

Columbia River
 **CROSSING**

ENVIRONMENTAL IMPACT STATEMENT
AGREEMENT NUMBER Y-9245

TASK AD

FINAL
STATEMENT OF WORK

MARCH 21, 2007

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LIST OF ACRONYMS

AA	Alternatives Analysis
AASHTO	American Association of State Highway and Transportation Officials
AG	Attorney General
APE	Area of Potential Effect
API	Area of Potential Impact
BA	Biological Assessment
BRT	Bus Rapid Transit
CEJG	Community and Environmental Justice Group
CEVP	Cost Estimate Validation Process
CLG	Certified Local Governments
CPM	Critical Path Method
CRC	Columbia River Crossing
CSC	Customer Service Center
DAHP	Department of Archaeology and Historic Preservation
DEA	David Evans and Associates, Inc.
DEIS	Draft Environmental Impact Statement
DOE	Determination of Eligibility
DOJ	U.S. Department of Justice
DOT	U.S. Department of Transportation
DTM	Digital Terrain Model
EGDR	Existing Geotechnical Data Report
EIS	Environmental Impact Statement

EMF	Electro-magnetic fields
ESA	Endangered Species Act
ETC	Electronic Toll Collection
EWG	Environmental Working Group
FAIR	Financial and Institutional Resources Group
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Act
FHWA	Federal Highway Administration
FOE	Finding of Effect
FOIA	Freedom of Information Act
FTA	Federal Transit Authority
GDR	Geotechnical Design Report
GDSR	Geotechnical Design Summary Data Report
GIS	Geographic Information Systems
HCT	High Capacity Transit
IAMP	Interchange Area Management Plan
IGA	Intergovernmental Agreements
IJR	Interchange Justification Report
IMR	Interchange Modification Request
InterCEP	Interagency Collaborative Environmental Process
JPACT	Joint Policy Advisory Committee on Transportation
LPA	Locally Preferred Alternative

LRT	Light Rail Transit
LWCF	Land and Water Conservation Fund
MDR	Methods and Data Report
MPO	Metropolitan Planning Organization
MTIP	Metropolitan Transportation Improvement Program
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
NTP	Notice to Proceed
O&M	Operating and Maintenance
OCS	Overhead Catenary System
ODOT	Oregon Department of Transportation
PA	Programmatic Agreement
PBR	Preliminary Baseline Report
PDT	Project Development Team
PE	Preliminary Engineering
PMO	Project Management Oversight
PMP	Project Management Plan
PSC	Project Sponsors Council
ROD	Record of Decision
RTC	Regional Transportation Council
RTN	Real-time Network
SASS	Sponsor Agency Senior Staff

SHPO	State Historic Preservation Office
SimTraffic	Traffic Simulation Software
SOW	Statement of Work
STATES	ODOT and WSDOT
STIP	Statewide Transportation Improvement Program
STPs	Shovel Test Probes
TAC	Technical Advisory Committee
TCP	Traditional Cultural Properties
TMDL	total maximum daily load
TNM	Transit Noise Model
TOD	Transit-Oriented Development
TS&L	Type, Size, and Location
USDOT	U.S. Department of Transportation
USPS	U.S. Postal Service
USFWS	U.S. Fish and Wildlife Service
VE	Value Engineering
VISSIM	Verkehr in Städten – Simulation, or “traffic in towns – simulation”
VISUM	Verkehr in Städten – Umlegung”, or “traffic in towns – assignment”
WBS	Work Breakdown Structure
WSDOT	Washington State Department of Transportation

A. PROJECT PURPOSE

Work under Task AD will initiate Phase 2 work elements as described in the Columbia River Crossing (CRC) Project Flow Chart. Phase 2 signifies the transition from project scoping and screening to formal evaluation of the selected Range of Alternatives. Major work items include activities leading to publishing the Draft Environmental Impact Statement (DEIS), recommendation and selection of a locally preferred alternative (LPA), and preparation of the preliminary engineering (PE) application for New Starts. Preparing and publishing a Final EIS (FEIS), including a Record of Decision (ROD) will be accomplished in a subsequent Phase of work.

Task AD services will cover the portion of the Phase 2 work program occurring over a 16-month time period beginning March 1, 2007 and ending June 30, 2008.

Phase 2 work under Task AD will advance the project through the following key milestones:

- Publish DEIS
- Prepare Draft and Final LPA
- Prepare PE Application for New Starts
- Identify and form recommendations on an implementation plan for delivery of the final design and construction

Key work elements will include public involvement; National Environmental Policy Act (NEPA) development; travel demand forecasting and traffic analysis; alternatives development; design and traffic engineering; development of funding structures; and development of initial implementation strategies.

B. COORDINATION

This project is being jointly managed by the Oregon Department of Transportation (ODOT) and Washington State Department of Transportation (WSDOT) within the CRC Project Office. In this Statement of Work (SOW), CRC is defined as the Columbia River Crossing project. The STATE and STATES are defined as staff from either/or both ODOT and WSDOT. The CONSULTANT is defined as David Evans and Associates, Inc. (DEA) and its subconsultants. Other agencies are described by name.

The original SOW was developed under the Managing Project Delivery process. Accordingly, the CRC and the CONSULTANT jointly developed a Vision and Purpose statement to guide the project development process:

Vision: The Columbia River Crossing project will improve the movement of people, goods, and services at the river crossing and within the corridor in a manner that is accepted and built. The project will be multimodal; environmentally sensitive; fundable; and support the community.

