wide range of substrate types and slopes we developed a habitat concept that would be within the range of natural conditions. The concept is intended to replace the habitat functions at locations where fill is not an option to replace shallow water habitat due to navigation, structural, or other requirements of existing site development and use.

- The intertidal panel concept provides precast, reinforced concrete panels that would be installed in the middle intertidal to shallow subtidal zone with the features listed below.
- Intertidal Panel Habitat Features
- Span tidal levels from about –4 ft to +6 ft Mean Lower Low Water.
- Installed at a slope of about 1:2 (vertical:horizontal) or flatter.
- Supported by reinforced concrete piles (potentially vertical bulkhead at shoreline).
- Incorporation of cobble or boulder size natural rock to provide surface texture and substrate for attached algae and invertebrates.
- Provide surface features that will retain about 4-6 inches of silt-sand-gravel sediment (perhaps only over a portion of the surface).
- Strength to support the weight of an aggregation of sea lions.

Demonstration Project / Monitoring

A demonstration project would install several intertidal habitat panels of a size determined to be appropriate for implementation should the project prove feasible. The several panels would be installed against the existing sea wall on piles at an appropriate site. Installation would be completed by mid-February. Monitoring would begin by mid-April and continue through mid-June. A second season would be monitored the following year if possible.

Monitoring of the demonstration project would involve sampling to evaluate the development of and epibenthic prey community with the species commonly consumed by young salmon. Monitoring would also demonstrate use of the habitat by young salmon. This can be accomplished through direct observation during the spring monitoring period. Direct observation can also provide evidence of the presence or absence of fish predators that are of concern to agency representatives.

6.5 Biological Assessment

Draft BE

The initial step will be to develop a biological evaluation (BE) outline for review by WSDOT, and the core management team prior to initiation of the work effort. A Draft BE will be prepared for each alternative (maximum of four) under consideration at the time of preparation of the Draft BE. Each Draft BE will incorporate the same baseline information and affects analyses for the specific alternatives evaluations. The draft BE will evaluate both potential impacts likely to occur during construction and operation of each of the alternatives evaluated.

Baseline Conditions

Baseline conditions incorporated into the Draft BE will be based on the baseline conditions developed for the Affected Environment. These descriptions will be revised to provide appropriate information in the appropriate format for the Service's requirements for a Biological Assessment.

Direct Effects

Assess the direct impacts of the Alaskan Way Viaduct Alternatives to species listed (Chinook salmon, bull trout, bald eagle) under the Endangered Species Act (ESA). Direct impacts of the alternatives will include the effects of potential structures on Elliott Bay habitat, and any streams potentially affected by the alternatives.

Indirect Effects

The consultants will assess indirect impacts of structural alternatives and water discharges for each of the Alaskan Way Viaduct alternatives under consideration. The assessment will focus on the indirect impacts of the Alaskan Way Viaduct alternatives to listed species and essential fish habitat. Indirect impacts include reasonably certain impacts caused by the project action along the Elliott Bay shoreline and other areas potentially affected by the alternatives.

The indirect effects may extend outside the area directly affected by the action. Therefore, this information is necessary to define the Action Area required for the Biological Evaluation/Assessment required under the Endangered Species Act.

Final BA (FEIS)

A Draft Biological Assessment (BA) will be prepared following the outline previously accepted by the core management team of the BE. A BA will be prepared

for each of the probable seawall alternatives still under consideration at this time. The Final BA will evaluate both potential impacts likely to occur during construction and operation of each of the alternatives evaluated.

The CONSULTANT shall support the STATE and CITY in consultation with the services early in project development and continuing through preparation of the Final BA. Formal consultation is not assumed necessary.

PRODUCT:
- Preliminary Biological Evaluation (25 Copies)
- Draft Biological Evaluation (25 Copies)
- Preliminary Biological Assessment (25 Copies)
- Final Biological Assessment (25 Copies)

6.6 Energy

The CONSULTANT shall analyze the impacts of the AWV project on energy resources, including the amount energy consumed in the operation of vehicles, maintenance of facilities, and energy invested in construction activities and construction materials.

Affected Environment

The CONSULTANT shall prepare a general estimate of the amount of energy currently consumed by transportation activities within the project area. The estimate will be described in terms of BTU's or quantities of fuel consumed based primarily on existing conditions traffic information.

Impact Analysis

The CONSULTANT shall assess the direct and/or indirect energy impacts of each alternative, including an assessment of the net change in energy consumption associated with each alternative. If a net increase in energy consumption is predicted, the impacts will be described in terms of BTU's or quantities of fuel consumed. The following types of impacts will be considered:

- Direct energy consumed in operation of vehicles predicted to use the facility compared to the existing facility. The effects of increased or decreased smoothness of traffic flow will be considered.
- Energy consumed during the maintenance of the facility compared to the existing facility.
- Energy consumed in the region as a result of operation of the facility compared to existing energy consumption. The effects of increased or

decreased smoothness of traffic flow, vehicle miles traveled, and growth generated by the project will be considered.

- The combined impact of energy used during construction versus energy used (or saved) during operation.

Temporary energy impacts related to construction activity will also be described. These include impacts on local fuel availability, energy sources needed, and source of energy invested in construction activities and construction materials.

Mitigation Development

The CONSULTANT shall assess the energy conservation potential of each alternative, including no-action. Potential mitigation measures will be proposed that address both direct operational impacts and construction activity impacts. The CONSULTANT shall describe traffic management measures that could be taken to reduce energy consumption.

Documentation

The CONSULTANT shall prepare text in electronic format for the Energy section of the Preliminary Draft EIS. Two (2) review and revision cycles are assumed: one (1) internal team review and one (1) WSDOT staff person review.

Additional FEIS Analysis

If necessary, the CONSULTANT shall perform additional analysis to address comments on the Draft EIS related to Energy. For budgeting purposes, additional analysis is assumed to be 10% of the DEIS effort.

PRODUCT:

- Energy section for Draft EIS
- Response to comments for Final EIS

6.7 Noise and Vibration

The CONSULTANT shall conduct a noise study for the project area based on the guidelines presented in the current Federal Aid Policy Guide, Sub-Chapter H, Part 772 and the WSDOT State Highway Policy Procedures. The EIS shall contain sufficient information about the noise analyses to determine impacts under FHWA criteria for the alternatives, reasonableness and feasibility of mitigation where appropriate, and support the decision for a Preferred Alternative. The CONSULTANT shall prepare Draft and Final Noise and Vibration Technical Reports documenting the procedures and results. The report shall follow the WSDOT Noise Study outline (Environmental Procedures Manual Section 446).

Affected Environment

The CONSULTANT shall conduct a reconnaissance of the project area to determine land uses to locate sensitive receptors and determine their distances from the proposed roadway alignment. Materials from the Land Use study shall be used to support this analysis. All of the following land uses shall be identified for noise sensitivity:

- Lands upon which serenity and quiet are of extraordinary significance and serve as an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose,
- Picnic areas, recreation areas, playgrounds, active sports areas, parks, Seattle Aquarium, residences, motels, hotels, schools, churches libraries and hospitals,
- Developed lands not included above, and
- Undeveloped lands.

Selection of sites for noise monitoring shall be coordinated with the team members responsible for Land Use and Parks & Recreation items for their comments and concurrence prior to selection and initiation of monitoring.

Sampling noise measurements shall be conducted at up to fifty (50) selected noise-sensitive receptors as needed to provide a complete description of existing noise levels and calibrate the traffic noise model that are representative of the land uses along the proposed alignments. The CONSULTANT shall note physical and terrain features that may be altered during construction and affect noise levels.

All measurements shall be conducted for fifteen (15) minute sampling periods during daytime off-peak (10 a.m. to 4 p.m.) and peak (4 p.m. to 6 p.m.) hours when traffic is moving freely. Measurements shall be made according to procedures in *FHWA-PD-96-046 Measurement of Highway-Related Noise*. At each measurement site, the CONSULTANT shall conduct short-term traffic counts concurrently with the noise measurements. During noise fieldwork, the CONSULTANT shall conduct classification counts to determine truck percentage. Non-highway noise sources shall be noted. Measured traffic noise levels shall be used to calibrate the FHWA's Traffic Noise Model (TNM) along with traffic counted during the noise measurement.

In addition to short-term monitoring, the CONSULTANT shall conduct 24-hour noise measurements at up to ten (10) locations to document daily noise patterns and support the analysis of noise impacts from nighttime construction activities. The CONSULTANT shall compile and include the following information: traffic and plan data for all study years, peak hour volumes, speeds and classification counts.

The CONSULTANT shall conduct indoor/outdoor monitoring at up to ten (10) locations to determine noise reduction coefficients for the buildings of interest. The STATE will obtain rights of entry permits for any buildings and/or units to be measured.

Existing noise levels shall be modeled using TNM. Under-deck reflections from the double-deck viaduct structure shall be modeled using virtual roadway sources to represent noise reflections from the upper deck.

Visual inspection and photo documentation of current conditions at up to twenty-five (25) historic or otherwise vibration sensitive structures adjacent to the existing viaduct or proposed project alignments shall be completed. The STATE will obtain Right of Entry permits to the structures. Sampling measurements of the existing vibration levels at these structures will be conducted for twenty (20) minutes during the morning or afternoon peak truck periods. These measurements will document the peak particle velocity vibration of truck passbys that are representative of the heaviest vehicles that presently use this roadway.

Impacts

Operational Impacts

The CONSULTANT shall model the future year traffic noise level for the alternatives stated above, including No Action, using TNM. Noise analysis of elevated roadway sections will require identifying construction features, specifically expansion joint alternatives. Alternatives to TNM may be required for elevated roadway sections depending upon the validity of the model for the particular characteristics of the structure. Noise predictions shall be modeled at the measured noise sensitive receptors and other noise sensitive land uses along the corridor as needed to describe noise impacts from the project. Modeled receptors shall be adequate to assess all traffic noise impacts; the noise levels at each of the impacted receptors, the increase in traffic noise and amount of reduction to each outdoor area as a result of mitigation or the lack of mitigation. Outdoor areas that shall have a substantial increase in predicted noise levels over existing noise levels shall be identified by the CONSULTANT for all land uses and impacts quantified.

Noise impacts shall be quantified by area for all sensitive land uses. The study shall provide information on impacted activities, such as residential and park uses. Additional analysis shall be conducted for proposed tunnel portals and other openings. Under-deck reflections from double-deck viaduct structures shall be modeled using virtual roadway sources to represent noise reflections from the upper deck.

Ventilation system and other ancillary equipment's typical noise levels shall be evaluated and compared to CITY noise control code. Vibration analysis will be focus on elevated structure alternatives.

Construction Impacts

Construction noise impacts shall be described based on types and locations of equipment likely to be used on the project. Construction timing and phasing shall be discussed. Vibration analysis of tunnel construction on existing buildings will be assessed qualitatively based on identification of structures susceptible to damage based on structure and foundation type, age, condition and other relevant criteria. Vibration monitoring may be required for cast iron water mains per Seattle Public Utility's Water vibration monitoring criteria, depending on sequencing of the water main work and construction activity near cast iron water mains. Construction noise impacts shall be assessed in relation to the CITY noise code and the potential need for variances assessed.

Mitigation: Construction and Operational

Any identification of traffic noise impacts shall meet the FHWA and WSDOT definitions of "approach or exceed" or "substantial increase." The CONSULTANT shall discuss all mitigation techniques found in 23CFR772 and provide specific information on the mitigation measures.

The CONSULTANT shall identify noise abatement measures, in accordance with FHWA, WSDOT and CITY requirements, at locations along the alignments where traffic noise impacts are predicted, including techniques specified in 23CFR772. Noise barriers shall be evaluated using TNM. The noise study shall include a summary of barrier locations and sizes evaluated, and whether the barrier would meet WSDOT reasonableness and feasibility criteria. The CONSULTANT shall provide height, length, cost and benefits per impacted user for each proposed barrier. The study shall contain a complete discussion of impacted areas that do not meet the STATE criteria and specifically note reasons for not including mitigation. The STATE will solicit community input regarding mitigation noise wall locations.

Construction noise mitigation requirements shall be developed in cooperation with the Design Team, WSDOT and the CITY. The DEIS shall outline the elements which may be addressed in a detailed Construction Noise and Vibration Control Plan including : (1) noise and vibration level limits; (2) mandatory mitigation measures that would be implemented before construction is initiated; and (3) a program of monitoring oversight to review the progress of construction performance in meeting the noise and vibration limits and minimizing disruptions or annoyances to local communities. Vibration mitigation shall include: developing criteria for utilities and historic structures; providing guidelines for safe operating distances in the vicinity of these structures for impact equipment such as ram hoes, pavement breakers, pile drivers, and jackhammers; and the implementation of a vibration monitoring program for the Contractor. Development of a detailed Construction Noise and Vibration Control Plan and conducting the construction monitoring program would be outside of this Environmental Review scope of work and considered in a future phase.

Unavoidable adverse impacts shall include impacts identified for which mitigating measures are not identified, or which cannot be assured to be fully mitigated to meet applicable standards.

Final EIS

Comments received on the Draft EIS will require additional analysis and some individual responses. For budgeting purposes, this is assumed to be 25% of the DEIS budget.

PRODUCT:

- Vibration sensitive building baseline file
- Draft Noise and Vibration Technical Report (10 Copies)
- Final Noise and Vibration Technical Report (50 Copies)
- Noise Modeling Files
- Noise and Vibration section for the Draft EIS
- Response to comments and revised noise section for Final EIS

6.8 Hazardous Materials

An evaluation of the potential for hazardous materials will be conducted to investigate, assess, rank and describe the potential hazardous materials impacts that could occur along each of the proposed alignment alternatives. The CONSULTANT shall also evaluate the various seawall replacement alternatives for impacts related to contaminated sediments. This information will be summarized in the Draft EIS, with supporting data contained in the Hazardous Materials Discipline Report. The hazardous materials analysis will:

1. characterize known and suspected hazardous material releases in the project corridor;
2. identify probable adverse impacts of the screened project alternatives on hazardous materials;
3. identify possible impacts that the existence of hazardous materials may have on the construction of the project; and
4. recommended mitigation measures that could be implemented for unavoidable adverse impacts.

The following sections describe the specific approaches that will be used to implement data collection, and the assessment of affected environment conditions, impacts and potential mitigation.

Data Collection

The CONSULTANT has completed the initial historical and agency record review and a windshield survey of the most industrial portion of the corridor in the Early Action scope of work. This information was summarized and presented by city block in a preliminary document. Blocks posing a higher potential for hazardous materials were identified.

A total of 931 unique sites, located on 265 of the 368 blocks within the corridor, were identified as having a potential for contaminants. Sixty-two sites were listed more than once because their use and the types of potential contaminants had changed significantly over time. All of the sites were located within the corridor and/or directly adjacent to the corridor along Alaskan Way / East Marginal Way.

Of the 265 blocks, 257 blocks were identified based on historical use and 8 additional blocks were identified because of a known release at a site where historical use did not indicate a high potential for contaminant release. Most of these releases were fuel oil releases.

Of the 257 blocks identified based on historical use, 191 blocks are ranked *High* potential to effect the project, 62 are ranked *Moderate* potential to effect the project, and 4 blocks are ranked *Low* potential to effect the project. Of the 92 blocks identified based on known releases reported to regulatory agency, 63 blocks are ranked *High* potential to effect the project, and 29 blocks are ranked *Low* potential to effect the project because a cleanup report has been submitted to the Department of Ecology. No blocks were ranked *Moderate* based on a known release.

For the discipline report, the information summarized and refined and supported by historic and current tax assessor records and a review of extensive Ecology files. Available information will be reviewed and evaluated by property to provide site-specific information along the selected alignments that is necessary to accurately evaluate project impacts. A Hazardous Waste Discipline Study will be conducted in accordance with WSDOT Guidelines (2001) and Checklist (2001) to assess environmental impacts and corresponding mitigation alternatives.

Continuing work begun in the Early Action scope of work, further assessment of the study area will be accomplished by examining several resources for evidence of potential recognized environmental conditions. As defined by American Society for Testing and Materials (ASTM) Standard E 1527-00, the term recognized environmental conditions (RECs) means the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicated an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. RECs may be visible in aerial photographs and from ground reconnaissance in the form of aboveground storage tanks, (ASTs), former gas stations (or paint shops, dry cleaners, etc), drum storage,

and grading or filling of land surfaces.

Sanborn Fire Insurance Maps and Polk City Directories (telephone directories) were reviewed for the preliminary document to identify historical uses and features of the study area. In addition Washington State Archives records were previously compiled for each of the city blocks to develop supporting information. A thorough review of these historic tax records will be conducted. A summary of the city block will be presented with an emphasis on properties that have been also identified by Polk City Directories and Sanborn Fire Insurance Maps as sites that have a potential for hazardous materials. In addition the historic records may provide information regarding old piles/piers along the waterfront that may pose challenges for construction and the disposal of piles.

Current property owners will be identified from King County Assessor's Office records.

U.S. Geological Survey (USGS) maps and aerial photographs will be reviewed to identify historic land features such as the historic shoreline and areas of fill.

The date of the resources, as well as the actual resources available for the study area will vary. They may include other sources in addition to any or all of the above including information developed by the CITY, which will be provided where possible. The historical research will be focused on the various alternative alignments. The data will be carefully organized and catalogued to facilitate data evaluation.

A windshield survey will be conducted for publicly accessible areas to verify the current business and general site conditions. Site visits will not be conducted. This survey will emphasize blocks of industrial activity and is viewed as continuation of the initial windshield survey. No site access will be requested. Interviews will not be conducted.

The information obtained from these sources will be summarized. All known or suspected contaminated sites based on regulatory records and historical research will be mapped by site address using GIS format and summarized in tables.

The alternatives may impact sediments within Elliot Bay, particularly adjacent to the seawall. Ecology will be contacted for existing information. Summary reports of existing data will be used as the primary reference; site-specific files may be reviewed for sediments as required for the evaluation. A summary of impacted sediments with a general discussion of types and distribution of contaminants along the existing seawall will be presented. The potential impacts that contaminated sediment will have on the project, such as cleanup and disposal costs if sediments are to be removed, will be addressed in the HWDR.

Impacts

The discipline report will also include a characterization of the affected environment as impacted by the known and suspected contaminated sites. This section will include a discussion of the land use history and physical environment considerations that could impact the distribution, migration, and cleanup of contamination.

The evaluation will discuss the potential impacts that the existence of contamination has on project development, including but not limited to, construction impacts and costs, worker safety, regulatory impacts, and local requirements. The additional studies described below will be necessary to fully evaluate project impacts and develop cleanup costs. Extensive filling occurred along the waterfront, particularly south of Yesler Way and extending along today Beacon Hill to Elliot Bay (the Seattle Tidelands). Another environmental concern along the current and past waterfront areas is the presence of creosote-treated timbers. These timbers were used to support the elevated rail lines, the piers along the waterfront, and construction of the seawall. These timbers if removed would be considered a regulated waste, and creosote leaching from the timbers could also have contaminated soil that is in close proximity to the timbers.

Mitigation

Mitigation measures will be identified for the purposes of avoiding or controlling contaminated site impacts. The mitigation measures will be site specific where possible, including but not limited to, avoidance of contaminated sites, permit requirements, and cleanup options. Mitigation measures will be further defined following the Additional Studies described below.

Additional Studies

Screening level subsurface investigations are necessary to develop reasonable costs for cleanup within the alignment. These investigations need to be conducted in conjunction with geotechnical investigations to determine that the information is available for scoping and design to meet the proposed schedule. Soil sampling would be limited to areas with a high potential for hazardous materials to have migrated into the alignment right-of-way. It will also be necessary to conduct groundwater sampling as part of dewatering evaluation to determine proper disposition of extracted groundwater during construction. The chemistry of the water could have significant impacts on the cost of and approach to construction.

Additional FEIS Analysis

Comments received on the Draft EIS will require additional analysis and specific responses. For budgeting purposes, this is assumed to be 25% of the DEIS effort.

PRODUCT:

- Draft Hazardous Materials Discipline Report (10 Copies)
- Final Hazardous Materials Discipline Report (50 Copies)
- Draft EIS section on Hazardous Materials
- Response to comments for Final EIS

6.9 Land Use

The CONSULTANT shall prepare a Land Use section of the EIS based on guidance provided in the WSDOT Environmental Procedures Manual that describes current development trends and assesses the consistency of each alternative with relevant regional and local plans for land use, transportation, public facilities, housing, and community services. Secondary social, economic, and environmental impacts of development induced by the project will also be analyzed.

Affected Environment

The CONSULTANT shall review applicable local and regional land use and transportation plans, policies, and ordinances including the Puget Sound Regional Council's regional land use and transportation plan (Destination 2030), King County's countywide planning polices, the CITY's comprehensive plan (including land use, transportation, and capital facilities elements), downtown plan, urban design district, and shoreline master program. Applicable plans, policies and ordinances will be summarized and their relevance to the proposed project will be noted. Information on existing plans and policies developed for the Urban Design Assessment Report (Phase 2 Early Action Item) will be used to the maximum extent possible. The CONSULTANT shall also describe existing and proposed land use within the project area. Maps and drawings will be used to show current land use, comprehensive plan designations, zoning classifications, shoreline designations, natural resource lands and critical areas within the project area.

Impact Analysis

The CONSULTANT shall evaluate the consistency of each alternative with relevant regional and local plans for land use, shorelines, transportation, public facilities, housing, community services and urban design. Maps or drawings will be used to show potential impacts on existing zoning and land use and areas where real property will be acquired for right-of-way. The CONSULTANT shall also describe the potential for joint or multiple use of right-of-way for utilities or other purposes, above, below, or beside the traveled lanes of the facility. Potential changes in land use caused by changes in noise, air water and visual quality will also be described.

Particular emphasis will be placed on the "joint development" aspect of the project including the shared commitment between WSDOT and the CITY so that the

proposed project enhances the urban waterfront and compliments the planned and ongoing transition from an area of commerce and industry to an area for tourism, recreation and residential development. CITY land use plans for the waterfront include improving pedestrian access to and along the waterfront, providing for views of Elliot Bay and the Olympic Mountains, physically and visually reconnecting the downtown waterfront to the rest of downtown, and providing increased opportunities for public access to, and enjoyment of, the shoreline.

The CONSULTANT shall describe the secondary social, economic, and environmental impacts of development induced by the project, making a clear distinction between planned and unplanned growth impacts. The CONSULTANT shall also assess the potential effect of a multi-year construction schedule on existing land use, especially changes resulting from changes in local access or ongoing noise, air or visual impacts.

Mitigation Development

If there is conflict between the proposed project and local or regional plans, the CONSULTANT shall describe the extent to which the proposed action will be reconciled with these plans and/or reasons for proceeding without full reconciliation. The CONSULTANT shall also identify specific mitigation measures and commitments to offset adverse operational impacts (e.g. access changes or controls) and temporary construction activity impacts (e.g. noise, air or visual impacts).

Documentation

The CONSULTANT shall prepare text in electronic format for the Land Use section of the Preliminary Draft EIS. Two (2) review and revision cycles are assumed: one (1) internal team review and one (1) WSDOT staff persons review.

Additional FEIS Analysis

Comments received on the Draft EIS will require additional analysis and specific responses. For budgeting purposes, this is assumed to be 25% of the DEIS budget.

PRODUCT:

- Draft Land Use and Urban Design section for DEIS
- Response to comments and revised Land Use and Urban Design section for the Final EIS

6.10 Section 4(f) Evaluation

One (1) or more of the project alternatives could impact significant historic or cultural resource sites, or publicly owned park or recreation areas. Therefore, a Section 4(f) evaluation will be prepared.

Draft Section 4(f) Evaluation (DEIS)

Avoiding impacts to possible 4(f) resources is a prime concern as alternatives are defined and design decisions are made. The 4(f) process includes documentation of existing resources, evaluation of impacts to (use of) these resources, consideration of avoidance alternatives, and, if necessary, incorporation of mitigation measures (measures to minimize harm to the affected resources). Including a record of coordination is also an essential part of the 4(f) process.

The Draft Section 4(f) Evaluation will be published along with the DEIS, but as a separate section. Coordination with agencies and other CONSULTANT team members will be an important part of this process. The Draft Section 4(f) Evaluation will include inventory and impact information prepared for the Parks and Recreation, the Historic Resources, and the Cultural and Archaeological elements of the DEIS. This will also be coordinated with the design team for consideration and evaluation of avoidance alternatives and measures to minimize harm. Inventory information for those resources affected will include maps of the resources, and descriptions of resource size, type, function, access, ownership and other defining or meaningful characteristics. Evaluation of impacts will include construction and operation impacts, and both direct impacts as well as potential "constructive use" of the resources.

In addition to internal team coordination, coordination activities will include: attending four (4) team meetings and four (4) meetings with the CITY and/or WSDOT.

- Coordination with the Department of Interior, HUD, and National Park Service. The project schedule will need to allow for a 45-day review of the Draft Section 4(f) Evaluation by the Department of Interior prior to publication of the Draft EIS so that the reviewed Draft Section 4(f) Evaluation can be included in the Draft EIS.
- Coordination and input will be solicited from the following:
- State Historic Preservation Officer
- City of Seattle Historic Officer
- City of Seattle officials
- Port of Seattle officials
- King Co. Metro officials

- State Parks officials
- Historic and Archeological CONSULTANT
- Advisory Council on Historic Preservation
- Indian Tribes

Final Section 4(f) Evaluation

Following completion of the DEIS comment period and selection of a Preferred Alternative, the CONSULTANT shall respond to relevant public and agency comments, and will prepare the final Section 4(f) Evaluation, including:

- Incorporate updated information from the historic, archaeological and cultural resources analysis (provided by others).
- Incorporate changes to the park and recreation impact analysis.
- Coordinate with design team on ways to avoid and minimize impacts.