Purpose: Deliver the Environmental Impact Statement (EIS) and ROD; develop a framework and strategy to deliver the project; provide a roadmap for the next phase's success; and, ultimately, build the project.

The CONSULTANT's approach will be to perform as an adjunct of the STATES. The STATES will provide support services to the CONSULTANT as described in the SOW.

C. GENERAL ASSUMPTIONS

Work on this project is being conducted in a co-located office in Vancouver with STATES' and Consultants' staffs. Approximately 40-45 CONSULTANT team members will be occupying office space and assigned to the CRC office full time. Other CONSULTANT team members will be working off-site at their home offices.

Schedule

- Duration March 1, 2007 through June 30, 2008
- Assume 16 months for budgeting purposes (March 1, 2007 through June 30, 2008)
- Deliverables under Task AC will continue to be funded under Task AC until completed
- Publish DEIS (February 2008)
- Complete Draft LPA (Final adoption August 2008)

Project Management

- 64 Project Development Team (PDT) and Mini- Project Development Team meetings
- 14 Task Force meetings
- Working Group meetings as needed

Number of DEIS Alternatives

- No Build plus two Build alternatives
- Carry transit base-line as needed for comparison
- Selection of preferred alternative for narrowing design by October 2007

D. WORK ELEMENTS

1.0 PROJECT MANAGEMENT

The purpose of this work element is to provide management and direction to the CONSULTANT team; support to STATES staff and review of their work over the course of the project. The Project Management Plan (PMP) as developed and amended for the CRC project defines the roles, responsibilities, processes, and activities required for project delivery.

1.1 Project Team Oversight and Coordination

This work includes the internal day-to-day coordination and management of the CONSULTANT team. Work includes administrative support for assigning and scheduling work, monitoring progress, and managing change. This work element includes direction and monitoring of the subconsultants and their work for delivery of Task AD.

Assumptions:

- Part of the CONSULTANT team will be co-located within the CRC project office with STATES staff. The remainder will be located at their home offices. Expenses associated with team oversight and coordination will include job-related costs to provide management of the team.

1.2 Project and Agency Coordination Meetings

This work element provides for the preparation, attendance, follow-up, and documentation of the weekly PDT and Project Manager Team coordination meetings for Task AD. These meetings will be the forums for the STATES and partner agencies to provide input and guidance for the direction of the CONSULTANT and will be used to discuss submittals, identify project issues, and develop solutions. In addition, work under this element includes CONSULTANT management participation in working group meetings.

Assumptions:

- Meetings will be held at the CRC office in Vancouver, Washington. Working group and agency meetings may be held in various locations and will include travel time and expenses.
- This work element includes participation by the CONSULTANT Project Manager, Deputy Project Manager, and their designee(s). Other CONSULTANT Task Manager participation will be covered in other work elements within this SOW.

Deliverables:

- The CONSULTANT will provide agendas, action item tracking, and documentation of meetings.

1.3 Intergovernmental Agreements

This work element provides for the completion of Intergovernmental Agreements (IGAs) with the project partners. Work includes coordination with Metro, Regional Transportation Council, TriMet, C-TRAN, City of Portland, and City of Vancouver to prepare draft scopes of work and budgets for negotiations by the STATES. Other work includes supporting the STATES in preparing and amending agreements with the Federal Highway Administration (FHWA) and the Federal Transit Authority (FTA).

Assumptions:

- The agencies will provide draft SOWs and budgets for the IGAs. The CONSULTANT will assemble the IGA packages for review and negotiation by the STATES.
- The CONSULTANT will coordinate with FTA and FHWA in preparing and amending agreements for CRC approval and negotiation.

Deliverables:

- The CONSULTANT will assist the STATES in preparing draft IGAs and draft Agreements.

1.4 Interdisciplinary Coordination and Documentation

This work element provides for coordination of work products, deliverables, and schedules among the various disciplines tasked with developing the DEIS and recommending an LPA. Work includes developing strategies and gaining consensus on issues that arise that may impact budget and schedule. Decision documents and presentations will be prepared as necessary for communication with the STATES and committees.

Assumptions:

- Based on experience from Phase 1 work under Task AC, 1,000 hours are budgeted for this work element.
- The CONSULTANT will identify issues, recommend resolution processes, prepare agendas, document findings and prepare presentation materials with STATES and CONSULTANT Task Managers.

1.5 Expert Review Panels

This work element provides for establishment and management of expert review panels required to provide independent oversight for the CRC project. Expert panels may be required for bridges, transit, cost estimates, tolling, and other disciplines as identified throughout this phase of the project.

For budgeting purposes it is assumed that up to three expert panels will be convened. Each panel may meet either multiple days or multiple times. Up to 500 hours have been budgeted for forming and managing the expert panels. Hours required in excess of this amount will be considered as extra services.

Assumptions:

- Costs for participation of outside experts in an expert panel will be borne by the STATES and is not part of this SOW.
- Costs for CONSULTANT team involvement in an expert panel are covered in other sections of the SOW, including preparation of materials, presentations, and participation.
- Direct expenses associated with holding expert panel meetings outside the CRC project office shall be borne by the STATES.
- An estimate of hours required to perform this work as included in the approved budget has been negotiated for Task AD. Hours required beyond this estimate will be considered extra services.
- The CONSULTANT will deliver project management activities required for organizing and conducting expert review panels.

2.0 PROJECT CONTROLS

The purpose of this work element is to develop and maintain the CRC Project Control Systems to support the CRC staff. The intent is to maintain a current schedule and budget scenario that matches the CRC scope and recommendations including supplemental task orders.

2.1 Project Controls Team Project Management

This work element includes management of the delivery of project controls tasks through quality control of products and processes, coordination and supervision of the project controls team, coordination with other project team members, and to provide support to other task managers on related work items.

Assumptions:

- The CONSULTANT will manage project controls in accordance with the approved Project Management Plan.

2.2 Agency and Public Outreach Support

This work includes providing support for agency and public outreach activities through the preparation of financial and schedule related materials on an as needed reasonable basis.

Assumptions:

- Duration March 1, 2007 through June 30, 2008
- 14 Task Force meetings

2.3 Schedule Management and Control

This work includes the development, coordination, and management of the CRC Master Program Schedule. CONSULTANT work includes development of an overall Master Program Schedule including:

- Identifying activities of all stakeholders involved,
- Coordination of various disciplines within CRC,
- Incorporation of STATE interfaces,
- Milestones for internal and external agency coordination, and
- Key process milestones for identification.

The CONSULTANT will maintain and update the Master Program Schedule on a monthly basis to reflect the current progress and status of individual activities and any revisions required to reflect the latest approved timeline and supporting activity coordination.

As various finance and funding models are formulated, the schedule will be modified as needed to reflect the work effort commensurate with the funding available.

Assumptions:

- Duration March 1, 2007 through June 30, 2008

Deliverables:

The CONSULTANT will maintain and/or provide:

- Task AD Baseline Schedule (AD2001)
- 16 monthly schedule updates in Critical Path Method (CPM) format with current progress/changes for each activity incorporated (AD2002)
- Concept Alternative Schedules (as necessary) (Del# Assigned when identified)

2.4 Budget Management

This work element provides for development, coordination, and management of the CRC Master Program Budget and document control. CONSULTANT work includes:

- Development of program budget
- Refinement and maintenance of a budget reporting system
- Coordination of project estimates
- Integration with Work Breakdown Structure (WBS)
- Identification/formalization of budget scope changes

Assumptions:

- Duration March 1, 2007 through June 30, 2008
- All project financial data to be reconciled to the agency General Ledgers on a monthly basis

Deliverables:

The CONSULTANT will provide:

- 16 monthly budget updates into Prolog (AD2003)
- 16 monthly reconciliations to project financial information to WSDOT Agency General Ledgers (AD2003)
- Preparation of Cost Estimate Validation Process (CEVP) Materials as needed (Del# Assigned when identified)

2.5 Document Control Management

This work element provides for capturing, indexing, securing, versioning, and keeping the project documents current, in order to maintain day-to-day access to project documents and their integrity. Major CONSULTANT work elements include:

- Technical report production and word processing
- Document scanning, processing and filing
- Version, Review and Status Tracking
- Transmittal Tracking
- Document Filing

Assumptions:

- Duration March 1, 2007 through June 30, 2008

Deliverables:

- The CONSULTANT will provide monthly deliverable reports from Prolog (AD2004)

2.6 Monthly Invoice and Progress Reports

This work element provides for the routine reporting to the STATES, and the Executive Management Group, of project progress and accomplishments. CONSULTANT work consists of:

- Derivation of report format/content
- Compilation of progress data from CRC sources
- Generation of compiled report
- Distribution (as approved)

Assumptions:

- Duration March 1, 2007 through June 30, 2008

Deliverables:

The CONSULTANT will provide:

- 16 monthly progress reports that include written progress updates on accomplishments and monthly cost and progress data (AD2006)
- 16 monthly invoices (AD2005)
- Proposals for changes in scope or work, including budget and schedule impacts (Del# Assigned when identified).
- Contract amendment documentation for approved changes (Del# Assigned when identified).

2.7 Project Management Plan and Updates

This work element consists of the development and maintenance of the CRC Project Management Plan, as required by the FTA and FHWA. CONSULTANT work consists of:

- Yearly content revisions to reflect the most current project direction
- Control of document distribution/updates

Assumptions:

- Duration March 1, 2007 through June 30, 2008

Deliverables:

The CONSULTANT will provide:

- 2007 Draft and Final Project Management Plan Update (AD2007)
- 2008 Draft Project Management Plan Update for WSDOT, ODOT, and Agency review (AD2008)

2.8 Prolog Database Management Support

This work element consists of supporting the WSDOT IT department for the deployment and ongoing usage of the Prolog project management database system. CONSULTANT work consists of:

- Updating user passwords and security
- Clean up of erroneous data requiring administrative intervention
- Providing custom reports for major team efforts
- Providing minor day-to-day user support
- Establishing and implementing ongoing user training

Assumptions:

- Duration March 1, 2007 through June 30, 2008.
- Attendance at 2007 Meridian User Conference for training and support.
- WSDOT IT department responsible for all IT connectivity, server, product updates, upgrades and implementation of new software.

Deliverables:

The CONSULTANT will provide:

- Training program outline (AD2009)
- User's manual chapters for six distinct areas:
 - Project management (AD2010)
 - Document control (AD2011)
 - Communications and public comment tracking (AD2012)
 - NEPA scoping environmental public comment tracking (AD2013)
 - Meeting minutes (AD2014)
 - Ongoing contact database management (AD2015).

2.9 QA/QC Oversight

This work element provides for providing oversight for the CRC Quality Assurance Program as provided in the Project Management Plan.