If the selected alternative involves the unavoidable use of Section 4(f) property, then the Section 4(f) Evaluation will make a determination that use of 4(f) facilities is unavoidable and that there are no feasible and prudent alternatives. This determination will require supporting information and input from other team members and the STATE. In particular, input will be needed regarding avoidance alternatives and why they are not prudent and feasible, including:

- Unique problems or unusual factors involved in the use of alternatives, and
- Extraordinary cost, social, economic or environmental impacts or community disruption involved in the use of alternatives.

The final Section 4(f) Evaluation will be included as a separate section of the FEIS.

PRODUCT:
• Draft Section 4(f) Evaluation (25 Copies)
• Final Section 4(f) Evaluation (25 Copies)

6.11 Historic Resources

Affected Environment

The CONSULTANT shall:

- Review existing records to update information previously collected under the Early Action scope of work. Relevant records include: the National Register of Historic Places; the list of designated City of Seattle landmarks; the State Heritage Register; the Determination of Eligibility files at the Seattle Historic

Preservation Program and at the state Office of Archaeology and Historic Preservation (OAHP); previous surveys and environmental studies; and other information relevant to the study area.

- Conduct a field survey of the study area to locate any previously unidentified properties that may potentially be eligible for the National Register or City of Seattle historic landmark designation. The study area will be defined roughly as: from West Thomas Street south to South Spokane Street and from the waterfront piers east to Westlake Avenue North, Third Avenue and Fourth Avenue South.
- Research and prepare up to twenty (20) Determination of Eligibility forms for individual properties.

Impact Analysis

The CONSULTANT shall:

- Review alternative descriptions, maps, drawings, and other design and construction information as needed to understand potential impacts and possible mitigation.
- Identify and evaluate the potential impacts on identified existing and eligible resources of the No Action and additional action alternatives.
- Identify and evaluate the potential construction impacts on identified existing and eligible resources of the No Action and additional action alternatives.

Mitigation Development

The CONSULTANT shall:

- Assist with developing avoidance and least impacting alternatives for Section 4 (f) review and the Preferred Alternative. Attend up to six (6) meetings to present alternatives and reach agreement on their adequacy for Section 4 (f) needs.
- Identify mitigation measures in consultation with the City of Seattle and OAHP.
- Assist in development of the Programmatic Agreement on mitigation.

Documentation

The CONSULTANT shall:

- Prepare environmental impact statement documentation.
- Provide documentation in compliance with Section 106 of the NHPA and Section 4(f) of the Department of Transportation Act, and additional reports as needed.

Additional FEIS Analysis

The CONSULTANT shall:

- Respond to public comments as needed.
- Conduct additional evaluation and analysis of refined alternatives for the FEIS.
- Prepare FEIS documentation as required.
- Assist with liaison with Pioneer Square Preservation Board and Pike Place Market Historical Commission districts, and other neighborhood groups as needed, including attending up to eight (8) board or neighborhood meetings.
- Coordinate with appropriate staff persons at WSDOT, OAHP, the CITY and other agencies, as needed.
- For budgeting purposes, 25% of the DEIS effort is assumed.

ASSUMPTIONS

The area to be surveyed will not expand significantly in total area.

PRODUCT:
- Determination of Eligibility Forms (20 Copies)
- Draft EIS section on historic resources
- Final EIS section on historic resources and responses to comments

6.12 Cultural and Archaeological Resources

Affected Environment

The CONSULTANT shall prepare NEPA EIS sections describing the affected environment, environmental consequences, cumulative impacts, and mitigation measures. The description of the affected environment would include a summary of environmental characteristics of the project area during the early historic period, recorded hunter-fisher-gatherer archaeological sites in the project area, recorded historic period archaeological sites in the project area, and areas with varying probabilities for unrecorded archaeological resources, by project alternative.

The CONSULTANT shall conduct archival research to document the types of hunter-fisher-gatherer and historic period archaeological sites recorded in the project area vicinity and to estimate the probability for unrecorded, unknown archaeological sites. The CONSULTANT shall review archaeological site records held by the Washington State Office of Archaeology and Historic Preservation (OAHP). Researchers will use in-house documents and will access repositories such as the Suzzallo Library, University of Washington, the Seattle Public Library, and local historical societies, to

obtain data regarding hunter-fisher-gatherer and historic period land use in the area. Investigators will estimate the probability for unrecorded, unknown archaeological deposits using environmental data, patterns in recorded hunter-fisher-gatherer site distribution in Southern Puget Sound, ethnographic land use patterns, historic documentation, and information regarding historic period land use, such as areas modified through construction or fill placement.

The CONSULTANT shall obtain historic maps of downtown Seattle that document construction and land modifications in the project area through time. Maps would include U. S. Surveyor General survey maps and notes, Sanborn Fire Insurance Maps, Baist Real Estate Maps, and Washington State Department of Natural Resources Tidelands Maps. Ethnographic and historic period land use data would be obtained from histories of Seattle, including books and notes by T. T. Waterman, J. P. Harrington, James A. Costello, Arthur Denny, Emily Inez Denny, Roberta Fry Watt, and Thomas Phelps. The CONSULTANT shall review documents and maps on file at the Seattle Engineering Department to estimate historic period landscape modifications, such as grading streets and bluffs, filling tideflats, and constructing pilings and seawalls. Historic photographs at Special Collections, University of Washington and the Museum of History and Industry will be inspected to delineate land use patterns and locations of shorelines, pilings, seawalls, and structures. The CONSULTANT shall use in-house documents on local geology and sea level rise to estimate probability for hunter-fisher-gatherer archaeological deposits in the former intertidal zone of the Elliott Bay shoreline.

Snoqualmie!

The CONSULTANT shall initiate the tribal consultation process by preparing a letter for WSDOT and FHWA to place on agency letterhead for mailing to the chairpersons and designated cultural representatives of the Muckleshoot Indian Tribe, Suquamish Tribe, Tulalip Tribes, and the Duwamish Tribe. The CONSULTANT shall follow the letters with telephone calls to solicit comments regarding historic Indian use and traditional cultural use areas within the proposed project area.

The WSDOT and FHWA would define the Area of Potential Effect (APE) prior to completion of the technical report. The CONSULTANT shall coordinate with the lead federal agency to aid in the definition of the APE, if necessary. The CONSULTANT shall consult with the OAHP regarding significance if archaeological resources are identified that may be significant.

Impacts Analysis and Mitigation Development

Discussion of environmental consequences would include possible impacts to recorded and unknown archaeological sites by proposed project alternative. A discussion of mitigation measures would include recommendations for archaeological construction monitoring and requirements for Section 106 compliance, e.g. preparation of archaeological treatment and construction monitoring plans, and development of a Memorandum of Agreement prior to construction to address significant archaeological resources that may be identified during construction.

Technical Report Preparation

The CONSULTANT shall prepare an archaeological overview that includes a summary of archival data, describes Tribal and agency consultation, provides estimates of probability for archaeological resources throughout the project area, and offers recommendations for monitoring construction for significant archaeological deposits that may be affected by the project. The technical report would describe the processes involved in compliance with Section 106 of the National Historic Preservation Act for the Alaskan Way Viaduct Project. The CONSULTANT shall consult with the Duwamish Tribe, Muckleshoot Indian Tribe, Suquamish Tribe, and Tulalip Tribes as part of data gathering to obtain information regarding unrecorded archaeological resources or traditional cultural properties that may be in the project area vicinity.

The CONSULTANT shall develop maps and text summarizing the probability for hunter-fisher-gatherer and historic period archaeological resources for proposed project alignments within the project area, based on archival research. Text discussion would include background descriptions of environmental data, ethnography, history, and implications for hunter-fisher-gatherer and historic period archaeological resources.

The CONSULTANT shall offer recommendations to mitigate possible adverse effects on archaeological resources during project construction through monitoring construction excavation of proposed project segments by a professional archaeologist. The CONSULTANT shall outline the process for Section 106 compliance, including preparation of an archaeological resources treatment plan prior to construction, preparation of an archaeological construction monitoring plan prior to construction, and development of a Memorandum of Agreement among FWHA, WSDOT, and the Washington State Historic Preservation Officer (SHPO) during project planning.

Final EIS

The CONSULTANT shall respond to review comments on NEPA EIS sections addressing archaeological resources and Section 106 compliance regarding archaeological resources. For budgeting purposes, 10% of the DEIS effort is assumed.

PRODUCT:

- Technical Report on Archaeological Resources (10 Copies)
- Draft EIS Section on Cultural Resources
- Final EIS section on Cultural Resources and responses to comments

6.13 Social Elements

The CONSULTANT shall evaluate the proposed project's impact on community cohesion (neighborhood population characteristics and linkages with churches, schools and other community services and facilities) and regional and community growth. The CONSUTLANT shall coordinate closely with City of Seattle Office of Neighborhood Planning and local social service agencies during the preparation of this section of the EIS.

Affected Environment

The CONSULTANT shall describe existing neighborhood population characteristics (e.g. Title VI residents [elderly, handicapped or minority], transit-dependent, large family, income level, owner/tenant status) and linkages with community facilities (churches, schools, parks, etc.). The CONSULTANT shall describe regional and community growth considering local and regional population (broken down by census tract and block level data) and population characteristics such as ethnic/racial composition, age/family composition, income level/major employment, and status of the community, if in transition. The CONSULTANT shall use data obtained from the US Census and other population data sources, including data available from the Puget Sound Regional Council and the CITY.

Impact Analysis

The CONSULTANT shall assess impacts to community cohesion including potential divisions of the community caused by cutting off streets, separating residential areas from community facilities, shopping centers or recreational facilities, separating adjoining residential or areas, isolating areas, or increasing automobile dependency. The CONSULTANT shall also assess potential population changes caused by the project including effects on ethnic/racial composition, age/family composition, income level/major employment, and potential effect on population growth patterns. The impact analysis will be performed following FHWA guidance documents on assessing community impacts.

Mitigation Development

The CONSULTANT shall identify specific mitigation measures and commitments to offset adverse impacts to community cohesion (e.g. cutting off streets, separating residential areas from community facilities, separating adjoining residential or areas, isolating areas, or increasing automobile dependency). Mitigation is normally not applicable to regional and community growth.

Documentation

The CONSULTANT shall prepare text in electronic format for the Social Elements

section of the Preliminary Draft EIS. Two (2) review and revision cycles are assumed: one (1) internal team review and one (1) WSDOT staff persons review.

Additional FEIS Analysis

If necessary, the CONSULTANT shall perform additional analysis to address comments on the Draft EIS related to Social Elements. Additional analysis will be limited to minor updates in response to changes in assumptions or new data. For budgeting purposes, 10% of the DEIS effort is assumed.

PRODUCT:
- Social Elements section, with technical back up, for Draft EIS
- Social Elements section for the Final EIS, with technical back up and responses to comments.

6.14 Parks and Recreation

Assumptions:

- The City will provide all available information regarding existing and planned public parks and recreation facilities.
- Identification of avoidance alternatives will be coordinated with other team members.

Affected Environment

The CONSULTANT shall contact the CITY for information on existing and planned public park and recreation facilities within the study area. All resources in the study area will be identified. The Seattle Aquarium, operated by the Department of Parks and Recreation, will be evaluated recognizing its differences from other public parks in the area. Those resources that could be potentially affected will be described in greater detail, including location, size, use, functions, planned improvements, access and other key characteristics. Public art located in the project area will also be evaluated.

Impacts

Using project information provided by other team members, including the design, alignments (horizontal and vertical), construction approach (process, techniques, staging), and operational characteristics of the proposed alternatives, the CONSULTANT shall evaluate the short-term and long-term impacts to the relevant park and recreation resources. The following categories will be evaluated:

- Acquisition of facilities

- Displacement of uses and functions
- Interruption of relationships between park facilities
- Interruption in linear recreation such as trails or promenades
- Interruption of relationship with other land uses
- Loss of visual or other values (visual simulations of impacts on park facilities are not included in the analysis – see Item 7.2.15)
- Construction impacts on park and recreation facilities
- Displacement, substantial physical alternation
- Interruption of access during construction
- Interruption of relationships with other facilities
- Interruption of relationship with other land uses
- Noise, vibration and other impacts which degrade user experience

Operational Impacts of Alternatives

Operational impacts will consider:

- Net loss or gain of facilities
- Access restrictions or enhancements
- Relationship with other park facilities
- Relationship with other land uses
- Relationship to plans and policies
- Air Quality impacts
- Noise, vibration and other impacts which degrade user experience
- Water impacts
- Design quality of features of project alternatives which affect park and recreation facilities
- Scale relationship to existing setting
- Design features, aesthetics
- Visual resources
- Induced growth: increase in demand, use, other factors which might degrade park and recreation facilities

Mitigation: Construction and Operational

The CONSULTANT shall identify potential and required mitigation measures for impacts to public parklands and recreational facilities. The CONSULTANT shall prepare text describing mitigation measures for long-term and short-term impacts to

parklands that are of a sufficiently adverse nature to be considered significant.

- Avoidance alternatives, cross reference alternatives eliminated from further detailed study
- Replacement property, facilities or function
- Enhancement of access during construction and permanent
- Enhancement of relationships/linkages to other facilities
- Enhancement of relationships/linkages to other land uses
- Reduction or other mitigation of noise and vibration
- Enhancement of visual access
- Design alterations to enhance visual resources

Final EIS

Revise DEIS sections, above, as needed to respond to agency and public comment, and responses to comments. For budgeting purposes, 25% of the Draft EIS budget is assumed.

PRODUCT:
• Draft EIS Park and Recreation section
• Final EIS Park and Recreation section and responses to comments

6.15 Public Service and Utilities

An extensive effort will be made to identify the location of all public service facilities and utilities within the project area. The City of Seattle Public Utility Franchise Book and GIS public services and utility locations database will be reviewed to identify the location of existing public service facilities and utilities at the block level within the CITY. Four (4) to eight (8) field trips will be conducted. Field trip destinations may include the project alignment, Seattle Public Library, Seattle Public Utilities, the City of Seattle Police and Fire departments, and/or utility field locations. The public services and utilities lead will coordinate with project CONSULTANT and WSDOT staff persons.

Affected Environment

Public Services

The affected environment section for public services will identify the location of public service facilities on a map and describe the type of service provided, service area boundaries, level of use, access requirements, and other significant characteristics or values associated with each of the following public services in

the project area:

- fire
- police
- schools

Utilities

The affected environment section for utilities will review current utility plans and policies and will identify the location of utilities on a map and describe the size, type (function), level of use, access requirements, and other significant characteristics or values associated with each of the following utilities in the project area:

- electric power
- natural gas
- water
- stormwater
- sewer
- solid waste
- steam
- oil and crude products
- communications
- cable television

Impact Analysis

The impacts section will describe potential direct and indirect impacts to public services and utilities for each alternative during and after construction.

Public Services

The construction and operation impacts discussion will address the impacts of the proposed project on public services and facilities including:

- Delaying medical or police emergency response times
- Compromising fire protection, e.g. public safety facility access, fire hydrants, etc.
- Substantially delaying or modifying school bus routes
- Substantially increased demand for services

Utilities

The construction and operation impacts discussion will address the impacts of the proposed project on existing utilities such as utility crossings, utility service interruptions and revisions, utility relocations, street grades, future accessibility to infrastructure, and ability for existing facilities to withstand vibrations or settlement. Operation impacts to be addressed include any new utility infrastructure requirements to serve the new facility, temporary facilities, particularly infrastructure upgrades and substations required to meet the electrical power demand, and potential conflicts with existing utility operations.

Mitigation Development

After analyzing potential impacts, the CONSULTANT shall identify measures to minimize or mitigate direct (i.e., displacement of services and facilities) and indirect impacts on affected public services and facilities. These measures will be identified in consultation with WSDOT, CITY agency staff persons, school district representatives, and affected service providers.

After analyzing potential impacts, the CONSULTANT shall identify measures to minimize or mitigate direct and indirect impacts on utilities and infrastructure. Possible mitigation measures will be developed through coordination with WSDOT, the CITY, and affected utility service providers. The WSDOT Utilities Manual will be consulted.

Additional FEIS Analysis

Additional analysis will be completed for the FEIS to address comments on the DEIS and project changes. For budgeting purposes, 10% of the DEIS budget is assumed.

PRODUCT:
- DEIS Public Services and Utilities Section
- FEIS Public Services and Utilities Section and responses to comments

6.16 Environmental Justice

The CONSULTANT shall prepare an evaluation of potential impacts to low-income and minority population as required by two (2) federal directives:

- Executive Order 12898: Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (February 11, 1994)
- DOT Order 5610.2: Environmental Justice to Address Environmental Justice in Minority Populations and Low-Income Populations (December 1997)

Key factors in evaluating environmental justice include defining and identifying "minority" and "low-income" populations and determining "disproportionately high and adverse human health effects". The primary source of data for identifying minority populations will be the 2000 U.S. Census. Unfortunately, data on household income from Census 2000 will not be available until after the 2nd quarter of 2002 and cannot be used for the Alaskan Way Viaduct Draft EIS. The CONSULTANT shall rely on current estimates of household incomes prepared by PSRC and the state Office of Financial Management. The technical analysis for environmental justice will also rely on less quantitative information from the community outreach and involvement activities conducted for the project. Direct contact and interaction with the communities along the project corridor can identify and confirm neighborhood boundaries, social centers, and minority and ethnic groups who could be affected. Once identified and confirmed, these will be included in the environmental justice analysis.

The environmental justice analysis will use the results of other technical studies to determine where the project would have significant impacts. It is anticipated that the key impacts to minority and low-income populations will be from noise or displacements. Other significant impacts falling on low-income or minority populations will be noted and evaluated for their specific affect on the local communities. The methodology and criteria for determining environmental justice populations will be reviewed with WSDOT and FHWA prior to conducting the study.

The potential benefits provided by transportation improvements are also part of the evaluation of the overall evaluation of disproportionate impacts. Improved access to employment, services, and retail centers may provide benefits for the minority and low-income populations addressed under environmental justice. Information on travel time benefits and changes in accessibility will be drawn from the transportation analysis. The overall evaluation of impacts to environmental justice populations will incorporate both impacts and benefits.

Additional FEIS Analysis

Additional analysis will be completed for the FEIS to address comments on the DEIS and project changes. For budgeting purposes, 10% of the DEIS budget is assumed.

PRODUCT:

- Draft evaluations of Environmental Justice compliance for inclusion in the Draft EIS.
- Final evaluations of Environmental Justice compliance for inclusion in the Final EIS.

6.17 Relocation

The primary purpose of this analysis is to document the effects that will occur to individuals and businesses displaced as a result of the proposed project.

Affected Environment

The affected environment documentation will include population characteristics (such as ethnicity and race, handicapped status, elderly, family income, owner/tenant status); businesses (numbers and types of businesses); employment, availability of replacement housing, alternate business sites, and the long-term stability of the area. Socioeconomic data will be obtained from the US Census, local and regional socioeconomic reports, and contact with community leaders, local officials, and members of the real estate industry. Properties identified for potential displacement will be verified by visual inspection in the field.

Impact Analysis

Each of the alternatives will be evaluated to determine if it will result in displacements of households or businesses, the CONSULTANT shall discuss the following:

- Estimated number and characteristics of households to be displaced.
- Assessment of available replacement housing for impacted households.
- Affected neighborhoods, public facilities, non-profit organizations, and families, including special relocation considerations and measures proposed to resolve these relocation concerns.
- Measures to be taken if available alternative housing is inadequate.
- Estimated number, descriptions, types of occupancy, and sizes of businesses to be displaced, and the availability of replacement sites or buildings.
- Coordination with local governments, organizations, groups and individuals regarding residential and business relocation impacts, including any measures or coordination needed to reduce general and/or specific impacts.

The CONSULTANT shall use maps or drawings to show potential residential and business displacements. This effort will be closely coordinated with work on the Social Elements section of the EIS.

Mitigation Development

The CONSULTANT shall identify mitigation measures and commitments to offset the adverse impacts of displacement. For residential relocation impacts, the CONSULTANT shall describe available housing in the area, the ability to provide suitable relocation housing for residents being displaced, and any special advisory or

other services that will be necessary for special relocation problems. The CONSULTANT shall also discuss the availability of replacement facilities for business and non-profit organizations.

The mitigation section of the EIS will include the following statements:

- "The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended";
- "Relocation resources are available to all residential and business relocatees without discrimination"; and
- "Housing of last resort will be provided if comparable replacement housing is not available."

The CONSULTANT shall coordinate with the WSDOT NWR Real Estate Services Division during the preparation of this section of the EIS. Special financial and incentive programs or opportunities beyond those provided by the Uniform Relocation Assistance Act will be proposed only with the approval of the WSDOT NWR Real Estate Services Division and the City of Seattle.

Documentation

The CONSULTANT shall prepare text in electronic format for the Relocation section of the Preliminary Draft EIS. Two (2) review and revision cycles are assumed: one (1) internal team review and one (1) WSDOT staff persons review.

Additional FEIS Analysis

If necessary, the CONSULTANT shall perform additional analysis to address comments on the Draft EIS related to Relocation. Additional analysis will be limited to minor updates in response to changes in assumptions or new data.

PRODUCT:
- Relocation Evaluation section for Draft EIS
- Relocation Evaluation section for Final EIS and responses to comments

6.18 Economic Elements

The CONSULTANT shall perform an economic impact analysis generally following the guidelines in the National Cooperative Highway Research Report-122, *Summary and Evaluation of Economic Consequences of Highway Improvements*. Studies and coordination will include field interviews with employers, residents, CITY staff person and officials, local business leaders and business associations. Additional

information will be gathered from market feasibility studies, recent real estate transactions, property assessment valuations, and county tax rolls.

Affected Environment

The CONSULTANT shall describe the region's general economic climate, identify business districts within the project area, and describe area employment levels, property values and the dynamics of the local economy.

Impact Analysis

For each alternative, the CONSULTANT shall address foreseeable direct economic impacts including:

- Effects on overall business activity resulting from loss of productive business property, changes in travel time for shipment of goods, changes in business and shopping patterns resulting in changes in accessibility, and loss of business or admissions revenue due to construction of an alternate or new alignment.
- Increases, decreases or changes in the location of permanent jobs after completion due to changes in business location, introduction or removal of barrier effects, parking availability and access and induced growth or development.
- Changes in property value trends and the local economy resulting from changes in traffic volumes, competing enterprises and centers, visibility, physical access, altered commercial sales potential, and reduced revenue from loss of taxable property to right-of-way.
- Impacts on the economic vitality of existing businesses and established business districts, including any opportunities to minimize or reduce such impacts.

The CONSULTANT shall also describe temporary construction impacts, including economic benefits from construction expenditures, temporary jobs created during construction, and impacts of construction expenditures on sales tax revenues. Special emphasis will be placed on accurately assessing the economic impact of a large multi-year transportation construction project on the vitality and viability of downtown businesses and the local Seattle economy.

Mitigation Development

The CONSULTANT shall identify mitigation measures and commitments to offset adverse impacts to the local economy resulting from construction activities and ongoing operation of the facility. The CONSULTANT shall carefully assess the potential effect of a multi-year construction schedule on established uses in the project area, especially potential impacts resulting from changes or disruptions in

local access, loss of parking, or ongoing noise, air or visual impacts.

Documentation

The CONSULTANT shall prepare text in electronic format for the Economic Elements section of the Preliminary Draft EIS. Two (2) review and revision cycles are assumed: one (1) internal team review and one (1) WSDOT staff persons review.

Additional FEIS Analysis

The CONSULTANT shall perform additional analysis to address comments on the Draft EIS related to Economics Elements. Additional analysis will be limited to minor updates in response to changes in assumptions or new data. For budgeting purposes, 25% of the DEIS budget is assumed.

PRODUCT:

- Economics Elements section, with technical back up, for Draft EIS
- Economics Elements section for the Final EIS, with technical back up and responses to comments.

6.19 Visual Quality

The objective of the Visual Quality and Aesthetics item is to identify existing aesthetic resources and evaluate visual and aesthetic impacts and potential mitigation, as appropriate. Key views to the proposed alternatives from surrounding areas will be documented.

Affected Environment

The CONSULTANT shall:

Data Collection And Analysis

Acquire from the CITY and WSDOT appropriate base maps that illustrate site topography, street pattern, shoreline, and specific land uses with aerial photographs and horizontal and vertical alignments information for each alternative.

Collect and review pertinent documents that define the visual quality and aesthetics issues related to the proposed alternatives. These reports include the Seattle SEPA Ordinance, local comprehensive plans and policies, and open space, pedestrian/bicycle routes, and recreation plans as well as state and federal policies. Collected information will be confirmed by site reconnaissance and

meetings with local jurisdictions. Meet with Seattle, Strategic Planning and Parks and Recreation Department staff persons to obtain visual quality and aesthetic resource information.