Deliverables:

The CONSULTANT will provide:

- Monthly Audit reports (AD2016)

2.10 Project Control Support for Other Disciplines

This work element provides for coordination and support to the STATES and CONSULTANT Task Managers. CONSULTANT work includes processes required to resolve issues and coordinate among the tasks.

3.0 FINANCIAL STRUCTURES

The purpose of this work element is to advance the development of (a) coordinated financial plans for the highway and transit components of the CRC project and (b) institutional arrangements required for the CRC Project. While final financial plans and institutional arrangements are not anticipated until later in the project development process, this work element will bring these factors to the level required for the DEIS, the selection of a LPA, and the PE application to FTA. The CONSULTANT will provide technical support and intergovernmental coordination services toward achieving these objectives.

3.1 Financial Team Project Management and Quality Control

The CONSULTANT will manage the financial and institutional structures team, organize and administer work group meetings, coordinate with CONSULTANT project managers, and collaborate with and provide support to other CONSULTANT task managers on related work items. Work under this work element includes quality control for all deliverables. Major tasks include the following:

- Participation in bi-weekly PDT meetings (32)
- Participation in bi-weekly or other recurring meetings with the project co-directors and consultant team project managers (30)
- Attend other special meetings as needed (12)
- Preparation of monthly progress reports (16)
- Ongoing task management, financial coordination meetings, other subconsultant administration, and general administrative duties

Assumptions:

- Work Element 3.1 will proceed for the 16 month duration of Task Order AD.
- The CONSULTANT will provide memoranda, materials and/or meeting minutes associated with special meetings and financial team coordination

3.2 Agency and Public Outreach Support

The CONSULTANT will provide support to outreach efforts and attend agency and stakeholder meetings as required for financial, funding, and tolling issues for up to 12 agency and stakeholder meetings. The CONSULTANT will provide support to public outreach efforts as required for financial, funding, and tolling issues for up to eight public meetings.

In addition, at the request of the STATES, the CONSULTANT will prepare materials, organize, and coordinate up to four meetings of the Transit and/or Highway Financial and Institutional Resources Group (FAIR) to work with stakeholders and STATE Department of Transportation (DOT) staff on various funding, ownership, and/or institutional issues.

Assumptions:

- Financial and tolling support efforts to be determined in coordination with the CONSULTANT Communications Team staff.
- Administrative assistance in scheduling meetings.

Deliverables:

The CONSULTANT will provide:

- Limited contributing materials regarding funding and tolling issues, to be determined during the course of work (Del# Assigned when identified).
- Agenda and meeting minutes for FAIR meetings (Transit FAIR AD3001, Hwy FAIR AD3002).

3.3 Resolve Institutional, Intergovernmental, and Administrative/Regulatory/Statutory Issues Affecting the Financing of the CRC Project

Underlying the finance plan for the CRC project will be an array of agreements and arrangements between the STATES, the STATES and the federal government, the STATES and local governments, the STATES and the transit sponsors, and between the transit sponsors. Establishing and/or implementing these agreements or arrangements may require regulatory or statutory analyses or amendments. The CONSULTANT will help identify and resolve these institutional and related issues, and help the affected parties reach agreements as required for the DEIS, LPA selection, and PE application to FTA.

The CONSULTANT will facilitate a concept agreement between transit sponsors/operators regarding CRC project. Major tasks include:

- Identify ownership and operations issues between TriMet and C-TRAN
- Identify cost and revenue responsibility issues from the transit financial analyses
- Establish and implement a technical framework and political process for resolving ownership, financial, and “operations” issues between TriMet and C-TRAN
- Facilitate discussions between transit operators to identify and agree on capital project and O&M roles and responsibilities to be used in the DEIS finance plan, LPA report, and PE application
- Identify capital project and Operation & Maintenance (O&M) roles and responsibility issues to be resolved after completion of DEIS and document in memorandum

Based on results of highway funding analysis, the CONSULTANT will assess need/desirability to modify the existing agreement between DOTs regarding project capital funding for purposes of the DEIS and LPA selection. If appropriate, the CONSULTANT will facilitate negotiations between the DOTs and prepare necessary agreements or memoranda documenting status of agreements and issues. The CONSULTANT will:

- Assess the elements of the DEIS financial plan and identify its potential affect on institutional arrangements
- Assess impacts of TriMet-C-TRAN institutional issues and arrangements on the institutional arrangements between WSDOT and ODOT
- Work with WSDOT and ODOT to resolve issues
- If appropriate, prepare necessary agreements or memoranda documenting status of agreements and issues.

The CONSULTANT will identify Washington and Oregon statutory concepts that may be used to facilitate the comprehensive highway and transit finance plan, including tolling and bonding toll revenues, and resolve differing interpretations and/or propose statutory amendments, as may be needed. CONSULTANT will:

- Determine statutory and administrative concepts to maximize/facilitate the project's financial capacity, both in terms of the capital project and operations and maintenance.
- Work with DOTs, legislative staff, and other stakeholders to facilitate agreement on administrative and legislative concepts and outline approaches that appear promising.

The CONSULTANT will work with project staff and project consultants to coordinate toll proposals with federal and local government officials and regulations. CONSULTANT will identify policy, administrative, and statutory/regulatory needs to integrate CRC toll proposals with U.S. Department of Transportation (USDOT), Metropolitan Planning Organizations (MPO), DOT, and local jurisdictional requirements.