Viewshed Identification

The viewshed for each of the proposed alternatives will be mapped using existing topographic and land cover information and the proposed vertical and horizontal alignments of the alternatives. This defined viewshed, or visible areas, will be the study area for the aesthetics and visual impact analysis. This element will be coordinated with the Urban Design analysis to make certain there is consistency.

The CONSULTANT shall carry out site reconnaissance to divide the project viewshed into a series of landscape units. The landscape units will be defined by topography and differences in the urban design context as defined by comprehensive plan policies or zoning regulations as well as identifiable design characteristics of existing development. This information will be documented on the base maps and with digital photography. Significant visual features and landmarks within each landscape unit will be located and the intrinsic qualities that characterize each landscape unit will be described in text form. Specific resources to be defined include:

- Character of existing development including topography, vegetation , land use patterns, community identity (aesthetics and image), neighborhood boundaries and edges, building scale and massing, building/open space texture.
- Street grid, development texture and open space patterns.
- Parks, pedestrian/bicycle routes and other recreation areas.
- Areas of special visual or aesthetic character including shoreline views and distant scenic views.
- Individual buildings, landmarks, historic districts, or clusters of development that help define the visual character of an area or its historic nature.

Viewpoints

Key viewpoints will be identified and mapped within each landscape unit from existing plans and policies, site reconnaissance, and through the public process. The selected key viewpoints will become the views to be used as existing conditions in the development of simulations of the proposed project alternatives. This element will be coordinated with the Urban Design analysis to make certain there is consistency.

Viewers and Viewer Sensitivity

Potential resident and transient viewer groups will be identified within the study area for each alternative alignment through a review of demographic data, existing traffic and land use studies, and the public participation process. Viewer groups could include:

- Residents within the area
- Business people and their customers
- Commuters traversing the study area
- Individuals visiting waterfront services, public parks, pedestrian/bicycle routes and view points
- Non-resident special interest groups (historic preservation society, open space advocates, pedestrian/bicycle advocates).
- Other interested parties identified through the public participation processes.

Impacts

To evaluate impacts, the CONSULTANT shall:

Simulations of Project

The visual simulations will be prepared to present the appearance of specific facilities as viewed from representative key viewpoints. The visual simulations will present the appearance of project elements including elevated and at-grade sections, tunnel entries, landscaping, maintenance centers, and other related facilities or structures. Existing viewpoint photography and simulations will be developed from the selected viewpoints.

The simulations will form the basis to evaluate the potential change to the existing aesthetic and visual quality of the landscape. Impacts to the visual and aesthetic environment could include physical changes to the existing visual character of a landscape due to the addition of proposed project elements to that landscape. In addition, project elements could also displace landscape features and introduce other features that may be out of character with the surrounding landscape. An analysis of shadow and light and glare will also be included in this effort. The ability of a landscape unit to visually absorb the project elements will be evaluated.

Analysis of Simulations

An analysis of the alignment plans in the field and the simulations from key view points will be used to describe and evaluate the level of change to the visual and

aesthetic character for each of the landscape units within the study area. The level of change will be related to the following:

- View blockage issues
- Project shadows, solar access blockage and the relationship of project shadows to the apparent mass of the project elements.
- Light and glare impacts will focus on the compatibility of project lighting to the surrounding landscape.
- The level of visual compatibility of the project elements to the landscape and built elements that compose the visual character of each landscape unit. Key elements include
- Elimination of landscape and built environment elements,
- Relationship of project to the scale, form and massing, materials and color of the landscape and built environment components within the landscape unit.
- Relationship to the street and landscape grid, and the character and texture (block size) of built and open space areas.
- Relationship to views of the shoreline and distant views from public places
- Relationship to view corridors from downtown defined in CITY policies and regulations
- Viewer sensitivity to the potential change . Key viewer sensitivity factors include:
    - viewer numbers,
    - viewer position,
    - viewer activity,
    - view duration, and
    - cultural significance.
- The level of change (High, Moderate, Low) within each landscape unit will be identified by combining the level of change and viewer sensitivity evaluation information.

This element will be coordinated with the Urban Design analysis to make certain there is consistency.

Mitigation

To develop mitigation, the CONSULTANT shall:

Mitigation concepts that reduce the impacts to the visual and aesthetic resources of each landscape unit and enhance the visual characteristics of the alternatives

will be developed in coordination with the Urban Design element. Potential mitigation measures to be considered could include concepts that alter the alignment (vertical and horizontal), screen views of the project (topographic and vegetation screening), or integrate the project into the surrounding landscape through use of materials and color, structure, design scale and massing, or slope gradient alteration. This element will be coordinated with the Urban Design analysis to make certain there is consistency.

Final EIS

Revise DEIS sections, above, as needed to respond to agency and public comment, or new information in the same format in addition to responses to comments. For budgeting purposes, 25% of the DEIS budget is assumed.

PRODUCT:
- Visual Quality section for the Draft EIS
- Visual Quality section for the Final EIS and responses to comments

6.20 DEIS Preparation

Assumptions

- Legal notices will be drafted by the CONSULTANT and placed in state, local and federal registers by the STATE and CITY.
- The PDEIS will be reviewed by lead and cooperating agencies. The CONSULTANT shall produce review copies.
- All reviewers will reconcile and compile all their review comments onto a single copy.
- Two (2) rounds of review and revision are assumed.
- All final documents will be provided in camera-ready electronic and hard copy. The CONSULTANT shall provide printing and prepare the distribution list. The State will distribute the EIS.
- A CD-ROM version of the DEIS in PDF format will be produced by the CONSULTANT.

PDEIS Preparation

The CONSULTANT shall prepare a preliminary Draft EIS (PDEIS) following WSDOT procedures (M31-11) and CITY requirements (SEPA Ordinance No. SMC 25.05) for NEPA and SEPA documents. The PDEIS shall include all required sections, incorporating draft materials prepared under Items 4.1 through 4.19. A Preferred Alternative will be identified. The PDEIS is expected to include the following chapters or sections (subject to revision):

- Cover and Fact Sheets
- Summary, including tables comparing alternatives
- Purpose and Need for Action
- Alternatives Including the Proposed Action
- Affected Environment, Impacts, and Mitigation Measures
- Secondary and Cumulative Effects
- Comments and Coordination
- Draft Section 4(f) Evaluation
- Appendices, including list of preparers, distribution list, glossary, index, and other technical backup.

Professional editing will be conducted on the PDEIS. Twenty-five (25) copies of the PDEIS will be provided for review by project lead and cooperating agencies.

DEIS Production

The DEIS will be revised based on two (2) rounds of comments received on the PDEIS. Revisions will be reviewed with STATE/CITY and cooperating agency technical leads to make certain all substantive and procedural issues are resolved in a timely manner. A camera-ready copy will be prepared for final review and approval signatures. The CONSULTANT shall provide printing. Distribution of the DEIS will be provided by WSDOT.

PRODUCT:
- Preliminary Draft EIS (50 Copies)
- Draft EIS for distribution at each round of reviews (2,500 Copies)

6.21 FEIS Preparation

Assumptions

- All DEIS assumptions also apply to the FEIS.
- 500 substantive comments (not just letters) will be received.
- Additional technical analysis will be required to address comments. For budgeting purposes a percentage DEIS preparation effort (10% or 25%, depending on the complexity and likely controversy of an issue) will be assumed. This assumption and the effort required to complete the FEIS will be reviewed at the close of the comment period.

Response to Comments

All comments received on the DEIS must have a response in the FEIS. General responses will be developed to address commonly raised issues. Detailed or unique comments will require individual responses. Comments will be cataloged in an electronic database according to commentor, subject, and status of response. This item assumes up to five hundred (500) substantive comments will be received and some additional technical analysis may be required.

PFEIS Preparation

The CONSULTANT shall prepare a preliminary Final EIS (PFEIS). The PFEIS will include refinements to the project alternatives and environmental analysis made in response to comments received on the DEIS and continued project development efforts. The PFEIS will include the same sections as the DEIS, with the addition of comments and responses, and the final Biological Assessment and 4(f) Evaluation.

Professional editing of the PFEIS will be conducted. Twenty-five (25) copies of the PDEIS will be provided at each round of review for review by project lead and cooperating agencies.

FEIS Production

The FEIS will be revised based on one (1) round of comments received on the PFEIS. Revisions will be reviewed with STATE/CITY technical leads to make certain all substantive and procedural issues are resolved in a timely manner. A camera-ready copy will be prepared for final review and approval signatures. Printing will be provided by the CONSULTANT. Distribution and legal notice of the FEIS will be provided by the STATE.

PRODUCT:
- Preliminary Final EIS (50 Copies)
- Final EIS (2,500 Copies)

6.22 Record of Decision

The CONSULTANT shall assist the STATE / CITY in preparation of the draft NEPA Record of Decision (ROD) through the review and approval process. One (1) round of review and revision is assumed.

PRODUCT:
- Draft Record of Decision
- Final Record of Decision

ITEM 7 PUBLIC INVOLVEMENT / COMMUNITY OUTREACH

7.1 Public Events

7.1.1 Interest Focus Group Workshops

Objective: Opportunities for key interests (i.e., freight, neighborhoods, urban design) to identify values at key points in the process and apply those values to potential alternatives.

Approach: Interest-design workshops will be held at the following points in the project for up to seven (7) interest groups:

- *Conceptual alternatives* – Identification of values of the different interest groups in workshops hosted by Leadership Group members or other key decision makers (i.e., Design Commission). Outcome will be understanding of key issues and concerns of each of the interest groups, which will be considered during further development and evaluation of alternatives, and used to provide feedback to interest groups on how their values are incorporated in the project.
- *Identification of Preferred Alternative* – Identification of values of different interest groups in workshops hosted by Leadership Group members or other key decision makers. Outcome will be understanding of key issues and concerns of each of the interest groups, which will be considered during selection of the Preferred Alternative and used to provide feedback on how their values are incorporated in the project.
- *Identification of Preferred Alternative design* – Review of design issues and opportunities associated with the Preferred Alternative hosted by Leadership Group members or other key decision makers. Outcome will be understanding of the key issues and concerns of each of the interest groups, which will be considered during design of the Preferred Alternative and used to provide feedback to interest groups on how their values are incorporated in the project.

The CONSULTANT shall be responsible for identifying groups and individuals to be involved, issuing invitations for workshops, based on input from STATE and CITY representatives, identifying workshop locations, preparing workshop materials, preparing workshop logistics (i.e., name tags, sign-in sheets, comment forms, etc.), developing presentation boards, facilitating workshop discussions and staffing the sessions, and summarizing public input as part of monthly public summaries (Item 7.2.13).

ASSUMPTIONS:

- It is assumed that up to six (6) CONSULTANT staff persons will attend each workshop.
- It is assumed that eight (8) hours will be required for preparation and participation by each CONSULTANT participant.

PRODUCT:

- Three (3) series of workshops held for up to four (4) interest groups (urban design/open space and waterfront users; bicyclists/pedestrians; commuters; and freight) (12 workshops total).
- Workshop plans detailing specific workshop objectives, format, materials and resources, facilitation plan, documentation needs.
- Meeting logistics and materials (displays, maps, worksheets, handouts, presentations, signage) for twelve (12) workshops. It is assumed that for each series of workshops, up to 20 handouts will be made available and 20 boards will be prepared. It is also assumed that up to 40 participants will attend each workshop. Materials will also be prepared in web-ready formats and posted to the project website prior to the workshops.

7.1.2 Leadership Group

Objective: To provide a continuing opportunity for community leaders to provide input at key decision points and act as ambassadors and communication channels for the project to community groups and interests represented by them on the Leadership Group.

Approach: Building on support raised to date through Leadership Group meetings, continue to bring together members at key decisions in the process to provide feedback to WSDOT and the City on significant community values that should be considered, proposed EIS alternatives, and the proposed Preferred Alternative. It is anticipated that Leadership Group meetings will be held at the following points during the project:

- *Conceptual alternatives* – Review of conceptual alternatives prepared by CONSULTANT and feedback on elements, potential impacts, and direction on identification of proposed EIS alternatives.
- *Identification of proposed EIS alternatives* – Review of proposed EIS alternatives and identification of how key community values are addressed or impacted by each alternative. Also, identification of, based on community values, which alternatives should continue to be evaluated and designed.
- *Identification of Preferred Alternative* – Based on results of the DEIS, review of the proposed Preferred Alternative and identification of how community values are addressed or impacted by each alternative. Also, recommendation on the proposed Preferred Alternative.

- *Further design of Preferred Alternative* – Review of Preferred Alternative design issues and provide input to project team, as necessary.

The CONSULTANT shall be responsible for establishing and notifying Leadership Group of meeting dates, identifying and booking meeting locations, covering costs of meeting rooms and refreshments, preparation of meeting materials, preparing meeting logistics (i.e., name tags, sign-in sheets, comment forms, etc.), staffing and facilitating the meetings, and preparing meeting summaries. The CONSULTANT shall also communicate with Leadership Group members between meetings to identify and resolve information needs and emerging issues. Information generated for Leadership Group meetings will be placed on the project website prior to meetings.

ASSUMPTIONS:
- It is assumed that up to eight (8) CONSULTANT staff persons will attend the Leadership Group meetings.
- It is assumed that eight (8) hours will be required for preparation and participation by each CONSULTANT participant.

PRODUCT:
- Six (6) Leadership Group meetings, roughly quarterly, including draft and final meeting summaries.
- Meeting logistics and materials (agendas, displays, handouts, presentations) for six (6) meetings. It is assumed that for each Leadership Group, up to 20 handouts will be made available and 15 boards will be prepared. It is also assumed that up to 50 participants will attend each meeting. Materials will also be prepared in web-ready formats.
- Monthly project updates sent via e-mail to Leadership Group (19 total)

7.1.3 'Critique Weeks' / Open Houses

Objective: Involve the public in project development, including identification of values, application of values to proposed alternatives, and refinement of Preferred Alternative.

Approach: Hold a series of workshops with the public and interest groups in geographically specific areas to identify values associated with the Alaskan Way Viaduct project and apply those values throughout the life of the project. Interests that will be targeted as part of this effort include:

- Urban design/open space
- Engineering
- Commuters, including single occupant vehicles, transit, and ferries, ranging from Sea-Tac and Federal Way to Shoreline

- Freight, including Port, trucks, and railroad
- Neighborhoods, including West Seattle, Pioneer Square, SODO, Downtown, Belltown, Queen Anne, Uptown, South Lake Union, Magnolia, Ballard, Denny Regrade
- Waterfront users, including businesses, merchants, tourists
- Bicyclists and pedestrians

The series of workshops would be held during a one-week period identified as 'critique week' associated with the following project milestones:

- *Identification of proposed EIS alternatives* – Review the proposed EIS alternatives and how community values identified during conceptual alternative development are reflected.
- *Identification of Preferred Alternative* – Review of environmental review and proposed Preferred Alternative.
- *Identification of Preferred Alternative design* – Review of design issues and opportunities associated with the Preferred Alternative.

The CONSULTANT shall be responsible for identifying workshop locations, publicizing workshops through implementation of items included in this scope of work, preparing workshop materials, preparing workshop logistics (i.e., name tags, sign-in sheets, comment forms, etc.), staffing workshop sessions and facilitating discussions, and summarizing public input as part of monthly public summaries (Item 7.2.13). Notification of the meetings will be publicized through the hotline (7.2.1), newsletter (7.2.2), display advertisements (7.2.4), website (7.2.6), posters (7.2.7), informational displays (7.2.8), carrier route mailings (7.2.9), public service announcements (7.2.10), and news release (7.3.1). Information generated for workshops will also be placed on the project website prior to workshops.

ASSUMPTIONS:

- It is assumed that up to eight (8) CONSULTANT staff persons will attend each workshop.
- It is assumed that eight (8) hours will be required for preparation and participation by each CONSULTANT participant.

PRODUCT:

- Three (3) series of workshops held in four (4) locations (north Seattle, central Seattle, west Seattle, Burien/SeaTac) (twelve workshops total).
- Workshop plan for each series, detailing objectives, formats, materials, logistics, staffing, and documentation plans.
- Meeting logistics and materials (displays, maps, worksheets, handouts, presentations, signage) for twelve workshops. It is assumed that for each series of workshops, up to 20 color handouts will be made available and 30 boards will be prepared. It is also assumed that up to 200 participants will attend each workshop.

7.1.4 Elected Official Briefings

Objective: To work with WSDOT and City governmental liaisons to provide opportunities to brief local, state, and federal elected officials on the project, to identify key issues of concern to elected officials to be resolved, and build support for the project, based on resolution of key issues, with elected officials.

Approach: The following activities will be part of the elected officials briefings:

- Coordinate with agency governmental staffs to contact elected officials with an interest in the project, based on represented districts within the Alaskan Way Viaduct study area or leadership positions, brief them about the project, and identify key issues to be resolved.
- Continue to provide elected officials information materials throughout the project to maintain awareness and understanding about the project
- Respond to questions and concerns as identified and participate in constituent briefings as requested.

The CONSULTANT shall be responsible for working with governmental liaison staff persons in identifying and contacting elected officials to schedule briefings, preparing briefing materials including information prepared as part of Item 7.2, and preparing summaries of issues, questions, and responses raised at each briefing that the CONSULTANT attends.

ASSUMPTIONS:

- It is assumed that ninety-six (96) briefings will be made over the twenty-four (24) month period and generally, CONSULTANT staff persons will not attend these meetings.

PRODUCT:

- Regularly updated elected official briefing calendar.
- Summaries of elected official briefings

7.1.5 Formal Public Hearings

Objective: To provide an opportunity for public input, as legally required by environmental and other regulations, in key decisions about the Alaskan Way Viaduct project.

Approach: Hold formal public hearings during key points in the process as required by environmental and other permit-required regulations. Public hearings will be held at key decisions points to allow testimony about a proposed decision to the key decision makers. It is anticipated that the following hearings will be held during the project:

- *Identification of Preferred Alternative and review of DEIS* – As legally required by state and federal environmental regulations, a public hearing will be held at three (3) locations following publication of the draft EIS to receive public testimony on the adequacy of the document as well as the proposed Preferred Alternative. Outcome will be public testimony on the adequacy of the DEIS as well as whether the proposed Preferred Alternative should be selected by the co-lead agencies.
- Others based on permit requirements (needs identification of permitting timelines from environmental item). Two (2) hearings are assumed to address permitting needs.

The CONSULTANT shall be responsible for identifying hearing objectives and formats, obtaining locations, publicizing hearings through implementation of items included in this scope of work, preparing hearing materials, preparing hearing logistics (i.e., name tags, sign-in sheets, comment forms, etc.), supporting hearing facilitation, arranging for a court reporter, and reviewing and summarizing the hearing transcript. Notification of the meetings will be publicized through the hotline (7.2.1), newsletter (7.2.2), display advertisements (7.2.4), legal notices (7.2.5), website (7.2.6), posters (7.2.7), informational displays (7.2.8), carrier route mailings (7.2.9), public service announcements (7.2.10), and news release (7.3.1). Notification of public hearings, through posters, will be translated into up to five (5) languages.

ASSUMPTIONS:
- It is assumed that eight (8) CONSULTANT staff persons will attend each hearing.
- It is assumed that six (6) hours will be required for preparation and participation by each CONSULTANT participant.

PRODUCT:
- Public hearings on DEIS at three (3) locations (north, central, and south/west Seattle)
- Two (2) additional public hearings for specific permitting needs.
- Meeting plans, logistics, staffing, and materials for five (5) hearings. It is assumed that for each set of hearings, up to 20 color handouts will be made available and 30 boards will be prepared. It is also assumed that 200 participants will attend each hearing. Materials will also be prepared in web-ready formats and placed on the project website prior to hearings.

7.1.6 Community Briefings

Objective: Recognizing the need to reach members of the community at their neighborhood meetings and events, systematically conduct community briefings throughout the project to reach the broader public. Communities will include within the area from Shoreline to Sea-Tac and Federal Way and are identified in Appendix A of the Communications Strategy).

Approach: Maintain current list and identify additional relevant community and interest groups representing those potentially impacted or interested in the project. Systematically contact them at key decision points to inform them about the project's status and new technical information, identify decision point which requires public input, provide opportunity for questions and answers and feedback, and present further opportunities for public feedback. The project will also respond to relevant invitations to attend community briefings.

The CONSULTANT shall be responsible for identifying and contacting community groups to schedule briefings and coordinate team resource attendance, preparing community briefing presentation, attending and coordinating the briefings, and preparing summaries of issues, questions, and responses raised at each community briefing for inclusion in the monthly public comment summary (Item 7.2.13).

ASSUMPTIONS:

- It is assumed that two hundred forty (240) meetings will be held over the twenty-four (24) month period and two (2) CONSULTANT staff persons will attend each meeting.
- It is assumed that four (4) hours will be required for preparation and participation by each CONSULTANT participant.

PRODUCT:

- Regularly updated community briefing calendar.
- Updated community briefing presentation (once a month) in electronic and hard copy format. It is assumed for each community briefing, 30 copies of presentations will be made and presentations will be an average of 15 pages long.
- Community briefing summaries (up to 10 per month).

7.2 Public Involvement and Communication Tools

7.2.1 Hotline

Objective: Provide information to the public about the project, including Leadership Group meetings, public hearings, workshops, and project contacts, as well as provide opportunity for questions and comments to be left.

Approach: The CONSULTANT shall be responsible for setting up and maintaining a project hotline throughout the life of the project. This will include updating information on the hotline on a weekly basis, or more frequently as required. The CONSULTANT shall incorporate messages left on project hotline into monthly public comment summaries (7.2.13).

PRODUCT:

- Maintain hotline, updated on a weekly basis, or more frequently as required.

7.2.2 Newsletter

Objective: Provide project information to the public at key decision points and notification of public events through a project newsletter that will describe development of alternatives, environmental review results, and public involvement opportunities. Each newsletter will also include options for communicating with the project team and providing input on project choices, by mail, email, and telephone.

Approach:

- Develop a standard look and format for the project newsletter.
- Publish newsletters at key points in the process, including identification of proposed EIS alternatives, identification of Preferred Alternative, selection of Preferred Alternative, and information as the Preferred Alternative is designed. Newsletters will also include information about public events and other opportunities for input, and response mechanisms.
- Post newsletter on website.
- Distribute six (6) newsletters to project mailing list and two (2) of those to carrier routes in the project study area during key points in the process.

The CONSULTANT shall be responsible for defining newsletter objectives and concepts, drafting newsletters for review by the STATE and CITY and incorporating comments into a final version, and coordinating with the STATE printer for timely printing and distribution.

PRODUCT:

- Six (6) draft newsletters distributed to STATE and CITY for review.
- Six (6) final newsletters sent to state printer for printing and mailing.
- Six (6) web-ready newsletters for posting on project website.

7.2.3 Fact Sheets and Technical Information Summaries

Objective: Provide information about the project, focusing on key elements, including schedule, cost estimates, transportation, freight, construction, public involvement, urban design, environmental review results, and engineering.

Approach: Prepare and update fact sheets and other information materials as technical information becomes available about issues of importance to the public and interest groups. Distribute fact sheets and summaries of technical information along with informational displays at community facilities, at public events, on project web page,

and at community briefings. Translate one (1) fact sheet (describing general project information) and one (1) technical summary of draft EIS into five (5) languages for use by non-English speaking communities.

The CONSULTANT shall be responsible for drafting fact sheets and technical information summaries for review by the STATE and CITY and incorporating comments into a final version. The CONSULTANT shall also be responsible for providing copies of the fact sheets and technical information summaries to interest groups, partner agencies, and the lead agencies for broader distribution. The CONSULTANT shall be responsible for coordinating translation of one (1) fact sheet and one (1) technical summary.

PRODUCT:

- 10 draft fact sheets distributed to STATE and CITY for review.
- 10 final fact sheets sent to state printer for printing (1000 copies of each fact sheet-not included in this contract).
- 10 final fact sheets for posting on project website.
- 4 draft technical information summaries distributed to STATE and CITY for review.
- 4 final technical information summaries sent to state printer for printing (1000 copies of each technical summary-not included in this contract).
- 4 final technical information summaries for posting on project website.

7.2.4 Display Advertisements

Objective: Notify the public about events and opportunities for input about the project through publication of display advertisements in local and regional print publications.

Approach: Place display advertisements in local and regional print publications to notify the public about events and opportunities for input about the project. The CONSULTANT shall be responsible for design and layout of display advertisements, contacting publications for ad placement, and payment of display ads. It is assumed that display advertisements will range in size from 4x4" to 5x10".

PRODUCT:

- 4 draft display advertisements for review by STATE and CITY.
- 4 final display advertisements for distribution to 25 publications.

7.2.5 Legal Notices

Objective: Publish legal notices, as required by local, state, and federal regulations, about the project, including key decisions and opportunities for public input.

Approach: Publish legal notices in local, regional, state, and federal publications as

required by environmental and other regulations. The CONSULTANT shall be responsible for drafting legal notices for review by STATE and CITY, contacting publications for notice placement, and payment of legal notices.

PRODUCT:
- 6 draft legal notices for review by STATE and CITY.
- 6 final legal notices for distribution to 5 publications.

7.2.6 Public Involvement Website

Objective: Maximize public access to timely information about the project and quick, easy interaction with project agencies; simplify the collection and management of public questions, opinions, and feedback through electronic tools; and reduce administrative time and cost of document management and publishing through:

- Providing online tools to support public meeting events and interactive design opportunities
- Enabling public input about the project via the Internet
- Providing an easy-to-maintain online repository of the latest publicly-available project information
- Providing an easy-to-maintain online repository for the latest media content and online tools for media coordination

Approach:

- This online system becomes the single cooperative data store for all information management and publication to project constituencies.
- System includes database/document driven content to minimize ongoing software development requirements in site operation and tools to support editorial approval/publishing tools for administration of content.
- Information materials are indexed, time stamped, and searchable by appropriate parameters.
- Online presence supports lowest-common denominator (desktop) with minimal page size (kb), graphic elements, plug-ins, etc to accommodate users with dial-up connections
- Infrastructure: Site operates on WSDOT hardware, software, and infrastructure

Site features to support the project include:

- Events calendar with information on event time, date, location, and associated materials.
- Document center with technical reports and meeting materials available by lists and through searches.

- Communications center with a comment form, frequently asked questions, stakeholder surveys prepared in Item 2.11, frequently asked questions, and the ability to be added to the project distribution list. Comments received via the website will be incorporated into the public comment database (7.2.13).
- Project alternatives center, with up-to-date information about the project's proposed alternatives, Preferred Alternative when selected, and interactive design features as appropriate (i.e., photo simulations prepared as part of Item 7.2.12 or waterfront design feature).
- News center with recent press releases, news articles, and video clips of television news stories, supplied by WSDOT communications.
- Gallery of project photographs, informational videos, or other visual tools prepared by the project.

PRODUCT:
- Draft/Final website plan, including site architecture for review by STATE and CITY and conceptual layout.
- Draft website for review by STATE and CITY.
- Weekly updates for project website or more often as necessary.

7.2.7 Posters

Objective: Provide information about public events by placing posters in highly visible and high traffic locations, including business districts, neighborhood centers, and public buildings from Shoreline to Sea-Tac and Federal Way.

Approach: Place posters prior to public events in locations throughout the project study area. The CONSULTANT shall be responsible for design, text, and layout of posters for review by STATE and CITY. Posters will be translated into five (5) languages for posting in non-English speaking communities. Posters will be approximately tabloid size.

PRODUCT:
- 6 draft posters for review by STATE and CITY.
- 6 final posters for posting in public locations (250 color copies each).
- Posting of posters in public locations.

7.2.8 Informational Displays

Objective: Increase awareness about the project by providing general information through informational displays placed in highly visible and frequented locations, such as community centers, libraries, shopping malls, etc.

Approach: Prepare informational displays with project information, including schedule, alternatives being considered, and opportunities for public input. Update

displays at least quarterly with project information. The CONSULTANT shall be responsible for design, text, and layout of informational displays as well as rotating informational displays to public locations on a monthly basis.

PRODUCT:
- 6 updated informational displays for review by STATE and CITY.
- 6 final informational displays (3 sets each).

7.2.9 Carrier Route Mailings

Objective: Provide important project information including opportunities for public input to key decisions to all potentially impacted parties, including businesses and residents throughout the project study area.

Approach: Identify boundaries for carrier route mailings and send notification to residents and businesses using the project newsletter (7.2.2) within those boundaries at key project decision points, including identification of EIS alternatives and the proposed Preferred Alternative. The CONSULTANT shall be responsible for proposing boundaries for review by STATE and CITY and working with state printing and mailing house to distribute newsletter.

PRODUCT:
- 2 carrier route mailings.

7.2.10 Surveys

Objective: Conduct surveys of the public throughout the project's duration to understand public concerns and values.

Approach:

- Conduct one (1) public opinion survey of six hundred (600) individuals for approximately twelve (12) minutes each following announcement of proposed Preferred Alternative to understand public concerns and reaction to the proposed Preferred Alternative.

The CONSULTANT shall be responsible for preparing a draft statistically significant survey, conducting survey, and summarizing results.

PRODUCT:
- One (1) draft public opinion survey for review by STATE and CITY.
- One (1) final public opinion survey.
- One (1) summary of public opinion survey.

7.2.11 Informational Videos

Objective: Prepare one (1) informational video about the project to build awareness about schedule, decisions to be made, potential trade-offs, specific project issues, and opportunities for public input.

Approach: Prepare one (1) informational video that can be distributed to elected officials and community groups, broadcast on cable access stations, and use at public events. The CONSULTANT shall be responsible for preparing draft script for review by STATE and CITY, preparing a final script, and working with production staff on images and interviews. The video will highlight the need for the project and describe the Preferred Alternative and the selection process.

PRODUCT:
- One (1) draft script for review by STATE and CITY.
- One (1) final script.
- One (1) informational video not to exceed 15 minutes (100 copies).

7.2.12 Public Comment Summaries

Objective: To consolidate and summarize public input to inform the project team and decision makers about the public's values and concerns.

Approach: The CONSULTANT shall be responsible for entering public input into the project's comment database, tracking issues raised, and summarizing, on a monthly basis, key issues raised by public comments. The CONSULTANT shall be responsible for distributing to project team.

PRODUCT:
- Updated public comment database.
- Monthly public input summaries.

7.2.13 Distribution List

Objective: Maintain distribution list throughout the life of the project to which updated information, public event notification, and project decisions will be sent.

Approach: The project will solicit additions to the existing mail and email distribution list through website, community briefings, public events, project hotline, e-mail updates, and news articles. The project will also solicit updates from community groups and partner agencies. The CONSULTANT shall be responsible for updating the list on a regular basis as well as working with community groups and partner agencies to add existing distribution lists.

PRODUCT:
- Maintain project distribution list.

7.2.14 3-D Models, Renderings, and Photo Visualization

Objective: Provide a model through 3D renderings and animations that will allow for increased understanding about the proposed project from various locations and perspectives.

Approach:

- Use two (2) design visualization techniques for initial alternative identification. *Conceptual sketches* will be prepared for early alternative analysis to present information to the public. These sketches will be prepared as overlays to photography of the site or with renderings from the 3D model. This "loose" sketch style is well received by the public. *Photo-realistic simulations* will be prepared once the alternatives are narrowed to a selected few. These highly realistic and accurate simulations are based on engineering data and give the public a powerful image of what is proposed.
- Develop an engineering accurate 3D computer model of the project site for Alaskan Way. The 3D model will be based on 2' contour data, as-built engineering drawings and photography. The model will be built in two (2) phases. During phase I, construct the existing conditions including roads, structures, harbor, and surrounding buildings. The model will be technically accurate, but will not be photo-realistic in quality. During phase II, construct design alternatives and include realistic details for presentation to the public.
- Use two (2) animation techniques to view proposed alternatives. *3D animation* allows sequences to be generated such as car, pedestrian, ferry or truck movement once the model is complete. Construction sequencing and maintenance of traffic issues are effectively communicated to the news media and general public with this tool. *3D animation over live video* produces the most realistic simulations possible, so that the public has the best depiction of what the system will really look like when it is operational.

PRODUCT:
- Eighteen (18) total Conceptual sketches
- Fifteen (15) total Photo-realistic simulations
- 3D Computer Model
- Ten (10) total 3D animations (30 seconds each)
- Five (5) total 3D animations (15 seconds each over live video)

7.2.15 Public Involvement Summary Report

Objective: To properly track and summarize public involvement activities from the

beginning to end of draft environmental review process.

Approach: The CONSULTANT shall be responsible for preparing a summary report for review by STATE and CITY to coincide with publication of the draft EIS.

PRODUCT:
- Draft summary report for review by STATE and CITY.
- Final summary report.

7.3 Media

7.3.1 News Releases

Objective: Provide timely information to the media about opportunities for public input and key project decisions in order to raise awareness and announce opportunities for public input.

Approach: Issue news releases to announce public events and decisions to media, including Leadership Group meetings, public workshops, and decisions about the proposed alternatives. The CONSULTANT shall be responsible for drafting news releases for review by STATE and CITY. STATE will be responsible for distributing news releases to news organizations.

PRODUCT:
- Forty (40) draft news releases for review by STATE and CITY.
- Forty (40) final news releases for distribution by STATE.

7.3.2 Editorial Boards

Objective: To make certain that accurate project information in conveyed to the media, raise awareness about the fast-track nature of the project, and announce key project decisions.

Approach: Schedule editorial board briefings at key project decisions with the *Seattle Times* and *Seattle Post-Intelligence*, including selection of EIS alternatives, selection of a Preferred Alternative, and future project events during design and construction. The CONSULTANT shall be responsible for identifying potential editorial board topics, preparing a plan for contacting and scheduling editorial board visits, outlining talking points, and preparing informational materials. The STATE will be responsible for scheduling editorial board visits.

PRODUCT:
- Two (2) draft plans for editorial board visits for review by STATE and CITY.
- Two (2) final plans for editorial board visits.

7.3.3 One-on-one Media Briefings

Objective: To provide opportunities for members of the project team to meet with media contacts to discuss project details and answer questions associated with information provided or inquiries by the media.

Approach: Schedule one-on-one briefings with media contacts at points in the project where new information is provided to the public and opportunities for public input are scheduled. The CONSULTANT shall be responsible for identifying opportunities for one-on-one briefings, developing talking points, and preparing materials for briefings. The STATE will be responsible for scheduling and conducting briefings with media representatives.

ASSUMPTIONS:
- It is assumed that the CONSULTANT will not attend the briefings.

PRODUCT:
- Briefing plan, information material support for up to 25 briefings.

7.3.4 Broadcast Meetings/Interviews

Objective: To broadcast information about the project via public, state, or city-owned television and radio stations during "critique weeks".

Approach: Use informational video (7.2.12) and prepare interview talking points for project team to be used during "critique weeks" to generate increased awareness about the project and opportunities for public input. The CONSULTANT shall be responsible for preparing a plan for contacting public, state, and city radio and television stations to develop opportunities for running of project video on stations or setting up interviews with project decision makers and/or staff during key points in the project. The CONSULTANT shall contact identified contacts and television and radio stations to schedule broadcast events and conduct necessary coordination activities.

PRODUCT:
- Coordination of up to 10 broadcast events with public, state, and city-owned television and radio stations.

ITEM 8 CONCEPTUAL GEOTECHNICAL ENGINEERING

The following Scope of Work is provided for the geotechnical engineering services that are required to develop the Environmental Impact Statement (EIS) and conceptual design for four (4) alternative replacement schemes of the existing Alaskan Way Viaduct.

It is assumed that initial contact for obtaining Right of Entry for the purposes of performing field reconnaissance and explorations on private property will be performed by the STATE. This will include the preparation of any documentation required for signature by the property owner. Upon securing the Right of Entry, the CONSULTANT shall coordinate with the property owner and provide supporting documentation regarding the activities to be performed on the property, as required.

ASSUMPTIONS:
- Right of Entry to private property will be provided by the STATE.

8.1 Data Collection, Compilation and Review

The CONSULTANT shall continue to collect and review readily available geotechnical and geologic data for the project including, but not limited to; Geologic maps from the U.S. Geologic Survey, WSDOT construction records, soils and geotechnical reports from WSDOT, Federal, Community, City or County officials, groups or individuals, and geotechnical information within the project limits that may be in The CONSULTANT's files.

The results of this review will be summarized in a database. Copies of all available exploration logs will be copied and collated for use in evaluating the subsurface conditions along the project corridor.

8.2 Site Review / Reconnaissance

The CONSULTANT shall perform an on-site site review of the project corridor. The CONSULTANT shall evaluate general site conditions, access for explorations, condition of existing transportation features, soil exposures, groundwater seepage areas, signs of instability, and potential other geologic hazards associated with the project.

8.3 Project Geology

The CONSULTANT shall summarize the regional geology and geology of the project limits.

8.3.1 Seismic Design Criteria

The CONSULTANT shall review the site seismicity and provide input to assist in the development of the seismic design criteria for the project. In conjunction with the STATE and CITY, the CONSULTANT shall establish single or multiple ground motion return periods and/or deterministic sources (e.g., Seattle Fault) that will be used for seismic design. Using existing PSHA and/or ground motion attenuation relationships, we will develop peak ground accelerations corresponding to firm soil/rock conditions. We will also provide appropriate AASHTO site coefficients and empirical code based spectra.

8.3.2 Geological Hazards

Geological hazards will be assessed and the potential impacts to the project will be discussed. Recommendations for mitigating the hazards will be provided. Liquefaction potential will be assessed based on the results of selected previous explorations along the alignment as well as any new explorations performed for the project. General recommendations for liquefaction mitigation will be provided, if required.

8.3.3 Subsurface Profiles

Soil profiles will be developed and shown for all structures or significant excavations. Plan views will be prepared that show the actual locations of the explorations in relation to project elements. The profiles will be based on both the available existing exploration logs as well as any new borings drilled for this project.

8.4 Field Explorations

The CONSULTANT, in consultation and coordination with the STATE, shall plan and conduct a subsurface investigation program utilizing exploratory borings and insitu tests to provide information relative to soil, groundwater, and other geologic conditions along the project alignment.

Soil Borings

The following items will be accomplished:

- The CONSULTANT shall develop an exploration plan showing the locations of existing information, proposed locations for new explorations, the anticipated depths and sampling requirements for the borings, and field instrumentation requirements. Existing subsurface information will be utilized and considered when preparing the field exploration plan.
- The CONSULTANT shall submit the plan to the STATE for review and approval. Upon approval, the CONSULTANT shall locate/stake all boring locations in the field.

- The CONSULTANT shall obtain the permits required to perform the explorations.
- The CONSULTANT shall obtain utility locates prior to field investigations requiring digging or boring and will field locate the borings or test pits relative to existing structures and facilities.
- The CONSULTANT shall coordinate with the STATE and the city of Seattle, develop the necessary traffic control plans, and provide all traffic control for the field explorations.
- The CONSULTANT shall subcontract with an experienced contractor to perform the explorations for the project. It is anticipated that this work will generally be accomplished in one phase, which will include performing explorations in areas where available information is lacking to provide adequate information for the EIS preparation. .
- All the explorations will be monitored by an experienced representative of the CONSULTANT, who will log the explorations, classify the material encountered, and retrieve representative samples. The CONSULTANT shall retain all soil samples for a period of ninety (90) days after submittal of the final geotechnical report, at which time the samples may be disposed of unless the STATE requests that they be made available for pick-up at the CONSULTANT's offices in Seattle.
- The CONSULTANT shall prepare logs for all the explorations. The logs will be edited based on laboratory or field tests in accordance with the STATE Soil And Rock Classification Guidelines. Boring logs with station, offset, elevation, groundwater elevations, uncorrected SPT test results with blows per six (6) inches will be provided. Soil units encountered in the field exploration will be described and their extent and limits will be identified.
- The results of the field exploration and all of the equipment used will be summarized. Down hole hammers or wire line operated hammers will not be used for Standard Penetration Tests (SPT).
- The following borings will be accomplished for the EIS preparation:
    1. Elevated Viaduct South of Washington Street: Two (2) borings averaging three hundred (300) feet depth each. The existing available subsurface information between Holgate and Spokane Street is not sufficient to adequately size deep foundation capacities and estimate potential settlements. The existing available boring logs do not extend to glacially consolidated soils in this area.
    2. Twin Bored Tunnel Option: Six (6) borings averaging two hundred (200) feet depth each. The vertical profile of the proposed tunnels extends below the existing available subsurface information in this area. Explorations will be required to identify soil and groundwater conditions. This information will be used to quantify construction techniques, as well as waste disposal, and groundwater pumping requirements. Two (2) of these borings will be located in the proposed mined areas that may be required at the crossover location.

1) 2 @ 300' = 600
2) 6 @ 200' = 1200
3) 3 @ 200' = 600
4) 10 @ 150' = 1500
5) 5 @ 50' = 250
26 holes ~ 4,150'

3. Large Diameter Sequentially Excavated Tunnel: Three (3 borings averaging two hundred (200) feet each. The vertical profile of the proposed tunnel extends below the existing available subsurface information in this area. Explorations will be required to identify soil and groundwater conditions. This information will be used to quantify construction techniques, as well as waste disposal, and groundwater pumping requirements.
4. Cut/Cover Tunnel along Alaskan Way: Ten (10) borings (one boring approximately every 1000 feet) averaging one hundred fifty (150) feet depth each will be drilled along Alaskan Way in the vicinity of the proposed cut/cover tunnel. A review of historical information in the area indicates that the existing surficial fill along the waterfront may contain contaminated materials. In addition, several of the available exploration logs in this area indicate that the underlying native foundation soils consist of granular material. Reviewing samples retrieved from these borings will be essential to evaluate the nature of the potentially contaminated materials and the dewatering requirements of the project.
5. Additional Borings to Evaluate Potential Contaminated Soil Hotspots: Five (5) borings averaging fifty (50) feet depth each may be drilled along Alaskan Way to evaluate the nature of potentially contaminated materials in selected hotspots. The locations will be selected based on the results of the historical search.

- Observation wells and/or vibrating wire piezometers will be installed in all the explorations.

8.5 Testing

The CONSULTANT shall conduct field and laboratory tests in general accordance with appropriate American Society for Testing Materials (ASTM) and WSDOT standards.

8.5.1 Field Tests

The field tests will include Standard Penetration Tests (SPT's) and slug tests. The SPT and slug testing will be accomplished in the soil borings drilled for the EIS phase. The slug testing will be accomplished to evaluate the groundwater conditions and dewatering requirements for the project.

The observation wells and vibrating wire piezometers will be monitored biweekly to evaluate the groundwater conditions along the project corridor. Selected groundwater monitoring instruments located along Alaskan Way will be monitored more frequently to evaluate interdependence with tidal fluctuations. In addition, the observation wells will be used to detect for the presence of methane gas along the bored and SEM tunnel alignments.

8.5.2 Laboratory Tests

Laboratory tests on selected retrieved soil samples will include natural moisture content, grain size analysis, Atterberg Limits, pH, and resistivity.

In addition, chemical tests will be accomplished on selected soil and groundwater samples retrieved from the explorations. These tests may include: Gasoline-Range Organics (GRO), Diesel-Range Organics (DRO), Oil-Range Organics (ORO), Volatile Organic Compounds (VOC), Polynuclear Aromatic Hydrocarbons (PAH), Priority Pollutant Metals, and Toxicity Characteristic Leaching Procedure for the Eight Resource Conservation and Recovery Act Metals.

8.6 Engineering Analysis

Conceptual geotechnical engineering design recommendations will be developed and provided for use in conceptual design of the four (4) alternative replacement schemes to support preparation of the EIS. The conceptual engineering performed shall identify suitable structure types and likely means and methods of construction for the four (4) build alternatives. The potential environmental impacts for each method or alternative shall be assessed. For each alternative, the CONSULTANT shall identify critical design elements and shall provide the basis for all geotechnical recommendations.

The CONSULTANT shall identify geotechnical hazards and seismic hazards close to or at the site of each alternative.

8.6.1 Geotechnical Design Considerations

The following work elements will be addressed for the four (4) replacement alternatives being considered:

Soil Loads on Bored or Mined Tunnels

Preliminary recommendations for short-term and long-term soil loads will be estimated to evaluate means and methods for tunnel construction. Conceptual support methods for different soil strengths, consistency, and groundwater levels shall be evaluated. Loads on the soil pillars between tunnels and soil columns at intersections of underground openings will also be estimated.

Lateral Pressures

Preliminary recommendations for temporary and permanent lateral earth and water pressures will be developed to evaluate the suitability of the alternatives and the potential depths of structural walls. Estimates of active, at-rest, and passive earth pressures will be developed for generalized subsurface soil conditions along the

alternative corridors to evaluate the alternatives. In addition, earth pressures under seismic loading conditions will be developed. This will require an evaluation of the liquefaction potential of the soils along the alignments. Preliminary lateral earth, water, and seismic earth pressures will be used to evaluate the feasibility of the alternatives.

For structures that may utilize a beam on elastic subgrade approach for design, appropriate preliminary soil subgrade moduli values will be provided to evaluate feasibility and suitability of these structures.

Excavation Stability

The stability of proposed excavations will be evaluated and potential methods to maintain stability will be discussed.

Coordination with Existing Seawall

Installation of the cut/cover walls adjacent the existing seawall will require coordination with the existing seawall and could potentially impact the existing seawall. Appropriate geotechnical design values will be developed to provide a basis for the structural analysis of various temporary support schemes to maintain the integrity of the existing seawall during construction.

Groundwater Control

The CONSULTANT shall develop dewatering requirements and groundwater inflow estimates for selected soil types and excavation configurations, as appropriate. Estimated pumping quantities and estimated groundwater level lowering outside the excavation shall be provided. Groundwater control studies will be required at selected locations to provide recommendations for construction methods, to identify potential construction hazards due to groundwater inflows, to identify potential impacts on structures adjacent to the alignment where dewatering is to be performed, to evaluate treatment requirements and permitting issues for discharge of drainage, and to evaluate long term dewatering systems. Groundwater control for construction and the life of the alternative shall be assessed.

Impacts on Adjacent Structures and Facilities

Ground settlements and lateral soil movements will occur away from the excavation as a result of the dewatering and excavation operations. These ground movements will be estimated for generalized subsurface conditions along the alignment. The potential impacts of the ground movements on adjacent existing structures and facilities will be evaluated using empirical methods.

Axial Capacity

For alternatives that will utilize deep foundations or slurry walls, secant pile, and tangent pile walls, preliminary axial capacity shall be estimated to determine the potential size, depth, and limits of structural elements that may be required to carry the anticipated loads. The CONSULTANT shall evaluate the potential impacts associated with deep foundations, slurry walls, secant pile, and tangent pile walls.

Retaining Walls for Structures and Portals

The CONSULTANT shall provide conceptual recommendations for retaining walls and fill sections that may be required where transitions between the at-grade and elevated sections occur. The potential impacts of these features shall be assessed and described.

Ground Improvement

Ground improvement to mitigate seismic hazards, and facilitate construction for suitable long-term performance of the alternatives, shall be assesses and discussed. The effectiveness of methods such as chemical grouting, compaction grouting, penetration grouting, and freezing depend on the range of pertinent soil properties. Classifications and recent experience will be presented to indicate where these various ground improvement techniques may be used most productively along the tunnel alignments.

Impacts on Adjacent Structures and Facilities

Ground settlements and lateral soil movements will occur away from the tunnels as a result of the dewatering and excavation operations. These ground movements will be estimated for generalized subsurface conditions along the alignment. The potential impacts of the ground movements on adjacent existing structures and facilities will be evaluated using empirical methods.

Utility Relocation and Protection

Preliminary recommendations will be developed for the relocation and protection of existing utilities along the project corridor. These recommendations will include temporary and permanent support methods, settlement estimates of newly constructed utilities, and dewatering considerations.

Overwater Berm Placement

It may be required to construct berms along the waterfront for potential fish mitigation and/or for construction of the cut/cover facility. Preliminary stability analyses will be performed to evaluate the global stability of these potential berms.

Preliminary lateral support schemes to reduce the berm foot print will also be evaluated.

Egress Shafts

Preliminary recommendations will be developed for egress shafts that may be required for the tunnel schemes. Recommendations will include lateral earth and water pressures and dewatering considerations.

8.6.2 Geotechnical Report

For the Preliminary Engineering phase of the work, the CONSULTANT shall prepare a Draft Geotechnical Data Report, a Final Geotechnical Data Report and a Geotechnical Summary Report. The Data Reports will include all the factual information developed for the project including the logs of the explorations, field test results including instrumentation readings, and laboratory test results. The Geotechnical Summary Report will summarize all the geotechnical engineering recommendations developed for the project.

Prior to Draft Data report submittal, the CONSULTANT shall meet with the STATE and the CITY's Geotechnical Branch to discuss the recommendations, assumptions, and design methodology used in preparation of the report. After the meeting, the CONSULTANT shall incorporate or address the STATE's and the CITY's comments in the Draft Report. The CONSULTANT shall prepare three (3) copies of the Draft Geotechnical Data Report and submit them for review and comment. The CONSULTANT shall respond to comments from the Design Team, the STATE, and the CITY in writing, revise the Draft Report, and submit fifteen (15) copies of the Final Geotechnical Data Report.

In addition to the formal reports, it is anticipated that preliminary recommendations shall be provided to the Design Team as they are developed. These recommendations shall be presented in a series of technical memoranda.

PRODUCT:
- Draft Geotechnical Data Report (3 Copies)
- Final Geotechnical Data Report (15 Copies)
- Geotechnical Summary Memorandum (15 Copies)

ITEM 9 GEOTECHNICAL ENGINEERING FOR PREFERRED ALTERNATIVE

The following Scope of Work is provided for the geotechnical engineering services that are required to develop a preliminary design (20 to 30 percent level) for the Preferred Alternative. It is understood that about five (5) months after NTP, the CONSULTANT shall receive direction regarding the Preferred Alternative. At this time, the scope developed for this Preferred Alternative will be initiated. It is understood that the level of geotechnical exploration and testing to accommodate a 20 to 30 percent design level corresponds to about 80 to 90 percent.

It is assumed that initial contact for obtaining Right of Entry for the purposes of performing field reconnaissance and explorations on private property will be performed by the STATE. This will include the preparation of any documentation required for signature by the property owner. Upon securing the Right of Entry, the CONSULTANT shall coordinate with the property owner and provide supporting documentation regarding the activities to be performed on the property, as required.

ASSUMPTIONS:
- Right of Entry to private property will be provided by the STATE.

9.1 Site Review / Reconnaissance

The CONSULTANT shall perform an on-site site review of the project corridor. The CONSULTANT shall evaluate general site conditions, access for explorations, and potential other geologic hazards associated with the project.