Assumptions:

- Transit sponsors/operators will provide access to their applicable legal counsel(s)
- Project Managers will provide access to Attorney General (AG)/Department of Justice (DOJ) staff, bond counsel, and applicable DOT staff

Deliverables:

The CONSULTANT will provide:

- Memorandum documenting areas of agreement and areas needing future agreement between the transit sponsors/operators regarding funding and operations responsibilities to be used in the DEIS, LPA selection process and PE application (AD3003)
- Memorandum on potential refinements to funding/ownership/operations agreement between DOTs to be used in the DEIS, LPA selection process and PE application (AD3004)
- If required, prepare bi-state agreements addressing project funding and ownership issues (Del# Assigned when identified)
- If required, memorandum on potential statutory or administrative amendments in support of resolving project funding or institutional issues (Del# Assigned when identified)
- If required, memorandum on agreements with FHWA and FTA regarding funding or institutional issues (Del# Assigned when identified)

3.4 Tolling: Capital, Operating and Maintenance Costs; Revenue Projections; and Financial Capacity

In coordination with Work Element 5.0, and building on the initial modeling conducted in Task Order AC, the CONSULTANT will evaluate, facilitate discussion, and document the toll rate structure(s), system(s), operations, capital and O&M costs, and financial structures to be used in analyses for the DEIS, LPA selection, and PE application. The CONSULTANT will address tolling I-5 only and, if authorized by DOTs, tolling I-5 and I-205. The evaluation will address the

toll revenues, traffic diversion, toll-related capital costs, operating costs, financial capacity, and other benefits and challenges of the tolling options. The CONSULTANT will document any issues regarding consistency of the toll structures and systems examined for the CRC project with emerging Washington and Oregon State toll policies.

3.4.1 Travel Demand Modeling Support and Toll Traffic Demand Projections

The primary travel demand modeling for the horizon year 2030 and resulting data for the DEIS will be prepared under Work Element 5.0 in coordination with Metro. These modeling runs and data will assume tolling on I-5 and possibly on I-5 and I-205. In addition, the modeling outputs related to the bridge crossing will be initially post-processed by the project team under Work Element 5.0. The result of these efforts will be year 2030 toll traffic demand forecasts (by type of vehicle and time of day (peak periods and one off-peak hour) that form the basis for the toll revenue projections and for estimating the diversion impacts of tolling. In addition a base year forecast (either 2005 or 2015 will be prepared under Work Element 5.0. With regard to these model runs and data, under this Work Element 3.4.1 the CONSULTANT will:

- Provide support services and advisory assistance to other members of the CRC Project Team and/or Metro's travel demand modeling process to confirm the resulting traffic estimates best reflects potential customer demand; this assistance will include advisory assistance with toll travel demand modeling, toll structure inputs, and the relationships between time and cost savings with the share of traffic that would be willing to alter travel behavior under tolled situations. Analytical support will draw from the CONSULTANT's experience on previous similar projects as well as on other proprietary information.
- Work with Metro and the rest of the CRC project team to post process the travel demand model outputs to properly calibrate localized traffic movements with observed conditions and to refine the expected route diversion estimates by general travel patterns.
- Estimate the toll diversion impacts, including traffic diversion to other routes and modes as well as changes in travel destinations and times of travel attributable to tolling. Toll diversion impacts will be documented, including the impacts on other transportation facilities and other modes of travel, for scenarios involving tolling I-5 only and I-5 and I-205 as applicable. An iterative process will be used to reach equilibrium between drivers' route choice and the resulting changes in traffic levels on the competing routes. In some cases, traffic may divert from another facility and load approach routes to the new facility. These diversion levels may be important to understand as they may require additional construction to alleviate congestion in these areas.

Factors relating to electronic toll collection (ETC), such as the share of toll transactions made with transponders versus license plate recognition, will also be analyzed. These factors will either be based on a frequency of use/market analysis survey (optional task under this work element) or will be based on the available industry information and professional judgment of the CONSULTANT. The percentages of total customers that can be expected to have transponders is a function of the frequency of travel by the various customers, the prevalence of other highways in the area that accept tags, the origin/home locations of travelers, and the familiarity of the traveling public with the electronic system. The figures developed will take into account

conditions found at other tolled locations, with adjustments for how the local region's car owners may behave in the future. Key elements to these ETC issues are the costs of toll collection and associated potential recovery of revenues. The CONSULTANT will:

- Make separate estimates of transponder use for the initial period of operation and for the years thereafter, when somewhat greater transponder use can be expected as drivers gain familiarity with the system and can use the tags on other highways.
- Estimate and document the level of loss of the total toll revenue potential due to unrecoverable (unbillable or uncollectible) revenues that could arise with 100% electronic toll collection.

Using the information from the year 2005 and 2030 model outputs prepared in Work Element 5.0 and refined under this work element, the CONSULTANT will interpolate weekday and expanded annual toll traffic volumes from the assumed year of opening (2015) through 2030 and extrapolate the same data through the year 2055 to support the financial capacity analysis in Work Element 3.4.4.