9.2 Project Geology

The CONSULTANT shall revise the regional geology and geology of the project limits based on the results of the explorations completed for this phase of the work.

9.2.1 Geological Hazards

Liquefaction potential will be assessed based on the results of the new explorations performed for the project. General recommendations for liquefaction mitigation will be provided, if required.

9.2.2 Subsurface Profiles

Soil profiles will be developed and shown for all structures or significant excavations. Plan views will be prepared that show the actual locations of the explorations in relation to project elements. The profiles will be based on both the available existing

exploration logs as well as any new borings drilled for this project. In addition to the subsurface profiles, contour maps will be developed to identify the top of the glacially consolidated soils along the waterfront.

9.3 Field Exploration

The CONSULTANT, in consultation and coordination with the STATE, will plan and conduct a subsurface investigation program utilizing exploratory borings, test pits, and insitu tests to provide information relative to soil, groundwater, and other geologic conditions along the project alignment.

9.3.1 Soil Borings

The work items referenced under "Soil Borings" in the Scope of Work developed for the EIS phase under this item will also be accomplished for the borings completed for the Preferred Alternative.

- A summary of the proposed boring explorations for the Cut and Cover Alternative is presented on Table 1 which is presented in Appendix 1.
- Observation wells and/or vibrating wire piezometers will be installed in the explorations, as summarized on Table 1 (found in Appendix 1).
- The observation wells and vibrating wire piezometers will be monitored biweekly to evaluate the groundwater conditions along the project corridor. Selected groundwater monitoring instruments located along Alaskan Way will be monitored more frequently to evaluate interdependence with tidal fluctuations. In addition, the observation wells will be used to detect for the presence of methane gas along the SEM tunnel alignment.

9.3.2 Test Pit Excavations

Test pit excavations may be accomplished to evaluate the foundation conditions of selected historical buildings located adjacent to the project alignment. The purpose of these pits will be to assess the nature and condition of the existing foundations in the event that underpinning and/or special protection of the structure is required. It is assumed that six (6) testpits may be accomplished at selected locations.

9.3.3 Sonic Coring

Sonic Coring will be accomplished to provide continuous recovery of a 3.5 to 4.0-inch diameter soil sample. Two (2) sonic coring borings will be accomplished for the 60-foot diameter sequentially excavated mined (SEM) tunnel.

9.4 Testing

The CONSULTANT shall conduct field and laboratory tests in general accordance with appropriate American Society for Testing Materials (ASTM) and the STATE

standards.

9.4.1 Field Tests

The field tests will include Standard Penetration Tests (SPT's), slug tests, geophysical tests, pressuremeter tests, and pumping tests. The SPT and slug testing will be accomplished in the soil borings drilled for this phase. The remaining tests will be accomplished at selected locations.

- Geophysical testing consisting of downhole shear wave velocity measurements will be accomplished to provide low strain material properties for seismic design and numerical modeling. This testing shall be accomplished in four (4) boreholes located along the elevated portion of the alignment, four (4) boreholes located along the cut and cover section, and two (2) boreholes located along the SEM tunnel alignment. This work will be accomplished by a qualified subcontractor.
- Pressuremeter testing will be accomplished in selected borings to evaluate in situ strength of the soil, subgrade moduli values for design of the cut and cover walls, and in situ stress conditions of the soils that will be mined for the SEM tunnel. Pressuremeter testing will be accomplished in six (6) boreholes located along the cut and cover section and four (4) boreholes located along the SEM tunnel alignment. This work will be accomplished by Hughes In Situ Testing under subcontract to the CONSULTANT.
- Groundwater pumping tests will be accomplished to evaluate the groundwater conditions and dewatering requirements for the project. It is estimated that up to six (6) pumping tests would be required for this phase of the work. Two (2) would be accomplished along the alignment of the SEM tunnel. The remaining four (4) tests will be accomplished along Alaskan Way to evaluate the dewatering requirements for the cut/cover tunnels. The pumping tests will be designed, performed, and analyzed by the CONSULTANT. A subcontractor will be utilized to drill and install the pumping well and associated pumps for the test.

9.4.2 Laboratory Tests

Laboratory tests on selected retrieved soil samples will include natural moisture content, grain size analysis, Atterberg Limits, pH, corrosion potential, and resistivity; and specialized geotechnical tests such as triaxial tests, and soil consolidation. This testing will be accomplished by the CONSULTANT.

In addition, chemical tests will be accomplished on selected soil and groundwater samples retrieved from the explorations. These tests may include: Gasoline-Range Organics (GRO), Diesel-Range Organics (DRO), Oil-Range Organics (ORO), Volatile Organic Compounds (VOC), Polynuclear Aromatic Hydrocarbons (PAH), Priority Pollutant Metals, and Toxicity Characteristic Leaching Procedure for the Eight Resource Conservation and Recovery Act Metals. This testing will be

accomplished by a qualified laboratory under subcontract to the CONSULTANT.

9.5 Geotechnical Recommendations

Preliminary geotechnical soil properties will be developed and provided for preliminary structural designs. In general, these same properties will be provided during the EIS phase. The level of detail for this Preferred Alternative development phase, however, will be increased based on the advancement of the design.

9.5.1 Cut and Cover Tunnel

This alternative includes constructing a cut and cover tunnel (approximately 10,000 feet long) along Alaskan Way. This will require the installation of slurry walls and/or secant pile walls to support major excavations along the corridor. Construction sequencing of these walls will require consideration of the existing seawall. As part of the preliminary design effort, the following studies will be accomplished:

Lateral Pressures

Recommendations for temporary and permanent lateral earth and water pressures will be developed for the design of the structure walls. Active, at-rest, and passive earth pressures will be developed for generalized subsurface soil conditions along the project corridor. In addition, earth pressures under seismic loading conditions will be developed. This will require an evaluation of the liquefaction potential of the soils along the alignment.

These cut and cover tunnel sections will be designed to resist large unbalanced lateral earth and water pressures. To evaluate the soil stress levels and the potential lateral movements of the structure, a finite difference soil structure interaction evaluation will be accomplished using the computer program FLAC. It is anticipated that this analysis will be accomplished at four (4) typical sections along the cut and cover alignment. The results of these analyses will also be used to evaluate potential ground movements adjacent to the excavations to evaluate potential impacts on existing structures.

Basal Stability

The basal stability of the proposed excavations will be evaluated. Based on our current understanding of the geology along the alignment, significant dewatering will be required to control basal stability. The impacts of this dewatering including estimated pumping quantities and estimated groundwater level lowering outside the excavation will be evaluated. The dewatering effort could be significant considering that Elliot Bay will provide a recharge source along the entire alignment.

Subgrade Moduli

It is anticipated that the base slabs and possibly the walls of the cut/cover tunnels will be designed using a beam on elastic subgrade approach. Appropriate soil subgrade moduli values will be provided for design of these structures.

Axial Capacity

Design parameters will be provided to determine the axial capacity of the slurry walls and/or secant pile walls. This will be particularly important considering that the cut/cover tunnels will be designed to resist large unbalanced lateral loads acting on the structure without the use of tiebacks.

Coordination with Existing Seawall

Installation of the cut/cover walls adjacent the existing seawall will require coordination with the existing seawall. Appropriate temporary support schemes must be developed to maintain the integrity of the existing seawall during slurry wall and/or secant pile wall installation.

Groundwater Control

The CONSULTANT shall develop dewatering requirements and groundwater inflow estimates for selected soil types and excavation configurations, as appropriate. These estimates will be based on the results of the subsurface explorations and pumping tests completed for this phase. Groundwater control studies will be required at selected locations to identify potential construction hazards due to groundwater inflows, to identify potential impacts on structures adjacent to the alignment where dewatering is to be performed, and/or to evaluate treatment requirements and permitting issues for discharge of drainage. The dewatering and groundwater drawdown studies will be accomplished using the groundwater flow computer model MODFLOW. Two- and 3-D models may be considered depending upon the subsurface conditions and the appropriate boundary conditions.

Impacts on Adjacent Structures and Facilities

Ground settlements and lateral soil movements will occur away from the excavation as a result of the dewatering and excavation operations. These ground movements will be estimated for generalized subsurface conditions along the alignment. The potential impacts of the ground movements on adjacent existing structures and facilities will be evaluated. Empirical charts will be used to estimate the damage potential of adjacent structures.

9.5.2 Elevated Structures

The Cut and Cover alternative includes constructing elevated structures along that portion of the alignment located south of about Royal Brougham Way. This will require the installation of deep foundations to support the structures along the corridor. As part of the preliminary design effort, the following studies will be accomplished:

Deep Foundations

It is assumed that the elevated structures would be supported by drilled shaft and/or driven pile foundations. The actual foundation type selected would be based on loading considerations, subsurface conditions, and environmental factors. The CONSULTANT shall develop recommendations for appropriate foundation types that will include developing ultimate capacities versus shaft penetration plots for each of the assumed stratigraphy/shaft size combinations for both compression and tension loading conditions. Potential downdrag loads will also be included. If driven piles are suitable, the axial capacity of the piles will also be estimated.

Lateral Load Capacity

It is anticipated that the structural design of the proposed deep foundations may be controlled by the lateral load capacity of the foundation element. The CONSULTANT shall develop lateral load versus deflection curves for the subsurface conditions and the assumed deep foundation types. Analyses will be performed by structural engineers using the computer program LPILE and geotechnical data generated from existing and new field data.. Seismic and static load cases will be considered. Appropriate mitigation schemes and/or equivalent lateral loads will be developed for the deep foundations if lateral spreading of the ground as a result of liquefaction is a design consideration.

Earthquake Engineering Studies

Based on the most recent experience with the deep foundation studies for the Sound Transit Rail Project in the Boeing Access area where similar loose and soft soils exist along the project alignment, the CONSULTANT recommends that site-specific ground motion studies be performed for the preliminary studies. It is anticipated that these studies may result in reductions in design earthquake ground motions over non-site-specific AASHTO levels.

Site-specific ground motion studies will be accomplished to develop a smoothed design spectrum for the elevated structures. The smoothed spectrum will be based on one-dimensional, equivalent linear free-field ground response analyses using estimated dynamic soil properties and site-specific earthquake ground motions.

Retaining Wall Design

The CONSULTANT shall provide recommendations for retaining walls and fill placement that may be required where transitions between the at-grade and elevated sections occur.

9.5.3 SEM Tunnel

The CONSULTANT shall perform geotechnical engineering analyses and develop recommendations for preliminary design and construction of the portals, tunnels, mined sections, and egress shafts. These analyses will be based on the subsurface conditions encountered along the alignment as determined from a review of the available exploration logs as well as the results of any new explorations completed along the alignment.

Soil Loads on Tunnels

Both short-term and long-term soil loads will be estimated and provided to the designers to assist in liner design for different soil strengths and consistency and groundwater levels. Loads on the soil pillars between tunnels and soil columns at intersections of underground openings will also be estimated and provided to the tunnel designers. Soil deformations measured at Seattle Transit Bus Tunnels suggests that the glacial clay pillars were partially crushed by overburden loads. More extensive overstressing may occur for the much deeper tunnels proposed for this project such that special methods of pillar reinforcement may be required.

Bottom Heave and Squeeze

Soil conditions, which may lead to bottom instability in major excavations will be evaluated and categorized based on soil strengths and consistency, groundwater pressures, and location along the alignment. This information will be summarized and provided to the tunnel designers.

Earthquake Engineering Studies

Historically, tunnels have performed well during earthquakes; tunnels deform with the surrounding soils during an earthquake. Based on our experience with similar tunnel projects (e.g., Boston Central Artery and Denny Way Combined Sewer Overflow [CSO]), the earthquake-induced soil strains at the tunnel depth are required for design or as a check of the design of the tunnel. Consequently, earthquake engineering studies will be conducted to evaluate soil strains at the tunnel depths. These studies will evaluate both horizontal and vertical wave passage effects and will include equivalent-linear earthquake ground response analyses. Earthquake-induced geologic hazards, and their effect on the tunnels/stations, and mitigative measures will also be evaluated.

Portal Wall Design

Earth retaining structures will be required to construct portal headwalls and wingwalls. Recommendations will be provided for lateral earth and water pressures, and lateral sliding resistance.

Egress Shaft Design

Egress shafts may be required for the SEM tunnel. Recommendations will be provided to the designers for lateral earth and water pressures.

Groundwater Control

The CONSULTANT shall develop groundwater inflow estimates for selected soil types and excavation configurations, as appropriate. Groundwater control studies may be required at selected locations to provide recommendations for construction methods, to identify potential construction hazards due to groundwater inflows, to identify potential impacts on structures adjacent to the alignment where dewatering is to be performed, and/or to evaluate treatment requirements and permitting issues for discharge of drainage. Alternative groundwater removal systems such as deep wells, vacuum wells, and eductor/ejector wells will be evaluated in terms of site conditions.

Ground Improvement

The effectiveness of methods such as chemical grouting, compaction grouting, penetration grouting, and freezing depend on the range of pertinent soil properties. Classifications and recent experience will be presented to indicate where these various ground improvement techniques may be used most productively along the tunnel alignments considering the ground encountered along the tunnel alignment based on the results of the subsurface explorations.

Impacts on Adjacent Structures and Facilities

Ground settlements and lateral soil movements will occur away from the tunnels as a result of the dewatering and excavation operations. These ground movements will be estimated for generalized subsurface conditions along the alignment. The potential impacts of the ground movements on adjacent existing structures and facilities will be evaluated. Empirical charts will be used to estimate the damage potential of adjacent structures.

9.5.4 Berms for Fish Mitigation

Construction along the waterfront adjacent to the cut and cover wall (sea wall) may be required for fish mitigation.

9.5.5 Geotechnical Report

For the Preliminary Engineering phase of the work, the CONSULTANT shall prepare a Draft Geotechnical Engineering Report, a Draft Geotechnical Data Report, a Final Geotechnical Engineering Report, and a Final Data Report. The Data Reports will include all the factual information developed for the project including the logs of the explorations, field test results including instrumentation readings, and laboratory test results. The Engineering reports will summarize all the geotechnical engineering recommendations developed for the project.

Prior to Draft report submittal, the CONSULTANT shall meet with the STATE and the CITY's Geotechnical Branch to discuss the recommendations, assumptions, and design methodology used in preparation of the report. After the meeting, the CONSULTANT shall incorporate or address the STATE's and the CITY's comments in the Draft Report. The CONSULTANT shall prepare three (3) copies of the Draft Geotechnical Data and Engineering Reports and submit them for review and comment. The CONSULTANT shall respond to comments from the Design Team, the STATE, and the CITY in writing, revise the Draft Reports, and submit fifteen (15) copies of the Final Geotechnical Data and Engineering Reports.

In addition to the formal reports, it is anticipated that preliminary recommendations shall be provided to the Design Team as they are developed. These recommendations shall be presented in a series of technical memoranda.

PRODUCT:

- Draft Geotechnical Engineering Report (3 Copies)
- Draft Geotechnical Data Report (3 Copies)
- Final Geotechnical Engineering Report (15 Copies)
- Final Geotechnical Data Report (15 Copies)

9.5.6 Underground Storage Tank Evaluation for Tunnel Alignment Alternatives

In addition to the discipline report, a separate UST evaluation will be conducted to identify known and potential USTs within one hundred (100) feet of a tunnel footprint, and evaluate the potential for releases from these tanks to pose a fire hazard in a tunnel. This study focuses on evaluating compliance with the National Fire Protection Association's 1997 Edition of NPFA 130 Fire Code for Fixed Guideway Transit systems. This evaluation will be limited to the cut-and-cover alternative.

9.5.7 Addendum for Environmental Sampling

Subsurface conditions for areas of potential contamination will be developed from existing soil borings and cross-sections developed for the Geology and Soils Discipline Report. This information will be supplemented by information gathered

from subsurface explorations that will be conducted for the geotechnical evaluation of alternatives. Chemical testing of soil is proposed for all borings with a focus on areas of potential subsurface contamination and areas of fill. If wells are installed to assess hydrologic conditions, water quality testing will be necessary to dispose of the water. Chemical data from this testing will be used to refine potential impacts and remediation / disposal costs developed for the EIS.

ITEM 10 UTILITIES

During the EIS Phase, the CONSULTANT shall be responsible for the evaluation of impacts to utility systems and preparation of text for inclusion in the project's overall EIS. Preliminary Engineering will run concurrently with the EIS, and the CONSULTANT is responsible for relocation design of existing utilities for the preferred AWV alternative. Because of overlap in the project schedule, "design" services shall be included as part of Conceptual Engineering and drawings prepared as part of Conceptual Engineering will be included as the EIS is prepared. The project also includes three (3) seawall replacement alternatives as described in the "SW" scope items.

ASSUMPTIONS:

- The project includes the "No Action" alternative, a retrofit viaduct alternative, and four (4) build alternatives for replacement of the Alaskan Way Viaduct and the approaches to the viaduct between Mercer Street and Spokane Street S in the north-south direction and from the waterfront to First Avenue in the west-east direction.
- Each alternative project will include a spur connection to Ballard / Interbay area.
- Utilities located on or below piers west of the Alaskan Way seawall are not included in the project scope. The scope will be limited to reconnection of existing utilities immediately outboard of the new seawall at existing utility locations for the preferred alternative only.
- Scope includes professional services for the conceptual level of detail for the retrofit of the existing AWV and four (4) build alternatives up to the design snapshot.
- Scope includes professional services for the EIS level of detail for the existing AWV and up to four (4) build alternatives.
- Scope includes concurrent professional services for Preliminary Engineering for one (1) alternative following the design snapshot.
- At the completion of the Preliminary Engineering work, the final MicroStation drawings will be electronically converted to AutoCAD 2000 format.
- Utility relocation cost opinions will be expressed as a range and will be to a level of accuracy to allow relative comparisons of alternatives.

10.1 Utilities

ASSUMPTIONS:

- Utilities include existing storm drains, sewers, interceptors, combined sewers, water, electrical, fiber optic, gas, steam, telephone, and cable TV.
- Utilities discovered to exist in the alignment that are not listed above shall be considered outside of this scope.
- The BNSF railroad tunnel is not considered a utility and is excluded from this scope.
- Relocated utilities will be replaced in kind as compared to the existing utilities (betterments not included).
- Space in the Alaskan Way corridor will be provided for utility betterments but the utility owners shall be responsible for identifying and designing the betterments.
- Hydraulic modeling of water and sewer systems will not be performed by the CONSULTANT.

10.1.1 Completion of Record Search for Existing Utilities:

The CONSULTANT shall continue the record search started in the "Early Work" phase for the utilities that will be affected by the proposed four (4) AWV alignments to be analyzed in the EIS.

10.1.1.1 Prepare markup drawings on 1"=100' base map (by others) of existing utilities within the proposed alignments based on GIS records and purveyor record drawings for utilities that are not shown on the GIS. Where GIS records do not provide sufficient detail, construction record drawings will be obtained from the owner to define the existing utility configurations.

10.1.1.2 Draft existing utility markup drawings on 1"=100' plan and profile (base map by others) from the markup drawings. Up to twelve (12) plan and profile drawings. Multiple sets showing different utilities may be required for clarity, typical for all submittals.

10.1.1.3 Draft existing utility markup drawings on 1"=50' plans from the markup drawings. Up to twenty-four (24) plans shall be provided for AWV electrical relocation designers.

10.1.1.4 Make field trips to observe existing conditions as required and to compile photo record file.

10.1.1.5 Meet and interview each private utility purveyor for the following information: missing or conflicting information resolution, design criteria, information on abandoned utilities, future capital improvement plans for utilities for up to the next five-years or the time limits of currently approved capital improvement

plans, details of policy on rerouting of the utility, naming conventions for utility components, estimated cost for proposed realignment, and any special considerations for phasing temporary construction service. Modify drawings to reflect additional information. Up to two (2) interviews per purveyor.

10.1.1.6 Coordinate with the utility purveyors and the surveying CONSULTANT to obtain "pothole" information at critical locations. Up to forty (40) locations.

10.1.1.7 Coordinate with AWV designers to develop utility cross sections consistent with the proposed AWV cross sections. It is assumed that cross sections shall be cut at approximately 500' intervals along the AWV between Spokane St. and Mercer St., along the Elliott Avenue connection and elsewhere as appropriate. Up to sixty (60) existing utility cross-sections shall be provided.

10.1.1.8 Compile the existing utilities and the five-year capital improvement plans attribute database spreadsheet for utilities within the proposed alignments.

10.1.1.9 Compose Technical Memorandum with attached appendices.

PRODUCT:
- Existing utility (except electrical) plan and profile drawings at 1"=100'.
- Existing utility cross section drawings at 1"=10'.
- Technical memorandum containing records of utility purveyor interviews, existing utility database field notes and photos as appropriate.

10.2 Proposed Alternatives Utility Relocations

In advance of the design snapshot the CONSULTANT shall prepare conceptual level plan and profiles and cross-sections of utility relocations for each of the proposed four (4) build AWV alternatives and the retrofit alternative. The following shall be evaluated for the four (4) build alternatives and the retrofit being considered:

Cut and Cover Tunnel: This alternative is under consideration in Alaskan Way and Wall, Bell and Battery Streets. Relocation design criteria will be refined and analysis performed as required to define the proposed relocation of major affected utilities. The required analysis includes coordination of crossing utility penetrations of the new seawall and impact of tidal fluctuations on seawall penetrations. Means of temporary construction utility support and seasonal timing constraints shall be investigated. Potential for utilidor will be evaluated. The need for pile support of critical utilities will be investigated with purveyors in terms of risk and consequences.

Twin Bored Tunnels: This alternative is under consideration in First Avenue and Western Avenue. The required analysis includes assessment of the existing utilities ability to tolerate the anticipated levels of settlement in the alignment of the tunnels

and relocations as required, recommendations for relocation of utilities at portals, and temporary construction service recommendations.

Aerial: This alternative is under consideration above Alaskan Way adjacent to the existing AWV. The required analysis includes recommendations for sequential construction of temporary construction utilities that are currently hung from the AWV, and relocation of utilities in Alaskan Way based on the proposed footing locations for the new AWV.

Aerial / Cut and Cover Tunnel: This alternative is under consideration above Alaskan Way adjacent to the existing AWV. The required analysis includes all of the items for the aerial and cut and cover alternative as noted above.

Retrofit: The retrofit of the existing AWV will involve extensive provisions for temporary construction for utilities hung from the existing AWV during the demolition and reconstruction work. The required analysis includes recommendations for sequential construction of temporary construction utilities that are currently hung from the AWV and final locations for the rehabilitated AWV.

More meeting for Utilities - Item 2

Proposed relocations will be coordinated with utility purveyors. Up to six (6) meetings will be held with each private utility purveyor to review progress, discuss constraints and obtain comments on revisions. Focus will be on utility relocations that involve long lead times.

Draft and final technical memorandum will be prepared describing the proposed relocated utility for each of the build alternatives and the retrofit.

Construction considerations will be addressed. Temporary construction utility requirements will be reviewed, particularly for customers that are outboard of the seawall.

ASSUMPTIONS:

- Design criteria for all utilities shall be based on the purveyor standards and the requirements of the CITY.

PRODUCT:

- Relocated utility (except electrical) plan and profile drawings at 1"=100'
- Relocated utility cross section drawings at 1"=10'
- Draft technical memorandum regarding proposed utility relocations in AWV alignments.
- Final technical memorandum regarding proposed utility relocations in AWV alignments.
- Conceptual level cost opinion

10.3 Preliminary Engineering

CONSULTANT work is predicated on selection of one (1) alternative for further refinement in Preliminary Engineering following the design snapshot. Preliminary Engineering work items shall be limited to review and coordination of previously created drawings to conform with the DEIS format, and identification of utility permit requirements. Identification of temporary construction utilities requirements and construction sequence will also be investigated and drawings prepared. Key details will be prepared to a preliminary level. Concurrent with Preliminary Engineering, CONSULTANT shall review and clarify utility relocations identified in conceptual design.

ASSUMPTIONS:

- After recommendation of the Preferred Alternative, the Preferred Alternative shall be advanced to approximately a 25% design level.
- It is anticipated that the Design File work will be extended beyond the ROD for a time period as required for the CONSULTANT to reach the 25% design level.
- Relocated utilities will be replaced in kind as compared to the existing utilities (betterments not included).
- Space in the Alaskan Way corridor will be provided for utility betterments but the utility owners shall be responsible for identifying and designing the betterments.
- Technical specifications for private utilities (fiber optic, gas, steam, telephone, and cable TV) will not be prepared by the CONSULTANT.

10.3.1 PDEIS and PFEIS Reviews Revisions (Tasks 8 and 14 in Schedule)

During the PDEIS and PFEIS review, for budgetary purposes, it is assumed that the CONSULTANT shall be required to revise drawings for four (4) build alternatives plus the retrofit, up to sixty (60) plan and profile drawings with utilities, revise the database spreadsheet, revise the technical memorandum text for up to four (4) build alternatives plus the retrofit, identify permit requirements and provide text for up to four (4) build alternatives plus the retrofit.

PRODUCT:

- Relocated plan and profile drawings of utilities
- Updated database spreadsheet.
- Revised draft and final technical memorandum for EIS regarding utility relocations in AWV alignments.

10.3.2 Preliminary Design

The scope of work described herein assumes that Alternative 1 described in Table 3.2 is selected as the Preferred Alternative (more cross-sections required for this alternative than for others).