While one or more toll structures/scenarios will be designated by the DOTs for use in the DEIS analysis, alternative toll scenarios will be examined as part of a sensitivity analysis and possible inclusion in the DEIS. These alternative toll scenarios will result in differing traffic volumes (by vehicle class and time of day), and therefore different revenue forecasts, and different diversion impacts. In Work Element 3.4.1, additional modeling, post-processing, and analysis will be undertaken to estimate these effects. The CONSULTANT will:

- Advise on three-four alternative toll scenarios/structures to be considered.
- Advise on the proper level and methods for analyzing these alternative toll structures/scenarios.
- Conduct sensitivity tests for alternative toll structures and their impacts on route diversion and toll traffic demand by conducting additional runs of the assignment stage of the travel demand model and/or other model stages as deemed necessary
- Estimate and document relevant traffic volumes and diversion impacts, as needed.

3.4.2 Toll Revenue Projections

Toll revenues will be estimated for each project alternative and toll scenario based on the traffic estimates resulting from Work Element 3.4.1 and the applicable toll structure(s), with the CONSULTANT making assumptions for weekend travel and toll structures and/or weekday to annual expansion factors and the share of commercial travel. This will require an iterative procedure, taking into account the financial requirements of the Project and the sensitivity of traffic to varying toll levels. Long-term corridor growth for projection of the traffic elements will be developed from data and forecasts of population, employment, and development in the region. The CONSULTANT will:

- Review and suggest toll rate structures for use in conjunction with the traffic modeling and sensitivity analyses to project potential gross toll revenues for the facility.
- Prepare and document estimates of gross toll revenues for each project alternative and toll scenario, up to a 10 total scenarios, by year over the duration of the planning period, net of initial ramp-up impacts and other revenue adjustments.

3.4.3 Toll Collection Capital and Operating and Maintenance Cost Estimates

To support the financial analysis and development of the highway financial plan, capital and ongoing operations and maintenance costs for toll collection and related customer service functions will be estimated. The capital costs will be estimated on a prototypical program of component elements and technologies; operating and maintenance costs will be based on a build-up of labor and materials. The basis for the cost of collection for non-transponder users will be documented.

Toll System Capital Cost Estimate: Capital cost estimates for toll collection equipment at the I-5 Bridge will be prepared for the project. Elements of the toll collection equipment capital costs will include but are not limited to:

- Toll system components;
- Transponder readers, license plate cameras for front and rear plates to be installed on the bridge span for all travel lanes;
- Canopy signs;
- Across-the-road overhead signs on each approach to a toll location conveying messages about ETC and other lane assignments;
- Customer service center facilities/space as applicable in coordination with the two State's other tolling operations; and
- Assumptions for back-office requirements and costs.

Toll Collection Function — Customer Service Center Operating Cost Estimate: Operating costs for the customer service center will be prepared, taking into account assumptions from other toll facilities in one or both states and potential sharing of functions with other regional toll facilities. Operating cost elements to be estimated for Customer Service Center (CSC) services are fixed regardless of the back office alternative chosen. These may include marketing, postage, printing, credit card fees, telephone charges and other similar costs such as mailings for transponders, statements, violation notices, credit card expiration notices, calls for account activation, account maintenance, requests for materials, disputed tolls, and the reciprocity process with other agencies.

Toll Collection Function — System Maintenance Cost Estimate: Assumptions will be established regarding the use of in-house staff and third-party contractors for the maintenance of toll system operating equipment. Estimates will be made for the costs for hardware and software maintenance contracts, spare parts, and power and communication utilities. The hardware and software maintenance required for periodically updating the system will be a recurring cost to the CRC project.

Toll Collection Function — System Operating Cost Estimate (Staffing): Estimates will be made for the costs of both field personnel and back-office personnel associated with toll collection (including collections from non-transponder customers), maintenance, and customer service functions.

3.4.4 Financial Capacity of Tolling Scenarios

The CONSULTANT will estimate the financial capacity (level of project funding supported) by the net toll revenues under each of the 10 scenarios examined in Work Elements 3.4.1 through

3.4.3. The financial capacity analysis will consider options employing state-backed bonds, stand-alone (non-recourse) toll revenue bonds, and subordinated/junior debt options including a TIFIA loan, and other financial structures. The CONSULTANT will:

- Update and refine the financial model developed under Task Order AC to accommodate the parameters and inputs for the more in-depth financial analysis of this work element.
- Document interest rate, coverage, issuance costs, insurance costs, bond term, bond structure(s), and other assumptions used in the financial capacity analysis.
- Estimate and document the year-by-year net toll revenues available for financing purposes and associated toll transactions.
- Estimate and document the financial capacity of the toll scenarios (I-5 and I-5/I-205) based on assuming (a) bonds secured only by the toll revenues with and without subordinated debt, (b) a double-barreled bond approach in which state funds are used to back toll revenues, and (c) other debt structure scenarios identified by the CONSULTANT.
- Identify any significant issues affecting the marketability of the bonds and opportunities to further leverage the toll revenues.
- Show the sensitivity of the financial capacity of tolling to potential or requested changes in the underlying assumptions.

Assumptions (Work Element 3.4):

- A customer market survey by a specialty vendor/subcontractor is recommended to be undertaken through an amendment to Task Order AD. If undertaken, the estimates of the travel market composition and trip frequency as related to transponder use and unrecoverable revenues will be based on the results of that survey; otherwise assumptions for these factors will be based on the limited available information for the region and experience in other areas.
- Toll structure inputs/policy direction and direction on whether to include I-205 in the tolling analysis will be provided by the DOTs.
- The operating and maintenance costs in Work Element 3.4.3 are only for the toll function; the O&M costs for the bridge and related project facilities will be provided for this work element by the Project Team from activities conducted in Work Element 8.0.

Deliverables:

The CONSULTANT will provide:

- Memoranda documenting the assumptions and results the gross revenue projections for each alternative/toll scenario modeled (AD3005)
- Memoranda documenting the assumptions and toll collection capital and O&M cost for each alternative scenario (AD3006)
- Memorandum documenting the financial assumptions and structures, and their bases, to be used in the toll capacity analyses (AD3007)

- Memoranda documenting the net revenues available for bonding, financial capacity of each alternative/toll scenario and issues, and opportunities to further leverage the financial capacity (AD3008)

3.5 Financial Analysis and Finance Plan Development

The CONSULTANT will prepare analyses and plans to meet the financial plan requirements of the DEIS, LPA selection and PE application to FTA. While the financial plan will ultimately be structured as an integrated, comprehensive plan for the CRC project, the work plan divides the financial plan into highway and transit components for the sake of clarity and work programming.

3.5.1 Capital Funding Assumptions

The CONSULTANT will identify the capital cost parameters to be used in the financial analysis. Major tasks include:

- Work with DOTs, transit operators, and project engineers to determine base cost, inflation rate, project delivery methods, and construction scheduling assumptions for project elements to be used as the basis for the capital funding plan
- Determine with DOTs and transit operators various packages of improvements, including minimum operable segments, to be used for analytical purposes
- Identify and document issues affecting the division of costs between transit and highway elements
- Work with DOTs, transit operators, and project engineers to determine division of common costs between transit and highways
- Review with stakeholders, including overseeing federal agencies

3.5.2 Highway Capital Funding Sources

The CONSULTANT will identify and evaluate prospects for employing federal highway funding in the capital finance plan. Major tasks include:

- Review and provide recommendations on Federal programs that may be useful to CRC, building on work previously completed by the Financial Structures team, including the Funding and Financing Options paper submitted during Task AC.
- Prepare necessary application materials for Federal programs that Project Managers determine merit an application.
- As requested by Project Managers, serve as liaison between CRC Project and federal lead agency for such programs.
- As requested by Project Managers, prepare project-related materials in response to questions from congressional delegation.
- Identify statutory and regulatory options to facilitate project funding or implementation.
- Assess whether formula Federal funds should be assumed in the DEIS funding plan.

The CONSULTANT will identify prospects for employing state and local highway funding in the capital finance plan. Major tasks include:

- Analyze potential use of state highway fund-backed bonds for CRC Project.
- Work with DOTs to determine feasibility/desirability of using state-highway fund-backed bonds or direct state highway funding in funding plan.
- Assess loan of state highway funds to CRC project with repayment through toll revenues (Section 129 Loans).
- Work with stakeholders to determine role, if any, for local/regional funding sources in highway project development and implementation.

3.5.3 Transit Capital Funding Sources

The CONSULTANT will identify options for employing federal transit capital funding in the transit capital finance plan. Major tasks include:

- For each alternative, prepare an analysis and recommendation on the level of federal New Starts or other federal discretionary and formula funding to be assumed in DEIS capital funding plan for the transit element(s).
- Review recommendation on federal funds assumptions for each alternative with stakeholders; revise as necessary, and document final assumption.

Building upon previous analysis conducted in Task Order AC, the CONSULTANT will identify options for employing toll credits in the transit capital finance plan. Major tasks include:

- Analyze methods to maximize the availability and usability of toll credits derived from CRC Project.
- Analyze methods to maximize the availability and usability of toll credits derived from other WSDOT sources for advancing CRC project.
- Identify and document assumption for DEIS finance plan purposes regarding use of toll credits for transit component of CRC
- Review with transit operators, other stakeholders, and revise as necessary

The CONSULTANT will identify options for employing state and local funding in the transit capital finance plan. Major tasks include:

- Assess the level of regional formula funding through Metro and RTC Metropolitan Transportation Improvement Program (MTIP) to be assumed in DEIS capital funding plan for the transit element(s)
- Assess the level of Statewide Transportation Improvement Program (STIP) formula and other state funding through WSDOT and ODOT to be assumed in DEIS capital funding plan for the transit element(s) of each build alternative
- Assess the use of lottery fund bond proceeds to be assumed in capital funding plan for each alternative
- Assess the level of transit agency funding through TriMet and C-TRAN to be assumed in DEIS capital funding plan for the transit element(s) of each build alternative

3.5.4 Forecast Transit Operations Funding Plan

Transit operating and maintenance costs will be developed in Work Element 7.0. In this work element, the CONSULTANT will create a 20-year bi-state transit system cash flow for the Build alternatives, based in part on the operations costs developed in Work Element 7.0, which meets FTA requirements for the PE application. Major tasks include:

- Compile existing and historic data on C-TRAN and TriMet capital and operations costs and revenues
- Facilitate agreement among transit operators on assumptions for forecasting C-TRAN and TriMet bus, Bus Rapid Transit (BRT) and Light Rail Transit (LRT) operations and maintenance costs
- Work with TriMet and C-TRAN to determine initial assumptions regarding division of operating and cost responsibilities for transit elements of CRC project
- Review transit output statistics from modeling with transit operators
- Review transit ridership forecasts and related passenger revenues
- Review and O&M forecasts prepared by transit operators based on output data from the modeling
- Prepare 20-year cash flow analysis of C-TRAN/TriMet system consistent with FTA financial analysis requirements, for each transit build alternative

3.5.5 Prepare Financial Plan for DEIS and LPA Report

The CONSULTANT will prepare a highway capital finance plan and transit capital and operations finance plan to be included in DEIS and LPA Report. Major tasks include:

- Prepare draft financial section of DEIS on highway and transit funding.
- Undertake review and comments process; preparing 2-3 additional drafts and final version of section for inclusion in DEIS.
- If required to be different than plan for DEIS, prepare plan document for LPA Report.