The CONSULTANT shall:

- Meet up to ten (10) times with each private utility purveyor to coordinate utility revisions for the Preferred Alternative. Meet up to four (4) times with public health and safety officials to coordinate temporary construction and permanent health, fire, safety requirements.
- Prepare up to twenty four (24) 1"=50' detailed utility relocation plan and profile drawings and compile calculations for the Preferred Alternative.
- Prepare up to twenty-four (24) 1"=20' scale utility relocation plan and profile drawings at locations where the realignments of the utilities does not provide sufficient clarity on the 1"=50' scale drawings for the Preferred Alternative.
- Draft existing utility markup drawings on 1"=20' plans from the markup drawings. Up to sixty (60) plans shall be provided for AWV electrical relocation designers.
- Prepare up to one hundred eighty (180) cross sections, one (1) at each bent row and as required north and south of elevated viaduct.
- Prepare up to twenty (20) key utility details to a preliminary level.
- Prepare up to twenty four (24) temporary construction utility plan drawings.
- Prepare draft and final utilities technical memorandum for the Preferred Alternative.
- Prepare draft, prefinal and "100%" utilities technical specification sections for water, sewer and electrical utilities.

PRODUCT:

- Relocated plan and profile drawings of utilities (except electrical) on separate plan and profile drawings at 1"=50
- Relocation plan and profile drawing of electrical utility at 1"=20'
- Enlarged relocated plan and profile drawings of utilities (except electrical) on separate plan and profile drawings at 1"=20'
- Database spreadsheet
- Relocated utility and cross section drawings at 1"=10'
- Key utility details
- Temporary construction utility plan drawings
- Draft and final utilities AWV technical memorandum
- Draft, prefinal and "100%" utilities technical specification sections
- Preliminary level cost opinion
- Electronic drawings in MicroStation and AutoCAD format

10.4 Conceptual Engineering for Electrical Utility Relocations

For each EIS alternative, the CONSULTANT shall collect, review and assess the available data on transmission and distribution (T&D), both overhead and underground, to develop conceptual-level designs for (1) new service to meet AWV project requirements, (2) maintain service to existing customers in the AWV corridor, and (3) determine relocations for temporary service as necessary or required for construction operations.

- Provide markups on "prepared" 1"=50' existing utility drawings for electrical relocation. Up to twenty-four (24) plan sheets for each alternative, as required. Meet with City Light to resolve design criteria, future capital improvements plans for utilities, details of policy on rerouting of the utility, estimated cost for proposed realignment and any special considerations for phasing temporary construction service. Modify drawings to reflect additional information.
- Review electrical requirements for new services for project and determine likely impact to existing T&D network. Provide narrative of any proposed upgrade to the existing network and an opinion of cost.
- Review utility requirements for maintaining service to customers. Determine final T&D relocations. Provide narrative of relocation, structures, and methods. Do not underground existing service unless currently provided or necessary. Accommodate T&D relocations within existing corridor. Do not consider accommodating added capacity. Utility relocations are reviewed for comparison with other alternatives. Include transmission and primary distribution upstream of distribution transformers.
- Provide proposed utility requirements for temporary service as necessary or required for construction operations. Include options for cross-over of power from existing to new or temporary service. Include methods, sequencing, or potential benefits to customers.

The CONSULTANT shall conduct field reconnaissance of the existing structures to become familiar with the site and to provide a visual assessment of the as-built conditions including existing pole structures and clearances.

ASSUMPTIONS:

- Four (4) build, one (1) retrofit, and the No-Action alternatives will be analyzed in the EIS.
- Existing transmission and distribution shall be accommodated within the AWV corridor or within corridors established by the proposed AWV alternatives.
- Accommodation of spare capacity within AWV corridor is not included in the EIS alternative assessment.
- Assessment of electrical infrastructure shall include transmission and primary distribution upstream of distribution transformers.
- The cost estimate for utility relocation will be plus/minus 50%.

PRODUCT:

- Design criteria to include final permanent relocation of transmission and primary distribution feeders in the AWV corridor upstream of distribution transformers. Describe options, locations, and methods.
- Provide structural input to major structures drawings including any SCL substation for receipt of power to AWV facilities.
- Provide one-line diagram including tie-in to the T&D grid for each alternative. Size load based on full capacity of existing transformer equipment.

10.5 Preliminary Engineering for Electrical Utility Relocations

For Preliminary Engineering (PE) of the Preferred Alternative, the CONSULTANT shall provide a 25% design of transmission and distribution (T&D), both overhead and underground, to support preliminary level designs and an opinion of cost. The preliminary level designs shall include plans and details for (1) new service to meet AWV project requirements, (2) final permanent relocations of T&D in the AWV corridor, and (3) any temporary relocations for construction operations.

- Provide markups on "prepared" 1"=20' existing utility drawings for electrical relocation. Up to sixty (60) plan sheets shall be provided for the Preferred Alternative. Modify drawings to reflect additional information.
- Prepare utility cross-sections at majpr intersections. It is assumed that cross sections shall be cut at approximately 500' intervals along the AWV between Spokane Street and Mercer Street, as required.
- Refine electrical requirements for new service.

- Identify transmission line relocations within the corridor.
- Identify underground and/or overhead T&D structures.
- Define spare capacity thought to be necessary in the corridor. Clarify SCL long-range planning for this corridor.
- Locate primary distribution transformers, overhead or underground.
- Provide any temporary relocations for transmission and/or distribution. The exact sequence for cross-over shall be as determined by the Contractor.
- Define extent of street lighting in the corridor and associated electrical loads.

The CONSULTANT shall review options for T&D relocations, accommodation of added capacity and reliability issues regarding transmissions lines between Union Substation and both Mass and Broad Substations.

ASSUMPTIONS:

- Existing transmission and distribution shall be accommodated within the AWV corridor or within corridors established by the proposed AWV alternatives.
- Preliminary engineering of the Preferred Alternative shall include transmission and primary distribution upstream of distribution transformers. Any further refinement of system loads shall be postponed until after Preliminary Engineering.
- The cost estimate for utility relocation will be order of magnitude.
- The transmission lines to Union Substation in support of reliability of the downtown grid and the need to replace incoming transmission in advance of eliminating existing lines on/under the Viaduct is currently not in this scope of work.

PRODUCT:

- One set of 1"=20' utility drawings will be prepared to show permanent and relocated utilities. Relocated utilities shall include all transmission lines as well as primary distribution to transformers. No details will be provided for secondary distribution to hand-holes or service vaults.
- One set of 1"=20' utility drawings will be prepared to show temporary locations of relocated utilities. This will be shown as a complete relocation unless the design of the Preferred Alternative permits relocation from existing location to the final permanent utility locations.

ITEM 11 SURVEY AND BASE-MAPPING

11.1 Survey Control Network

The CONSULTANT shall establish project-wide survey control network based upon the prior agreed upon (the STATE and CITY) datums of Washington State Plane Coordinate System (WCS), North Zone, 1983 (1991 Adjustment of horizontal position and North American Vertical Datum (NAVD), 1988 for vertical elevation. Control previously set and utilized for the creation of the CITY GIS aerial topographic map, if still existing on the ground, will be incorporated into this project control network.

Control points established will consist of permanent type materials, set outside of the alignment construction area for usage through the construction phase. Materials to be used could include a "PK" nail in asphalt, a ½ inch rebar with cap or a 3 inch brass cap on 2 ½ inch iron pipe. The physical placement of said control will be dependent upon the final chosen corridor.

Said system shall incorporate and equate the following vertical datums, which exist in the corridor area: City of Seattle, Port of Seattle and Army Corp of Engineers.

Primary control shall be established using GPS Fast Static methods adjusted to two (2) sigma certainty (95% statistical certainty).

PRODUCT:

- A Technical Memorandum which will explain the mathematical correlation between the above referenced vertical datums. (10 Copies)
- A control map and database which will show all control points established in their true position, their material type and their horizontal and vertical coordinates in tabular and MicroStation J format.

11.2 Base Mapping

For the EIS-level planning effort, the CONSULTANT shall utilize two foot (2') contour interval topographic mapping provided by the City of Seattle for the AWV Corridor (City of Seattle GIS layer named "topography").

When topographic mapping of greater detail is needed for alternative definition, data shall be collected by CONSULTANT on a site-specific basis as described below in Item 11.4. This supplemental topographic data shall represent one foot (1') contour accuracy with spot shots accurate to the one-tenth of a foot vertically (true measurement) although said spot will delineate elevation to the one one-hundreds.

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Upon additional data collection, the x, y and z coordinates will be merged into the CAiCE project electronic surface and MicroStation basemap. The CAiCE project electronic surface and MicroStation basemap will be maintained on a continual basis throughout the project.

ASSUMPTIONS:

- City GIS topo mapping is based upon W.C.S., North Zone, 1983 (1991 adjustment) for horizontal and N.A.V.D. 1988 vertical datum.

PRODUCT:

- CAiCE 2000 SE format .srv and .kcm electronic files containing the additional survey points and survey chains, checked for elevation and chain errors. All data attributes will be per WSDOT Standard Codes and Zones.
- Worksheet hardcopy plot of supplemental survey points and chains in tabular form.
- MicroStation J 2D electronic file with attribute conventions per WSDOT Plans Preparation Manual.

11.3 Additional Surveying Services

The CONSULTANT shall respond within 24-hour notice of a survey request. Site specific data collection could include, but is not limited to, horizontal and vertical position (potholing) of utilities (and inverts) as marked on the surface by others, geotechnical bore hole locations, hazardous waste material sites, existing structure and bridge as-builts, railroad tracks and switching yard, trolley system, roadway centerline and crown, columns, rockeries, traffic barriers, top of curbs and flowlines, and adjoining buildings or improvements (to include building position at surface grade, at top of building and elevation of lowest level--foundations can be represented based upon DCLU records, if they exist, vertical clearances from roadway to overhead structures, etc.) Mapping will be conducted using a variety of methods that could include traditional terrestrial ground mapping, CYRA Scanning System and/or Low Altitude Aerial Mapping LAMP.

Production allocation is based upon two (2) crews of two (2) persons each at eight (8) hour days per person (corresponding with an eight (8) hour day for survey technician for data reduction and processing, mapping and checking), assuming one (1) two (2) person crew at twenty (20) workdays for the first ten (10) months, one (1) crew at twenty (20) workdays for the next ten (10) months each and one (1) crew for the remaining months at two (2) days per week until the Record of Decision, December, 2003. Expenses for Cyra Scanning Theodolite and/or Cyra Boom Truck will be in addition as a separate cost. These systems greatly improve field crew safety and are able to map at places field crews cannot physically access.

ASSUMPTIONS:

- Right of Entry permission shall be first pursued by the CONSULTANT. If the CONSULTANT is unsuccessful, the STATE will assume responsibility to obtain Right of Entry permission.
- The CONSULTANT shall negotiate with CITY to obtain downtown parking permit for field crews.

PRODUCT:

- CAiCE 2000 SE format .srv and .kcm electronic files containing the additional survey points and survey chains, checked for elevation and chain errors. All data attributes will be per WSDOT Standard Codes and Zones.
- Worksheet hardcopy plot of supplemental survey points and chains in tabular form.
- MicroStation J 2D electronic files with attribute conventions per WSDOT Plans Preparation Manual.

11.4 Hydraulic Locations

Field surveys will be performed throughout the corridor area to locate catch basins and obtain invert elevations of the catch basins or drainage structures, surveys to locate culverts sizes and invert elevations and drainage features not identified on the existing photogrammetry. Some of these features will be located between the pavement and right of way and under bridges. The data will be collected per the product below and supplemented with field notes with individual sketches in notebook form. The CONSULTANT shall reduce and compile the field work and research of record drawings.

PRODUCT:

- CAiCE 2000 SE format .srv and .kcm electronic files containing the additional survey points and survey chains, checked for elevation and chain errors. All data attributes will be per WSDOT Standard Codes and Zones.
- Worksheet hardcopy plot of supplemental survey points and chains in tabular form.
- MicroStation J 2D electronic file with attribute conventions per WSDOT Plans Preparation Manual.
- Copy of field notes
- Drainage structure sketches (8-1/2" x 11" format)

11.5 Traffic Control

Traffic control may be required to perform surveys of structures and streets (providing Cyra Scanning Systems are not utilized). Appropriate traffic control plans using Northwest Region, City of Seattle and the Manual of Uniform Traffic Control Devices (MUTCD) standards will be utilized.

Said traffic control will be required to perform surveys for, but not limited to, monument ties, bridge site data, hydraulic features, street topography and lane or shoulder closures. This traffic control scope does not include any closure of the Battery Street Tunnel.

The amount of traffic control fees required to fulfill the Scope of Services by CONSULTANT is dependent upon the nature of "Survey Requests" as described by Item 11.3. It is anticipated that fees for traffic control services will be $75,000 based upon the direct expense breakdown sheet.

ASSUMPTIONS:

- Traffic Control will be utilized for lane closures, if necessary and for adverse field crew conditions.

11.6 Right of Way Establishment

Upon selection of the Preferred Alternative, centerline and right of way shall be established by the CONSULTANT on the above referenced horizontal datum as defined in Item 11.1. Alignment and right of way of SR99 shall be based upon methodology for the STATE re-establishment procedures. Once right of way is determined, adjoining buildings and other improvements can be mathematically determined for spatial and clearance relationships with said corridor.

ASSUMPTIONS:

- The STATE will furnish to CONSULTANT all existing right of way plans of SR 99 for the subject corridor.

11.7 Right of Way Plans of Existing Right of Way

The CONSULTANT shall prepare right of way plans as directed by the STATE of the existing right of way, at a currently undetermined scale based upon the guidelines set forth in the WSDOT Plans Preparation Manual and the R/W Plans and R/W Monumentation Manual. Right of Way may also be required at extensions of ramps and at intersections with streets outside the corridor area. The limits of work will include the entire corridor area, described elsewhere in this document. An equation station will be established at both the northerly and southerly ends to correlate with

stationing on the existing SR99 right of way plans. All stationing and plan preparation will be prepared in English units. State Plane Coordinates for two (2) monuments tied to "L" or centerline will be shown on each sheet along with the combined scale factor used. Only the alignments used to define the right of way will be shown.

The CONSULTANT shall submit three (3) full size (24" by 36") sets of prints to the STATE for review and approval. Following review, the CONSULTANT shall address and incorporate the comments and deliver one (1) full size set of reproducible drawing, one (1) half size set of reproducible drawings (11" by 17") and two (2) sets of electronic files, one (1) in State Plane Coordinates as a work sheet and one (1) in English/Ground Units as the Right of Way Plans in a .dgn format (MicroStation).

The CONSULTANT shall jointly assist the STATE in the determination of the appropriate disposition of each comment. All conflicting comments will be resolved jointly by the STATE and the CONSULTANT with the final disposition given by the STATE.

PRODUCT:
• Right of Way Plans at 1"= 50' scale (full size)

11.8 Right Of Way Plans For Acquisition

The CONSULTANT shall amend the right of way plans for the final chosen corridor for acquisition as described in Item 11.7 above based on the guidelines set forth in the WSDOT Plan Preparation Manual and the R/W Manual. Right of way may be required at extensions of ramps, at intersections with intersection streets and for partial or full takes on existing private lands impacted by the corridor.

This Scope assumes approximately two hundred (200) parcels are estimated to be impacted.

Requesting permission for surveying on private property and providing traffic control will be the responsibility of the CONSULTANT, if property owners are unwilling to allow access for surveying purposes, the STATE is responsible for acquiring permission through negotiations or court settlements.

The STATE will provide a title report for each "take" site and a Land Description of the required right of way take (unless STATE negotiates with the CONSULTANT to prepare said descriptions). The descriptions will include the alignment used to describe the take, with stations and offsets at the beginning, end and each angle point along the take (as electronic .dgn files).

In conjunction with the final choice of alignment by the STATE, the CONSULTANT shall prepare a Record of Survey of the right of way centerline alignment together

with location of controlling monumentation. The Record of Survey will conform to, but not limited to, requirements as set forth for a WSDOT Monumentation Map as described by WSDOT Instructional Letter 4034.00. The Record of Survey will be prepared in AutoCAD2000 and filed with the King County Recorder's Office.

ASSUMPTIONS:
- Right of Way plans will be prepared for the final route of corridor.

PRODUCT:
- Right of Way Plans at 1"= 50' scale (full size)

11.9 Property Ownership Research

The CONSULTANT shall amend Item E3.5, Alaskan Way Viaduct, Phase 2, Early Action Scope of Services to include research of parcel's building and land assessed values. The current product will be updated to reflect the assessed values.

ASSUMPTIONS:
- This Scope of Services does not include, at this time, preparation of deeds and easements, or real estate assistance to the STATE for property negotiation or acquisition.
- This preliminary Scope of Services also does not address the ordering of title reports, subcontracting, if any, for aerial mapping, and obtaining permits such as for entry onto railroad yard and tracks.

ITEM 12 CONSTRUCTIBILITY / VALUE ENGINEERING

12.1 Construction Sequencing and Staging Analysis

For each of the four (4) build alternatives and the retrofit alternative, a description of a feasible construction sequencing and staging plan shall be developed to a level of detail necessary to support the EIS in analyzing the environmental impacts due to construction. The description shall include a discussion of the alternative in terms of construction sequencing, impacts on adjacent public facilities and businesses, storage of construction materials and equipment, site accessibility, working space, office space, utility relocations, temporary utilities. A feasible construction schedule and overall construction duration will be estimated.

Once the alternatives have been narrowed following the EIS design snapshot, the construction sequencing and staging analysis will be further refined for the remaining Preferred Alternative. The construction schedule and overall construction duration estimate will also be refined.

PRODUCT:

- Construction sequencing and staging plan for four (4) build alternatives and retrofit alternative analyzed in the EIS.
- Refined sequencing and staging plan for the Preferred Alternative following the design snapshot.

12.2 Mobility Management

For each of the four (4) build alternatives and the retrofit alternative a traffic mobility plan will be developed to a level of detail to support the EIS analysis. The mobility management plan will describe measures to minimize disruptions for all modes of transportation currently in use in the AWV corridor during the construction period. These modes include vehicles, trucks, rail, trolley, pedestrian, bicycle, and ferry, both pedestrian and vehicle. Emergency services will also be included.

Once the alternatives have been narrowed following the EIS design snapshot, the mobility management plan for the Preferred Alternative will be further refined.

PRODUCT:

- Traffic mobility plan for each of the four (4) build alternatives analyzed in the EIS.
- Refined mobility plan for the Preferred Alternative following the design snapshot.

ITEM 12 CONSTRUCTIBILITY / VALUE ENGINEERING

12.1 Construction Sequencing and Staging Analysis

For each of the four (4) build alternatives and the retrofit alternative, a description of a feasible construction sequencing and staging plan shall be developed to a level of detail necessary to support the EIS in analyzing the environmental impacts due to construction. The description shall include a discussion of the alternative in terms of construction sequencing, impacts on adjacent public facilities and businesses, storage of construction materials and equipment, site accessibility, working space, office space, utility relocations, temporary utilities. A feasible construction schedule and overall construction duration will be estimated.

Once the alternatives have been narrowed following the EIS design snapshot, the construction sequencing and staging analysis will be further refined for the remaining Preferred Alternative. The construction schedule and overall construction duration estimate will also be refined.

PRODUCT:

- Construction sequencing and staging plan for four (4) build alternatives and retrofit alternative analyzed in the EIS.
- Refined sequencing and staging plan for the Preferred Alternative following the design snapshot.

12.2 Mobility Management

For each of the four (4) build alternatives and the retrofit alternative a traffic mobility plan will be developed to a level of detail to support the EIS analysis. The mobility management plan will describe measures to minimize disruptions for all modes of transportation currently in use in the AWV corridor during the construction period. These modes include vehicles, trucks, rail, trolley, pedestrian, bicycle, and ferry, both pedestrian and vehicle. Emergency services will also be included.

Once the alternatives have been narrowed following the EIS design snapshot, the mobility management plan for the Preferred Alternative will be further refined.

PRODUCT:

- Traffic mobility plan for each of the four (4) build alternatives analyzed in the EIS.
- Refined mobility plan for the Preferred Alternative following the design snapshot.

12.3 Technical Design Review

Technical reviews will be performed by experts for design elements that have proven to be problematic on past projects and for design elements that warrant a review to make certain that the project design approach is cost effective and the basis of the design is founded on sound engineering logic.

One (1) review of the conceptual designs will be scheduled to verify the general feasibility of the four (4) build alternatives and the retrofit alternative. The review will also verify their adequacy from an engineering perspective. Concurrent with this review, it is expected that the STATE will conduct a separate review and the results of both reviews will be documented and responses prepared.

Two (2) reviews will be scheduled during the preferred design. One at the midpoint of design and the second review at the conclusion of the preliminary design. The review will be to a level of detail necessary to verify the adequacy of the design, the accuracy of the information necessary in the preliminary design, and the engineering calculation supporting the design. Concurrent with these reviews, it is expected that the STATE will conduct separate reviews, and the results of both reviews will be documented and responses prepared.

PRODUCT:

- Summary report of technical comments and issue resolution generated during the three (3) technical reviews

12.4 Value Engineering

Once a Preferred Alternative has been identified, value engineering studies will be conducted. The studies will be done simultaneously by the same team and will focus first on specific project elements, then the entire project. The objectives of the value engineering study will be to minimize capital improvement costs, make certain that owner/user requirements will be met, integrate a total systems approach, and enhance quality, performance, and reliability.

Five (5) separate studies will be conducted for the structural alternatives, the construction staging alternatives, and the project as a whole. Each study is anticipated to last one (1) week with teams composed of CONSULTANTS and STATE specialists. Team size will vary depending on the specific study, and the number of specialty disciplines required to analyze all the related design elements. The CONSULTANT's Certified Value Specialist (CVS) will facilitate these sessions.

PRODUCT:

- Individual Value Engineering Reports
- Consolidated Value Engineering Study Report

12.5 Risk Registry for Each Conceptual Alternative

The CONSULTANT shall develop a comprehensive list of risks identified during the evolution of the conceptual design of with each alternative. This Risk Register will be used to facilitate the selection of the Preferred Alternative. Types of risks to be tracked will include those associated with known and unknown existing conditions, design assumptions, anticipated construction sequences and techniques, and operation, maintenance, and use of the facility once constructed. Each risk identified will be registered along with a description of potential problems or consequences that could result and an estimate of the probability of it being realized. Each risk will have a numeric value that is a numeric combination of the severity of the consequences and the probability of occurrence. In order to avoid the appearance that the interpretation and assignment of this risk value is subjective only, the process will be done by a cross disciplinary Risk Team that includes representatives from both the CITY and STATE.

A table of all risks identified for each alternative with a corresponding final Risk Assessment Score will be generated. This risk register will provide input into the preparation of the Environmental Impact Statement.

ASSUMPTIONS:

- Risk Registry set-up is required for each build alternative and retrofit and no-build alternative at eight (8) hours each.
- Maintain all Risk Registers at three (3) hours per week.
- Workshop #1 is a one (1) day workshop in Seattle and includes four (4) hours of preparation plus four (4) hours of de-brief time for the risk registry manager.
- Workshop #2 is a one (1) day workshop in Seattle and includes four (4) hours of preparation plus two (2) hours of de-brief time per participant.
- The following Project Team participants are included in each workshop: urban design, civil, aerial structures, tunnel structures, seawall structures, tunnel systems, utilities, environmental, geotechnical, traffic, risk registry manager.
- The following outside expert participants are included in Workshop #2: geotechnical, tunnel structures, aerial structures, tunnel ventilation, operations and maintenance.

PRODUCT:

- A Risk Registry table will be prepared for each of four (4) build alternatives, the retrofit option and the no-build option.

12.6 Risk Registry for Preferred Alternative

The Risk Register begun in conceptual engineering will be maintained during preliminary design and used to assist in minimizing and mitigating the risks, as far as is possible, during preparation of Preliminary Design documents for the Preferred Alternative. The Risk Register for the Preferred Alternative will also be used in preparation of procurement and contract documents for those activities that will be contracted using a Design Build process. For those activities that will be contracted using a Design Bid Build process, the Risk Register will be maintained throughout Final Design and used to develop specification and special conditions for the builder.

A Risk Assessment Report listing each risk identified and a description of that risk will be prepared. For each risk, the Report will list the design measures taken to mitigate the risk, and the designer's recommendations on dealing with the risk during construction and operation of the facility.

ASSUMPTIONS:

- Maintain Risk Register of Preferred Alternative at two (2) hours per week.
- Hold three (3) one (1) day workshops in Seattle at approximately six (6) month intervals, and includes six (6) hours of preparation plus two (2) hours of de-brief time per participant.
- The following Project Team participants are included in each workshop: urban design, civil, aerial structures, tunnel structures, seawall structures, tunnel systems, utilities, environmental, geotechnical, traffic, risk registry manager.
- The following outside expert participants are included in each workshop: geotechnical, tunnel structures, aerial structures, tunnel ventilation, operations and maintenance.

PRODUCT:

- A Risk Registry table will be prepared for the Preferred Alternative.

ITEM 13 QA/QC

13.1 Quality Control Plan

A Project Quality Control Plan (PQCP) shall be prepared by the CONSULTANT and submitted to the STATE. The CONSULTANT is responsible for both the preparation and implementation of this PQCP. Work associated with implementing this plan will occur under the work element "Implement Quality Control Program."

This plan shall outline the CONSULTANT's measures to make certain that all products are reviewed for quality, and corrected if necessary, prior to submittal to the STATE.

PRODUCT:
- Draft Project Quality Control Plan (8 Copies)
- Project Quality Control Plan (50 Copies)

13.2 Implement Quality Control Program

The CONSULTANT shall implement the project's Quality Control Plan as developed and approved in the Item 13.1. In the event that the STATE determines that it has received products which have not been properly quality-controlled, the STATE will return the products to the CONSULTANT for review and correction, at no additional cost to the STATE. The products will then be re-submitted to the STATE for the standard review and comment period.

Under this work item, the DEIS and FEIS documents will be reviewed for completeness and presentation. Technical reviews of each EIS element will occur at the subtask level.

The environmental documentation will be developed in accordance with the applicable sections of the following, and other laws, regulations and guidance that may apply:

NEPA LAWS

The National Environmental Policy Act [NEPA] (42 United States Code [U.S.C.] Sec. 4321 et seq.)

EPA GUIDELINES

EPA, 1992. Guideline for Modeling Carbon Monoxide from Roadway Intersections - EPA 454/R-92-005. Research Triangle Park, NC.
EPA, 1992a. Users Guide to Mobile 5 (Mobile Source Emissions Factor Model) - EPA-AA-AQAB-92-01. Ann Arbor, MI.

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EPA, 1992a. Users Guide to Mobile 5 (Mobile Source Emissions Factor Model) - EPA-AA-AQAB-92-01. Ann Arbor, MI.

EPA, 1992c. Users Guide to CAL3QHC Version 2.0, A Modeling Methodology For Predicting Pollutant Concentrations Near Roadway Intersections - EPA-454/R-92-006. Research Triangle Park, NC.

NEPA FEDERAL AGENCY REGULATIONS AND OTHER GUIDANCE

Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [C.F.R.] Section 1500.1 et seq.)
CEQ, Preamble to Proposed CEQ NEPA Regulations (43 Federal Register, page 25230, June 9, 1978). This document contains CEQ's detailed explanations of the proposed NEPA Regulations.
CEQ, Preamble to Final CEQ NEPA Regulations (43 Federal Register, page 55978, Nov. 29, 1978). This document contains CEQ's detailed explanations of the final NEPA regulations and discusses the comments raised during the regulatory review process.
CEQ, NEPA Implementation Procedures: Appendices I, II, and III (49 Federal Register, page 49750, Dec. 21, 1984). These appendices list agency NEPA contacts and agencies with jurisdiction by law or special expertise on environmental issue.

CEQ INFORMAL ADVICE.

Memorandum: Questions and Answers About the NEPA Regulations ("40 Questions"), 46 Federal Register, page 18026, March 23, 1981, as amended 51 Federal Register, page 15618, April 25, 1986.
Memorandum: Scoping Guidance, April 30, 1981
Memorandum: Guidance Regarding NEPA Regulations (48 Federal Register, page 34263, July 28, 1983.)

FHWA NEPA PROCEDURES

FHWA: 23 Code of Federal Regulations Sections 771.101 et seq.
FHWA Technical Advisory T 6640.8A, Guidance For Preparing and Processing Environmental and Section 4(f) Documents (October 30, 1987).
FHWA Memorandum, Freedom of Information Act (FOIA) and Environmental Documents, September 25, 1985 and March 27, 1989.
FHWA Memorandum, Implementation of Environmental Policy State - Questions and Answers ("Eleven Questions") (February 28, 1991).
NEPA/404 Merger Agreement, as amended (1995)

SEPA LAWS

State Environmental Policy Act Rules (Washington Administrative Code Chapter 197-11, as amended)

WSDOT WAC AND GUIDELINES

Transportation Commission and Transportation Department State Environmental Policy Act Rules (Washington Administrative Code Chapter 468-12)
WSDOT Environmental Procedural Manual (M31-11), Volumes 1-2.

STATE PUBLICATIONS

Standard Specifications for Road, Bridge and Municipal Construction (M41-10)
Standard Plans for Road, Bridge and Municipal Construction (M21-01)

Design Manual (M22-01)
Plans Preparation Manual (M22-31)
Highway Runoff Manual (M31-16)
Hydraulics Manual (M23-03)
Bridge Design Manual (M23-50)
R/W Manual (M26-01)
Traffic Manual (M51-02)
Northwest Region Hydraulic Report Guide
Roadside Classification Manual
Design Report Documentation Guidelines
Amendments and General Special Provisions
Standard Item Table
Standard drawings prepared by the STATE and furnished to the CONSULTANT shall be used as a guide in all cases where they fit design conditions.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) PUBLICATIONS

A Policy on Geometric Design of Highways and Streets (1984) ("Green Book")
Standard Specifications for Highway Bridges, Twelfth Edition (1977)
A Guide for Highway Landscape and Environmental Design (1970)
Highway Design and Operational Practices Related to Highway Safety (1974) ("Yellow Book")
Any American Association of State Highway and Transportation Officials policy applicable where said policy is not in conflict with the standards of the Washington State Department of Transportation.

US DEPARTMENT OF TRANSPORTATION PUBLICATIONS

Manual on Uniform Traffic Control Devices for Streets and Highways
Highway Capacity Manual (1994)

OTHER PUBLICATIONS

National Electrical Code
USACOE Wetland Delineation Manual.

ITEM 14 TRANSPORTATION ANALYSIS OF ALTERNATIVES

14.1 Special Transportation Studies and Data Collection/Management

In support of the alternatives analysis, a range of special transportation studies are anticipated as needed to meet the requirements of the study process, to respond to comments received from study participants, and to collect and manage specific data.

14.1.1 Special Studies

The CONSULTANT shall compile and make use of available information on the special study topics identified through the course of the study. For budgeting purposes, this work item shall be considered an on-call services work item with up to twelve (12) special study topics being anticipated to support the DEIS and FEIS process. The CONSULTANT shall receive approval by the STATE prior to initiation of any special study.

When the need for a special study is identified, the CONSULTANT shall prepare a problem statement and methodology for completing the special study, solicit vendor cost estimates for data collection (if necessary), and submit as a purchase order to the STATE for approval. The costs to complete the analysis necessary to support the conduct of the study will be forwarded to the STATE for approval. Upon approval by the STATE, the CONSULTANT shall initiate the study. Data collection costs will be assumed as direct expenses and be billed accordingly once approved by the STATE.

The CONSULTANT shall perform analysis of each identified topic to a sufficient level to support the alternatives analysis process within budget authorized for the special study. The CONSULTANT shall document the analysis of the individual topic in a study memorandum that includes the purpose for the special study, methodology used to complete the special study, a summary of the data collected, and results of the analysis. For each memorandum, a draft of the data memorandum will be forwarded to the STATE and CITY project leads for review. The CONSULTANT shall incorporate comments to the special study memoranda as appropriate. A final copy of each special study memorandum will be given to the STATE and to the CITY and incorporated in the Transportation Discipline Report. CONSULTANT efforts to document the need for the special study, develop the appropriate analysis, and develop the special study report are assumed as part of the cost estimates for this item.

Anticipated special studies may include, but are not limited to:

- Pedestrian/bike
- Parking (relocation/replacement due to construction impacts and final configuration)

- Waterfront Streetcar analysis
- Transit routing analysis (bus, monorail))
- Arterial Circulation Studies on the north and south ends
- Stadiums and Seattle Center access study
- Fire station access and emergency access through the corridor
- Emerging transportation technologies and transportation trends
- Loading and Un-loading operations for (taxi, commercial access, charter buses)
- Freight and commercial access (trucks), including over-height routing through the corridor

ASSUMPTIONS:
- Assume up to 12 Special Studies required to support DEIS/FEIS process

PRODUCT:
- Problem statements for each special study (requires approval by STATE prior to initiation of study)
- Purchase orders for data collection costs (requires approval by STATE prior to initiation of data collection)
- Draft Special Study Memorandum
- Final Special Study Memorandum

14.1.2 Traffic Data Collection (Intersection Counts)

In addition to the identified special studies, the CONSULTANT shall collect existing traffic counts as may be necessary to support the transportation planning efforts during the DEIS/FEIS process. Data collected in support of the DEIS/FEIS is assumed to be sufficient to also provide the necessary means to calibrate the micro simulation model proposed under separate scope item.

For budgeting purposes, it is assumed that up to two hundred (200) intersections may require data collection, including description of the intersection geometry, phasing, and AM and PM peak period turning counts. It is assumed that travel times and speeds for vehicles using downtown corridors will also require collection. For budgeting purposes, it is assumed that up to seventy-five (75) passes through the downtown will be necessary to estimate typical AM and PM peak travel times and speeds.

The CONSULTANT shall make every effort to use existing traffic counts and data that may be readily available. The STATE and CITY will provide these data to the CONSULTANT at no cost to the CONSULTANT. It is assumed that the CONSULTANT shall use an outside vendor to collect data when necessary. These costs will be billed as direct costs to the project. CONSULTANT costs related to

managing the data acquisition and analysis will be payable under this item.

In collecting data, the CONSULTANT shall use best practices as established by the industry. The CONSULTANT shall establish a data collection methodology to be approved by the STATE and CITY prior to the collection of data. The methodology report will provide the general procedures for data collection and represent a programmatic approach (rather than an intersection by intersection approach).

ASSUMPTIONS:

- Up to 200 intersections may require data collection and analysis
- Up to 75 passes through downtown using a floating car may be required to collect average travel speeds/travel times
- Data collection costs will be billed as direct costs to the project.
- All permits necessary to conduct data collection will be provided by the CITY and/or STATE at no cost to the CONSULTANT
- Existing data as may be available will be provided by the STATE and CITY
- Intersection counts will be primarily completed using an outside vender. For budgeting purposes, it is further assumed that for downtown intersections, a four person crew will be required to complete each count (to count pedestrian, turning movements, and report signal information). It is assumed that each count will be for both the AM and PM periods (total of 6 hours) and that up to 200 counts will be required. Given the above assumptions, and the ability to obtain a volume discount by going with a single intersection count vendor, it is assumed that each intersection count will generate a direct expense of approximately $850 in cost.
- Pedestrian counts, if needed separately from the intersection counts, will be primarily completed using an outside vendor. For budgeting purposes, it is assumed that 10 person days (9 hours per day) will be required to complete AM and PM counts, distributed throughout the study corridor. A cost of $500 per crew person day is estimated, based on the a volume discount and the ability to select a single vendor to complete both the intersection and pedestrian counts.

PRODUCT:

- Data collection plan (to be approved by the STATE and CITY)
- Purchase orders for data collection costs
- GIS map of intersection count plan and schedule for collection – to be approved by the CITY
- Data files (hard copy and digital) for all intersections for which traffic turning movements are collected

14.1.3 Data Management – GIS support

The CONSULTANT shall maintain a database of all project-related GIS data in a central location or library. The CONSULTANT shall provide sufficient staffing to maintain a consistent GIS data platform across disciplines and shall make available to the STATE, CITY, and technical team access to the data platform upon request. For purposes of budgeting, it shall be assumed that ArcView will be the GIS software of choice. Individual discipline staff shall coordinate with the CONSULTANT to maintain consistency. Project-related GIS data that are created by team members other than PB shall be provided to PB and shall be included in the GIS database. The CONSULTANT shall maintain a copy of all data licenses and shall notify the STATE if modifications and/or new data sets requiring financial commitment are to be secured. The STATE will be responsible for the purchase and/or acquisition of data sets required for the study that are not otherwise included in the scope of services to be provided by the CONSULTANT. The CONSULTANT shall develop once every two (2) months a summary data report that highlights appropriate protocol for accessing the data, data available, and other related items. This series of reports will be brief and intended for team coordination. It will be distributed electronically to appropriate team members and to the project file. For budgeting purposes, it is assumed that to maintain this data set that a quarter-time GIS specialist/transportation planner is required throughout the life of the study.

At the completion of the project, electronic coverages developed for the project shall be provided digitally to both the STATE and to CITY in accordance with any licensing requirements that may have been imposed on the data. These coverages shall be catalogued upon final delivery in a format acceptable to the STATE and CITY.

ASSUMPTIONS:

- ArcView GIS platform will be the program of choice for all GIS work on the project
- Costs to acquire available existing data sets and coverages and/or licensing agreements will be the responsibility of the STATE and/or CITY
- Assume 48 electronic GIS Protocol reports, to be distributed every other month via e-mail

PRODUCT:

- GIS reports detailing data levels and availability
- Electronic GIS coverages developed for the study to be distributed to STATE, CITY and technical staff (assume one (1) every two (2) months)

14.2 Complete Validation of 1998 Base Year Travel Model and Development of 2030 No-Action Networks

Building upon the work initiated as part of the Early Start scope of work, the CONSULTANT shall complete the validation of a 1998 Base Year travel network to include both transit and highway refinements to a consistent level of detail for the study corridor.

Once the 1998 travel model validation is completed, the CONSULTANT shall incorporate the validated 1998 network revisions into the future base 2030 travel network so that transit and highway networks are defined at a compatible level of detail. For purposes of regional consistency, the 2030 no-action will assume only committed projects as those with identified funding sources.

The CONSULTANT shall develop a Technical Memorandum detailing the validation of the PSRC model. This technical report will be a joint Viaduct and Trans-Lake project validation report. Results from the analysis of travel forecasting and traffic operation analyses, conducted as part of the validation process, will be documented in this report. The CONSULTANT shall develop a working memorandum documenting the fully validated 1998 Base Model and future 2030 No-Action models. This memorandum will remain a working memorandum. Once the modeling for the build alternatives is completed, documentation of those efforts is to be added.

PRODUCT:

- A Technical Memorandum to include PSRC model base year (1998) validation emphasizing the Alaskan Way Viaduct corridor (note: to be a joint report, including Trans-Lake validation).
- A future-year 2030 model chain representing the No-Action for the Alaskan Way Viaduct corridor (and assuming only committed projects with documented funding sources)

14.3 Traffic/Transportation Analysis of Alternatives

This work item is identified in three (3) primary phases. To support the continued refinement of preliminary alternatives, an initial set of modeling and transportation analysis is identified. Once the alternatives are defined for analysis as part of the NEPA/SEPA process, a second more detailed level of support is envisioned. Following the detailed analysis, documentation of the entire process results in the Transportation Discipline Report. The intent of the Transportation Discipline Report is to provide information necessary to support the NEPA/SEPA process and to provide the basis for any additional analysis that may be needed to support permitting and construction.

14.3.1 Refinement of Preliminary Build Alternatives

The CONSULTANT shall refine travel networks to represent each of the preliminary study alternatives to be tested (assuming up to 8 independent model runs to accommodate the analysis of 4 build alternatives). The focus of these refinements will be to support the further development of preliminary alternatives to a point necessary to determine viability.

Transportation elements to be considered will be based on input from the project management team and the public and may include no-action, congestion management strategies, high occupancy vehicle, managed lane, toll facility, urban arterial, bicycles, pedestrian, transit service improvements, intelligent transportation technologies, and combinations of these modes. Existing rail, street trolley, transit, and ferry transit modes will be incorporated into the model as appropriate. These elements will be matched with the engineering considerations and concepts being developed and evaluated through the environmental process. Furthermore, analysis will be conducted assuming a strict "committed as funded" approach to other regional projects.

The CONSULTANT shall perform sufficient detailed traffic analysis using Highway Capacity Manual (HCM) methodology to assist in the refinement of Preliminary Alternatives. In addition to HCM analysis, selected arterial corridors (links) may be analyzed using SYNCHRO or similar micro simulation software to obtain an understanding of impacts and benefits to arterials immediately affected by alternative connections. Data collection needs to support the transportation analysis are included as a separate item under Item 14.1.

ASSUMPTIONS:

- Four (4) Preliminary Build Alternatives are to be refined under this preliminary analysis.
- Up to 5 arterial corridors may require simulation in order to refine the preliminary build alternatives

PRODUCT:

- Refined 2030 model chains representing each of the identified Preliminary Alternatives.
- Transportation analysis memorandum for the Preliminary Build Alternatives (10 Copies + electronic copy).

14.3.2 Transportation Alternatives Analysis

Once the alternatives are defined for the NEPA/SEPA process, the traffic and transportation planning efforts will converge into an effort to detail the potential impacts and benefits from proposed improvements, quantify intersection and arterial impacts that may require mitigation, and support the environmental process. It is anticipated, because of the physical constraints of the identified corridor, that widely differing options for ramp locations and intersection configurations will not exist. Furthermore, it is assumed that alternatives will be identified in terms of a multimodal approach to meeting future travel needs, requiring the analysis of alternatives to respond to the various potential modes that might be defined as part of each alternative.

For budgeting purposes, it is assumed that six (6) alternatives will be identified for analysis during the environmental process (four (4) multi modal build alternatives, plus a No-Action and a Retrofit Alternative).

The CONSULTANT shall develop model chains representative of these alternatives and conduct model runs using the AWV version of the PSRC model (year 2030). For budgeting purposes, up to ten (10) model runs are assumed to support the analysis of alternatives. .

The CONSULTANT shall identify the Zone of Influence for traffic and transportation analysis. The Zone of Influence will be approved by the STATE and CITY prior to alternatives analysis.

The CONSULTANT shall perform necessary detailed traffic analyses, including HCM methodologies and modal analyses to support the evaluation of alternatives. This may include limited micro simulation analyses of arterials within the corridor, if deemed necessary to the evaluation process.

The CONSULTANT shall conduct detailed traffic analysis on the Base and 2030 No-Action to identify existing and future traffic conditions at major intersections, and arterial and mainline links, potentially affected by access options to be considered within the Viaduct Corridor (analysis to include up to one hundred (100) intersections as candidates for analysis). It is assumed that both the AM and PM peak hours will be analyzed as part of this analysis. In addition to the arterial network, the analysis will provide an estimate of the No-Action pedestrian, bicycle, parking, ferry, freight, at-grade rail operations, taxi and tour bus operations, and transit conditions that may be affected by modifications to the Viaduct. The CONSULTANT shall develop a working memorandum detailing the 1998 and future base conditions within the zone of influence of the proposed project.

Conduct traffic and transportation analysis to support the evaluation and analysis of potential alternative alignments and facility operational conditions (i.e., at-grade, aerial and depressed operations). Establish and confirm the baseline and design data

to be used for the evaluation and analysis of conceptual alternatives. Inventory existing streets impacted by the facility and/or alternatives (i.e., number of lanes, signals, pedestrian facilities, bicycle facilities, transit, parking, at-grade rail crossings). Evaluate the operational effects of the facility on surface and cross street mobility (including bicycle, pedestrian, and transit and rail operations, and parking). Evaluate the effects of the alternatives on the local street operations. Identify conceptual canalization and signalization schemes for general traffic operations. Coordinate with SEATRAN to identify local street signalization requirements, standards and operational needs.

Analysis will be conducted assuming a strict "committed as funded" approach to other regional projects. Once a Preferred Alternative is identified, a series of up to three (3) sensitivity tests on the Preferred Alternative are envisioned to incorporate an understanding of the effects from completing or modifying SR 509, I-405, SR 520, I-90, and the Monorail within the context of proposed AWV improvements.

The CONSULTANT shall review existing and available transportation and land use plans to determine the compatibility of each alternative with these existing plans. The CONSULTANT shall identify where modifications to existing plans are required to accommodate each of the alternatives.

The CONSULTANT shall develop a safety analysis, consistent with the requirements to establish an access plan as defined by FHWA/WSDOT identifying safety issues that might exist within the corridor of analysis and how these identified concerns may be addressed by the proposed Alternatives.

Once a preferred Alternative is identified, the CONSULTANT shall develop a year-of-opening demand model chain and develop year-of-opening forecasts to support mitigation planning. For budgeting purposes, it is assumed that up to three (3) model runs of the year-of-opening will be developed. The CONSULTANT shall develop intersection analyses for the year-of-opening as may be needed to support mitigation planning.

The CONSULTANT shall identify and quantify the relative construction impacts anticipated with each of the alternatives. Construction impacts will be defined sufficiently to understand the differences between alternatives and to distinguish the benefits and impacts of each (including impacts to vehicular movements; transit, pedestrian, bicycle, freight, at-grade rail operations, parking, and ferry operations). For planning purposes, construction would be anticipated to begin in 2005.

The CONSULTANT shall coordinate with other known studies on-going in close proximity to the Alaskan way viaduct corridor to make sure that potential impacts and recommendations presented by other studies are incorporated into the analysis of AWV alternatives.

The CONSULTANT shall document analysis findings in tabular and graphical format to be included in the Transportation Discipline Report.

PRODUCT:

- Working memorandum documenting the 1998 Base and 2030 No-Action Modeling results for arterial and main-line SR 99 traffic conditions (including intersections affected by the Viaduct).
- Revised model chains incorporating the alternative definitions identified for the NEPA/SEPA process. For budgeting purposes, four (4) build alternatives, plus a No-Action and a Retrofit Alternative (total of 6) are assumed.
- Revised model chain for year-of-opening to support traffic mitigation planning. For budgeting purposes, up to three (3) model runs for the Preferred Alternative is assumed.
- Detailed traffic and transportation analyses for identified alternatives.
- Tables and graphs identifying the impacts and benefits of the alternatives being considered.
- Traffic design technical memorandum detailing current traffic conditions and potential impacts of each conceptual alternative.

14.3.3. Comprehensive Access Control Plan

Based on the Alternatives Analysis, a comprehensive access control plan will be developed for the preferred alterative. The Access Plan will represent a systems plan approach to access management and establish a comprehensive freeway plan for controlling access between the identified termini of the Preferred Alternative. The purpose of the Access Control Plan will be to identify the level of access control, the planned access points, and the target level of service to be maintained on the main-line capacity of the Preferred Alternative. Because of the complexity of the corridor, it is anticipated that the proposed Access Control Plan will represent the build-out plan for the corridor, and no additional access points would be contemplated beyond those identified in the Preferred Alternative.

The Access Control Plan will:

- Identify the location and design of the proposed access points;
- Identify compatibility with existing land use and transportation plans, and where those access plans do not comply with existing land use/transportation plans identify the steps necessary to modify the land use/transportation plans to include the proposed access improvements;
- Provide operational and accident analysis of each access point, showing that the proposed access point is integrated with the design of the overall Preferred Alternative and the effect of the access point on operations;
- Identify any arterial coordination elements that must be met as part of the

Preferred Alternative.

The Access Control Plan will be evaluated as part of the NEPA/SEPA process and be incorporated into the Transportation Discipline Report. It will be coordinated with the design work and environmental work items. In addition, the Access Control Plan shall be summarized into a stand-alone document that can be used to explain the plan to the public and to affected interests.

The study area defined for the Alaskan Way Viaduct alternatives analysis extends from just south of the Spokane Street Viaduct to just north of the Battery Street Tunnel. This represents the entire length of the limited access facility as identified in the Washington State Highway Plan. Access Point Decision Reports are required where additional access is being proposed within an existing Interstate or State freeway corridor or where existing freeway access is being modified. In the Alaskan Way Viaduct Corridor, the build alternatives would substantially result in a new freeway corridor – differentiated from the existing corridor by either vertical or lateral separation. Access Point Decision Reports would be required where the new Alaskan Way Viaduct replacement alternative connects back into the regional transportation network if those connections occur at an Interstate or a limited access freeway identified on the Washington State Highway System Plan. Assuming the identified study area, no Access Decision Reports are anticipated as required and are not included in this scope of work.

Should the No-Action or Retrofit Alternatives be selected as the Preferred Alternative, any modification to existing ramp configurations on the Alaskan Way Viaduct would require that an Access Point Decision Report be completed. Access Decision Reports, required for modifications to the No-Action or Retrofit Alternative are not included in this scope of work.

ASSUMPTIONS:

- Access decision reports are not required for the Build Alternatives because these actions would represent a wholly new limited access corridor design.
- Access decision reports that might be required under the No-Action and/or the Retrofit Alternative are not included in this Scope of Work.

PRODUCT:

- Draft Access Control Plan (revised plan to be incorporated into Transportation Discipline Report).
- Summary Access Control Plan (Draft and Final)

14.3.4 Transportation Discipline Report

In support of the DEIS process, the CONSULTANT shall develop a Transportation Discipline Report to document the traffic and transportation analysis conducted in support of the NEPA/SEPA process. The Transportation Discipline Report will be a comprehensive overview of the development and screening of concepts, identification of preliminary alternatives, and the transportation analysis of those alternatives conducted by the CONSULTANT. It shall also contain documentation of any special study conducted in support of the Alternatives Analysis process.

The format of the report will be such that it provides an executive summary at the beginning of the report, provides data and information in tabular and graphical format whenever possible. Large data tables and raw data will be referenced or provided in an appendix, but is not necessarily to be placed in the body of the report. The focus of the report will be to document the transportation analysis in an easily referenced and readable fission.

The CONSULTANT shall develop an outline prior to development of the report for circulation within the CONSULTANT and client team. The discipline report is anticipated to cover not only impacts to vehicle traffic, but also the analysis of transit, pedestrian, bicycle, ferry, freight, at-grade rail crossings, and other special operations. Following the development of the outline and approval by the STATE and CITY, the CONSULTANT shall draft a report, conduct appropriate internal quality assurance, circulate the draft among the client team for comment, revise the draft report, and publish a the report as a final stand-alone document.

PRODUCT:
- Outline for transportation discipline report (electronic only)
- Draft transportation discipline report (10 Copies + electronic copy)
- Final transportation discipline report (15 Copies + electronic copy)

14.4 Traffic Mitigation (*Micro Simulation*) Model

This work item is identified to develop the necessary tools to support traffic mitigation and construction planning. Regardless of what alternative is selected, construction is anticipated in the Seattle central business district and surrounding neighborhoods. Micro simulation tools are required to provide an adequate level of technical analysis that may be needed during the implementation phase of the project. A comprehensive micro simulation tool is required that will allow evaluation of both freeway and arterial impacts/benefits simultaneously. This tool will also be helpful during negotiations of a design-build delivery process in that it can be used to lower potential risks to individual design-build contractors who may be required to demonstrate a certain level of performance in terms of traffic mobility during construction.

The recommended micro simulation tool of choice for construction mitigation planning is the INTEGRATION Software Program. The STATE will provide one copy of the most recent version of Integration for use by the CONSULTANT. The STATE has an existing copy of Integration, but will require an update. The CONSULTANT shall assist the STATE logistically in obtaining the update to the existing STATE license. The CONSULTANT shall supplement the STATE's copy of Integration with an additional license to be purchased by the CONSULTANT. The CONSULTANT shall provide two (2) high-end PC computers on which to run the micro simulation programs.

The CONSULTANT shall develop a detailed methodology plan for implementing a micro simulation model of the AWV Corridor. The extent of the model will likely NOT include the entire downtown network due to software limitations. However, the micro simulation model will be of sufficient detail to allow analysis of detour and construction impacts as will be necessary in the initiation of the project implementation phase.

At a minimum, the micro simulation model will include the Alaskan Way Viaduct, Alaskan Way, Western and first Avenues, and the adopted replacement alternative (when it becomes available). The micro simulation tool will include sufficient parallel and crossing arterials to allow proper assessment of traffic diversion/mitigation impacts.

Ferry loading and off-loading operations (land-side only) will be incorporated into the analysis capabilities of the model. Transit will be incorporated within the ability of the software. Heavy rail operations along the B&N railroad will be incorporated in the model where they effect traffic movements, but the B&N rail yards in the vicinity of the Port of Seattle will not be explicitly incorporated. In the Mercer Corridor, Mercer, Eastlake, and Broad streets will be incorporated into the micro simulation network. I-5 mainlines and express lanes will also be incorporated where appropriate. The north-south limits of the micro simulation modeling efforts will generally be South Lake Union to approximately the First Avenue South Bridge. The east-west limits will generally be I-5 to Elliot Bay. Only those arterials absolutely necessary to the micro simulation analysis will be incorporated in the model. The CONSULTANT shall develop a draft methodology report and circulate it within the client team. After receiving comments, the CONSULTANT shall incorporate those comments and issue a final working methodology plan prior to implementation. This methodology plan will remain a working plan, to be updated as necessary during the implementation of the micro simulation model.

The CONSULTANT shall collect data necessary to develop and validate a simulation model for the AWV corridor. The CONSULTANT shall make every effort to use existing data resources. Both the CITY and STATE will provide available data (e.g., signal phasing, signal timing, street configuration, traffic counts, turn counts, tube counts, vehicle occupancy observations, etc.) required for model implementation. Where data are missing or insufficient, the CONSULTANT shall identify the data

need, identify a vendor to collect the identified data, solicit a price proposal and forward this information to the STATE for approval. Once approved and accepted by the STATE, the CONSULTANT shall oversee the collection of the data. Expenses due to data collection shall be forwarded to the STATE as a direct expense. All data collection shall be conducted using best-practice procedures and be performed in a safe and efficient manner. The CONSULTANT shall provide to the CITY and STATE a copy of any raw data collected. Data collected as part of the AWV study shall become the property of the STATE.

Because the purpose of this tool is to aid in the analysis of construction detour planning, the tool will be designed to provide an average peak hour that can then be used to analyze typical peaking conditions (including AM or PM peak, special event mobility planning, etc.).

Once the micro simulation model network is developed, the CONSULTANT shall validate the Integration model to reflect a reasonable representation of traffic flow and key bottleneck areas. The CONSULTANT shall develop a validation report that documents the development of the micro simulation network and the validation results. The CONSULTANT shall circulate the validation report within the client team for comment and incorporate comments as appropriate.

Both the STATE and the CONSULTANT acknowledge that there is some level of risk in developing a micro simulation model. Such models are challenging to develop and use. The level of validation achieved will be viewed within the context of this risk when defining the level of accuracy desired. In recognition of this, the CONSULTANT shall review with the STATE and City of Seattle every two (2) months the status of the micro simulation model. Should problems be identified or difficulties be encountered during the development of the micro simulation model that require addressing, the STATE and the CONSULTANT shall work together to formulate a corrective action. This corrective action may include redefining the objectives for the micro simulation model or may include a determination on the part of the STATE to stop the work activity related to the micro simulation modeling efforts. Should a cessation of work activity on the micro simulation model be so ordered, the CONSULTANT shall provide the STATE with documentation of the model at the time the stop work order is issued and shall convey to the STATE all technical materials related to the modeling effort. The CONSULTANT will be compensated for all good faith work efforts completed on this work item prior to the notice to stop work.

ASSUMPTIONS:

- The CONSULTANT shall secure a service advisory and support fee from Professor Rakha at Virginia Tech University, the US supplier of the INTEGRATION software. The service advisory fee is assumed to provide a contingency that would allow the CONSULTANT and STATE to tap the technical support of Dr. Rakha, should technical issues arise that might warrant his participation in an advisory role. It is assumed, over the life of the contract, that up to $15,000 of technical support may be warranted. The CONSULTANT shall have the authority to use up to the first $5,000 increment of this technical support fee on their own authority. The remaining $10,000 shall only be available upon the STATE's consent.
- The CONSULTANT shall assist the STATE in updating its version of the INTEGRATION software. The CONSULTANT assumes that the fee from the maker of INTEGRATION for this update shall be approximately $3,000. Should the actual cost of the software update exceed this amount, the STATE agrees to pay for the full amount of the software upgrade. Facilitation by the CONSULTANT and the billing of the direct costs through the CONSULTANT's contract is solely for the convenience of the STATE.

PRODUCT:

- Briefings to the STATE and City of Seattle every 2 months to detail the progress on the development of the micro simulation model (assume 4 briefings).
- Methodology plan (draft and working plan – 15 copies)
- Data collection notices (to be identified when specific data are identified to be collected)
- Validation memorandum (draft and final – 15 copies)

14.5 Construction Planning (*Preferred Alternative*)

The CONSULTANT shall use the validated micro simulation model, developed in work item 14.4, to evaluate construction staging and traffic mitigation planning (construction detours) for the identified Preferred Alternative. The focus of this analysis will be to provide both the CITY, STATE, and the potential constructor with a better understanding and of potential mobility impacts through the AWV corridor during project implementation. The intent of this analysis is to develop macro-scale mobility plans that will enable the constructor to develop detailed detour plans that meet the City's and STATE's specified mobility requirements. These plans may include identification of basic detour concepts, advance construction elements critical to maintaining mobility, and specific operations plans (i.e., WSDOT Ferry operations and Seattle Fire Department operations on the waterfront during construction). It is assumed that the implementation of the corridor solution will be through a design-build process. For this reason, detailed detour planning is not incorporated in this

work item. The focus of this work item will be to establish an overall detour concept that will maintain the identified mobility goals to be identified during the course of the study.

The CONSULTANT shall coordinate with the CITY, major event generators in and around the corridor, the STATE and sports facilities to identify major events that might occur during the construction period of the Preferred Alternative. Additionally, the CONSULTANT shall identify up to ten (10) construction phases for the Preferred Alternative (including major utility relocations) and develop proposed detour concepts that maintain mobility during the construction process that address the needs of the Preferred Alternative and maintain the ability to access special events (including stadium events).

The CONSULTANT shall develop a draft documentation report of the micro simulation analysis completed as part of this work item. This draft report will include the revised validation report, revised methodology report, and a summary of the findings generated from the analysis conducted. The draft report shall also include a user's instruction manual for the AWV micro simulation tool as applied to the Preferred Alternative. The user's instruction manual will pertain specifically to the AWV micro simulation tool and will assume that the reader has a basic understanding of the software package. After circulation of the final documentation report to WSDOT and the CITY, the CONSULTANT shall incorporate comments into a final documentation report.

The CONSULTANT shall package the micro simulation model developed for the AWV corridor, construction analysis, and the final documentation report in a format that can be provided to prospective design-build contractors as a tool for planning their proposed work approach. The micro simulation network and AWV model will be provided as part of this package in a digital format, such that someone having the appropriate software could load and conduct micro simulation analyses using the AWV micro simulation model for analysis of construction phasing.

Note, this work item is dependent upon the successful completion of work Item 14.4. Should Item 14.4 be terminated by the STATE or unsuccessfully completed by the CONSULTANT, Item 14.5 shall not be initiated without approval of the STATE of an alternate methodology or approach for completing the work identified.

PRODUCT:

- Draft and final documentation report with, including user documentation (10 Copies)
- Digital copy of simulated Micro-Simulation model developed for AWV Corridor (10 Copies on CDs).

14.6 Emergency Contingency Plan

Working closely with the STATE and CITY, the CONSULTANT shall coordinate

with emergency management agencies responsible for emergency events in the Alaskan Way Viaduct Corridor. The CONSULTANT shall assist the STATE and City of Seattle by providing technical information from the on-going alternatives analysis that may be necessary for the State, City and other emergency management agencies to formulate an emergency response plan.

The CONSULTANT recognizes that the STATE and CITY currently have an emergency response plan. This plan shall form the basis for any future plan revisions. The CONSULTANT shall assist the STATE and CITY to review this plan and shall provide coordination as necessary based on the other planning activities identified for the NEPA/SEPA process.

PRODUCT:

- Participation in coordination meetings with emergency management agencies and provide technical input from other transportation planning work items. (Assume 5 meetings)

14.7 Documentation of WSF Impacts

In recognition of the potential implication of a project within the Alaskan Way Viaduct on the operations and facilities of the Washington State Ferries, the CONSULTANT shall compile a special report on potential impacts and opportunities related to the WSF operations at the Coleman Dock. This report will be developed concurrently with the Transportation Discipline Report so that the WSF can understand implications to their facilities and articulate their needs to the STATE as part of the NEPA process.

The CONSULTANT shall coordinate with WSF on a bi-monthly (once every two (2) months) basis for the duration of the environmental process to coordinate on-going planning and design efforts. Minutes from these meetings will be kept by the CONSULTANT and provided to the STATE upon request. Minutes from the meetings will be summarized in the special report.

The CONSULTANT shall review the existing master plan for the Colman Dock (South Downtown Waterfront Master Plan), summarize the transportation impacts to ferry operations, and document recommended changes to the WSF Master Plan.

As a basis for planning, it is assumed that WSF operations from the Coleman Dock are to be maintained according to current plans, or mitigated via a coordinated plan with WSF.

The special report will include pertinent information related to the WSF, including:

- Traffic estimates and potential impacts from proposed alternatives to both

access routes and internal circulation

- Potential construction impacts to Coleman Dock and surrounding docks and proposed mitigation approach
- Potential impact on proposed plans for a future regional passenger only ferry terminal at Pier 48
- Changes in access routes leading to WSF and required rerouting options for construction
- Analysis of pedestrian, non-motorized, and transit access to the site
- Description of potential changes to Alaskan Way
- Description of opportunities for improved remote holding area for ferry queuing
- Documentation of the public involvement process leading to the recommendations affecting the WSF operations at Coleman Dock

The report will not include projections of revenue impacts to the WSF, but shall include opinions of cost related to improvements that may be necessary to facilitate WSF operations at Coleman Dock. The report will not consider potential impacts to WSF operations outside of downtown Seattle.

It is anticipated that this work item primarily represents a compilation and documentation of work completed under other work items. The purpose is to provide WSF with a consistent document that can be used as a briefing tool for WSF upper management.

ASSUMPTIONS:

- Impacts to WSF services in Downtown Seattle will be the focus of this analysis and compilation
- Financial impacts to WSF services will be the responsibility of WSF and will not be estimated directly as part of this scope item.
- Public involvement efforts identified as part of the Alaskan Way Viaduct project are sufficient to meet the public involvement requirements of WSF for modifying the South Downtown Waterfront Master Plan.
- Digital copy of final WSF Impact Report will be suitable for use as an appendix to the South Downtown Waterfront Master Plan.
- WSF, and not the CONSULTANT, will be responsible for amending the South Downtown Waterfront Master Plan.

PRODUCT:

- Meeting minutes for coordination with WSF (Assume 10 meeting)
- Draft WSF Impacts Report (Assume 10 copies)
- Final WSF Impacts Report (Assume 10 copies + 1 digital copy)

ITEM 15 PERMIT PREPARATION

15.1 Environmental and Regulatory Permit Strategies

This item includes four (4) basic steps applicable to all permit applications.

Development of Civil Plans and Engineering and Environmental Analyses

Architectural plans and information needed for permit applications will be integrated into project alternatives designs and NEPA analyses to "front load" into the NEPA process as much of the analytical requirements for the actual regulatory decision-making as is possible. This will stimulate the early identification and resolution of the key regulatory issues and mitigation requirements for the alternatives. This will also enable the Project to initiate and pursue the major regulatory approvals needed for construction in parallel with the NEPA process and minimize the potential for significant post-ROD regulatory delays. The CONSULTANT shall coordinate with TEAM members responsible for Civil and Architectural plans and technical studies needed for each application.

Agency Coordination

The successful front-loading of the regulatory analyses for the project early into the NEPA process and the tracking of those integration efforts through the NEPA process and into permitting will require extensive and continual coordination with many agencies throughout EIS and into the preparation of permit application and supporting documentation. The CONSULTANT shall work with and under the direction of WSDOT and the City of Seattle to stimulate and assist in the execution of these coordination efforts at both technical and policy levels. This coordination allows the permit coordinators and technical experts to establish effective lines of communication early, to identify, analyze and resolve analytical and regulatory issues as they arise; to avoid redundancies or inconsistencies in related analyses and permitting processes; and to promote the timely and successful resolution of issues. Close intergovernmental coordination through the NEPA process and into the permitting processes will also promote the development of coherent and efficient mitigation strategies that can be folded into the relevant Federal, state and local regulatory approvals to maximize the effectiveness and efficiencies of the mitigation efforts. Coordination is assumed to continue for six months following formal permit submittal.

Preparation of Permit Applications

The CONSULTANT shall draft permit applications for the Preferred Alternative and construction options in coordination with the regulatory agencies. The CONSULTANT shall coordinate permit applications to avoid the preparation of studies and analyses that are redundant with the NEPA work and to facilitate the

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Permits required include:

JARPA

A single JARPA (Joint Aquatic Resources Permit Application) form will be prepared and submitted for the COE permits (Section 10 and 404), Washington State resource agencies (Dept. of Ecology and Dept. of Fish and Wildlife) and for the City of Seattle Shoreline Substantial Development Permit (SDP) following guidance provided by WSDOT Environmental Procedures Manual M31-11. However, information required for the SDP has an additional focus on the land use code not common to the resource permits and is therefore outlined below.

Section 401 Water Quality Certification

Washington State Dept. of Ecology (Ecology), Federal Water Pollution Control Act 1972 (FWPCA) Section 401 - 33 U.S.C. 1341; 33 C.F.R. Part 320; RCW 90.48.260; Ch. 173-225 WAC, The purpose is to certify compliance with state water quality standards. The 401 Certification is required before a Section 402 NPDES, Section 404 Dredge and Fill Permit are issued. Certification will examine effects of proposed permit on conventional and toxic standards established for designated uses (fishable/swimmable). Application is made through the JARPA process.

Section 404 Individual Permit

U.S. Army Corps of Engineers (Corps), FWPCA – Section 404: 33 U.S.C. § 1344; 33 C.F.R. Part 330, Dredging and filling that occurs in waters of the United States requires a Section 404 permit. Permits will examine the source, purpose, type and composition of discharge materials; methods of disposal or impoundments; impacts on the physical and biological aquatic environmental and lack of practicable alternatives. Application is made through the JARPA process.

Section 10 of the Rivers and Harbors Act of 1899

33 U.S.C. 403, U.S. Army Corps of Engineers (Corps), Act requires approval for wharf, pier, dolphin, boom, weir, breakwater, bulkhead, jetty, or other structures in navigable waters or any port (jurisdiction is dependent on location of the harbor line). Application is made through the JARPA process.

Endangered Species Act (ESA) Section 7 Consultations

Pursuant to Section 7(a)(2) of the ESA 16 U.S.C. § 1531-1543; 50 CFR 402 (the consultation regulations); the Federal agencies that will be funding or issuing permits for the project will be required to consult with National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) t to determine the effects of their actions on plant or animal species that are listed as endangered or threatened under

the ESA. Item 4.5 provides for preparation of multiple Biological Assessments and other ESA-related documentation to meet ESA requirements and assist in the successful and timely completion of these consultations. These assessments will also examine the effects on marine fisheries essential habitats under the Magnuson-Stevens Fishery Conservation and Management Act.

Hydraulic Project Approval (HPA)

Washington State Dept. of Fish and Wildlife (WDFW), RCW 77.55.100; WAC 220-110; Any project that uses, diverts, obstructs or changes the natural flow or bed of any waters of the state requires a hydraulic project approval (HPA) from WDFW. The purpose of the HPA is to protect fish life. Application is made through the JARPA process.

PRODUCT:
- Draft Permit Applications
- Final Permit Applications

15.3 Non-Resource Federal Approvals

Historic/Archaeological Approval

Washington Office of Archaeology and Historic Preservation (OAHP), Section 106 of National Historic Preservation Act of 1966 - 16 USC § 470; 36 C.F.R. Part 800; RCW 27.34, Project planning must take into account historical, architectural or archaeological properties within the project area. The purpose of this review is to minimize adverse impacts on historical resources. Up to eight (8) meetings will be held with local and state historic authorities and attended by up to three (3) CONSULTANT staff persons. This item will complete Section 106 Memorandum of Agreement based information developed in Items 6.11 and 6.12.

Air Quality Conformity for Regional Transportation Improvement Plans

Environmental Protection Agency (EPA), Clean Air Act - 42 USC 7401; RCW 70.94 RCW; WAC173-420, Transportation projects must be included in the Regional Transportation Improvement Plan (RTIP) to meet local air quality requirements. The TIP program makes certain that there is conformity with national ambient air quality standards. Conformity will be confirmed in writing from the Puget Sound Clean Air Agency.

PRODUCT:
- Final Section 106 Memorandum of Agreement
- Letter confirming air quality confirmation

15.4 Land Use Approvals

Plan Review

The CONSULTANT shall assist the STATE and the CITY in preparing a plan for organizing the compilation, transmittal, and collation of CITY plan review comments. The CONSULTANT shall facilitate the resolution of critical CITY plan review comments within the timeline of the project schedule.

City Permit Management

The CONSULTANT shall assist the STATE and the CITY in preparing a plan for streamlined CITY permit reviews and approvals. The CONSULTANT shall organize a process whereby the CITY's land use and environmental permitting is coordinated with street use and utility construction permits. In this regard, the CONSULTANT shall assist the CITY in convening a focused group of CITY departmental staff persons to proactively manage the permit process. As an early work item, the CONSULTANT shall assist the STATE and the CITY in determining which CITY permits will be obtained by the owner (the STATE or CITY), or by an (anticipated) design-build contractor. Note that some features of the project may be owned by the STATE and others owned by the CITY.

Shoreline Substantial Development Permit

City of Seattle DCLU, RCW 90.58 RCW; WAC 173-27; SMC 23-60, Substantial Development permit for any development or construction activity located within 200' of the waters of the state. The purpose of this permit is to preserve the public interest in shoreline areas by limiting development to permitted uses planned for in local Shoreline Master Programs and Shoreline Development Regulations. Up to six (6) meetings will be held with DCLU to review shoreline development issues, attended by up to three (3) CONSULTANT staff persons. Application will be by the JARPA process.

15.5 Construction Approvals

Construction Stormwater General Permit

Section 402 NPDES/ State Waste Discharge Individual Permit for Process Water and Storm Water, 40 CFR 122, 55 CFR 47990, 57 CFR 11394, RCW 90.48, WAC 173-226, General Permit Issued 10/4//2000 Notice of Intent (NOI) application for coverage under General is required for those construction activities which will disturb five (5) or more acres of land. The Stormwater Pollution Prevention Plan (SWPPP) details Best Management Practices (BMP) to prevent erosion from occurring and to minimize the transport of sediments on and from the site. A general SWPPP and Monitoring plan will be prepared. Site specific SWPPPs and Monitoring plans will

be prepared when final plans are complete and prior to construction.

Seattle Grading Permit

Seattle DCLU, SMC 22.80, A permit is required for all grading outside the STATE rights of way.

Seattle Stormwater and Drainage Control Approval

Seattle Public Utilities, WAC 173-270-050; WAC 173-270-060(6); SMC 22.802.016, Permit required for all facilities outside of State right-of-way. Discharge of runoff from State Highway to local system requires negotiated agreement, implementation of BMP

PRODUCT:
• Complete permit applications for all permits

ITEM 16 FINANCE PLAN DEVELOPMENT

16.1 Issue Development/Workshop Preparation

16.1.1 Issue Development

The CONSULTANT shall identify issues and policies related to funding, financing, and project delivery for the Alaskan Way Viaduct — in the context of other urban corridors, including Trans-Lake, I-90, I-405, SR-167, SR-509, and I-5. Policy issues include (but are not limited to) statutory and constitutional opportunities and constraints; the expected legislative context; political stability and public initiative risk; opportunities for regional coordination; geographic boundaries for local funding options; timeframe and implementation needs; and sunset provisions. Issues will be identified on the basis of the CONSULTANT team's own experience, newspaper and literature reviews (including managed lanes public opinion work) and selected in-person and/or telephone interviews.

PRODUCT:

- A Policy Discussion Paper that will be distributed in advance to workshop participants. This Policy Discussion Paper will discuss project funding in the context of the above state and regional issues, including the Washington State history of user-fee approaches to transportation infrastructure development.

16.1.2 Workshop Preparation

The CONSULTANT shall assist the STATE in setting the agenda and format for a day-long workshop. Specific activities under this item will include preparation of draft agendas for the workshops, including participants, topics, and workshop format. Draft and final agendas will be developed in close consultation with the staff persons.

In addition to the Policy Discussion Paper identified above, the CONSULTANT shall prepare other materials (including presentation graphics) aimed at the issue of the Viaduct alternatives' physical characteristics and the facility's physical amenability to tolling.

PRODUCT:

- Draft and final agenda
- Presentation graphics

16.2 Workshop #1

The CONSULTANT shall facilitate a day-long workshop at Northwest Region. The

ITEM 16 FINANCE PLAN DEVELOPMENT

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PRODUCT:

- Draft and final agenda
- Presentation graphics

16.2 Workshop #1

The CONSULTANT shall facilitate a day-long workshop at Northwest Region. The

first workshop will serve as a primary forum for the education and communication of policy issues related to all forms of funding and financing for the AWV among STATE staff persons and their designees. The CONSULTANT shall establish a common framework for understanding by presenting the Team's findings on the policy issues discussed in Item 16.1.1, and by discussing the project's major physical characteristics and their implications for various funding approaches, including tolling. The participants will play an active part in the formulation of policy and consensus on this issue.

16.3 Further Analysis and Workshop #2

The CONSULTANT shall assist the STATE in setting the agenda and format for a second workshop. The CONSULTANT shall conduct additional analysis needed regarding funding options (including broad range of revenue potential, legal constraints, and other issues), as identified in Workshop #1.

PRODUCT:

- Similar to Workshop #1, the CONSULTANT shall prepare draft and final agendas and other materials, including presentation graphics, as identified in Workshop #1.

16.4 Workshop #2

The CONSULTANT shall facilitate a second, day-long workshop at Northwest Region, with the following goals:

- Narrow the list of funding options to a politically feasible subset
- Identify steps to surmount legal and political obstacles to narrowed list
- Define strategy or approach for addressing obstacles and other policy issues
- Identify next steps and key players in the implementation of funding options

16.5 Summary White Paper

The CONSULTANT shall prepare a summary White Paper documenting the outcomes of the workshops, including the resulting list of funding options, implementation strategies, key players, and next steps.

PRODUCT:

- Summary White Paper (10 copies)

The policy development items outlined in this scope of services are envisioned as part of a larger, more detailed financial planning effort. Depending on the results of the Toll Feasibility Study currently underway, the CONSULTANT may propose in

subsequent supplements, as directed by the STATE, the following work elements:

- Detailed travel demand and revenue analysis of proposed user fee/pricing schemes. This analysis would include a stated-preference survey to collect quantitative data regarding demand elasticities; a toll mode choice model; and application of the toll mode choice model to specific project alternatives.
- Development of a Financial Plan required for replacement of the Alaskan Way Viaduct, to include a review of project cost estimates and associated cash flow requirements; evaluation of financing and project delivery options; and preparation of a financial model for developing and testing financial plan scenarios under various financial and project delivery structures.
- Preparation of a Financial Report and Implementation Plan which would prioritize and refine the most promising project finance scenarios and would identify implementation issues, hurdles and key next steps.