3.5.6 Prepare Finance Plan and Related Documentation for New Starts Submittal

The New Starts submittal will be prepared under Work Element 7.4. Under this work element, the CONSULTANT will prepare certain financial-related components of New Starts submittal. Major tasks include:

- If different from the financial plan prepared for the LPA report, prepare Capital and Operations Finance Plan Report for New Starts Submittal
- Coordinate with FTA on finance plan issues

Assumptions:

- Project Managers will provide CONSULTANT access to FTA to resolve federal funding issues.
- Project Managers will provide CONSULTANT access to FHWA and FTA to resolve toll credit issues.

- Transit O&M costs will be provided from Work Element 7.0.
- TriMet and C-TRAN will convert modeling outputs to operating and maintenance costs and passenger revenues.
- TriMet and C-TRAN will provide CONSULTANT with their existing financial models and information on any future plans not included in existing models.
- TriMet and C-TRAN directors will meet to resolve issues.
- Project Managers will provide access to AG/DOJ and internal DOT specialists in state funding issues.
- Supplemental funding will be provided, if needed, for special analyses by Bond Counsel.
- Base-year highway and transit capital costs, project delivery systems, project development schedules and inflation assumptions will be provided from Work Elements 7.0, 8.0, and 9.0.
- Preparation of documents to secure federal funding, as requested by Project Managers.

Deliverables

The CONSULTANT will provide:

- Memorandum documenting assumptions to be used in financial analysis (AD3009)
- Financial plan section of DEIS (AD3010)
- Financial plan section of LPA Report (AD3011)
- Financial Plan for New Starts submittal (AD3012)
- Preparation of documents to secure Federal funding, as requested by Project Managers (Deliverable number assigned when identified)

3.6 Cost Benefit Analysis

The CONSULTANT will prepare a cost-benefit analysis consistent with the needs of the project. At the time of this work plan, the precise nature of the cost-benefit analysis remains to be resolved. The amount of funding budgeted for this work element represents a level of effort that will be expended on this work element, subject to a final determination by the Project Managers on the scope of the cost benefit analysis. If the final scope exceeds the level of effort budgeted, the CONSULTANT will work with the Project Managers to amend the budget commensurate with the desired scope.

Prior to undertaking the cost benefit analysis, the CONSULTANT will prepare a White Paper that describes the range of potential economic evaluation approaches and their pros and cons for the CRC project. Based on the White Paper outcome and in discussion with the project directors, the CONSULTANT will recommend a suitable economic evaluation approach (or a combination of approaches) to apply for the project. Possible approaches to be explored in the White Paper for considering the project economic impacts include but are not limited to:

- The evaluation of construction-related impacts: 1) the potential negative impacts on local businesses and/or travel during construction, resulting from loss of access,

increased congestion, and other factors; and 2) the gross and net construction project (positive) economic impacts on output/economic activity, jobs, and employment income within the regional economy (benefits) associated with the proposed construction.

- The evaluation of “permanent” localized business and development impacts: the ongoing, post-completion economic impacts of the proposed project, if any, on established business districts and selected individual businesses, future development, employment opportunities, and accessibility resulting from diversion of traffic and possible changes in retail sales patterns, etc.
- A benefit-cost analysis providing the evaluation of the economic rate of return, net present value, and benefit cost ratio: such an analysis would examine user benefits including the value of passenger travel time savings, vehicle operating cost savings, safety benefits, and possibly other benefits such as environmental/air quality improvements to the extent these occur as a result project improvements. Cost will include all investment-related costs, and operation, maintenance and administration costs. There are two primary options for the basis of comparison in this approach: 1) the project No Build alternative, in which the existing bridge is maintained and from which alternatives are compared, and 2) no I-5 crossing. The latter would provide the economic benefits of having the I-5 crossing as improved against not having it at all as a means to assess the total benefits of the crossing rather than the incremental benefits of the improvement.
- A qualitative assessment of the larger social and regional economic effects: these would include improved environmental conditions, new regional or industrial activity, reduced goods movement costs, and other potential benefits.

Assumptions:

- Economic analysis efforts under this work element are separate from, and in addition to, any NEPA/DEIS-required economic analysis in Work Element 6.0.
- It is assumed that the economic analysis would be focused on the evaluation of one project alternative, subject to further scope refinement.
- Any additional travel demand modeling, if necessary, will be performed by Metro and/or the CONSULTANT team members responsible for Work Element 5.0. The CONSULTANT team will work with Metro and others to coordinate and extract model outputs necessary for the selected economic analysis.
- This work element will require input from Work Elements 7.0 and 8.0 with regard to estimating capital, operating, and maintenance costs of the project and the No Build scenario, including the ongoing O&M and probability-weighted capital replacement costs associated with catastrophic bridge failure over time.

Deliverables:

The CONSULTANT will provide:

- Economic Analysis Approach White Paper (AD3013)

- Subject to agreement on the final scope and authorization to proceed for the cost benefit analysis, a report documenting the analysis and findings of the selected economic analysis approach (Deliverable number assigned when identified)

3.7 On-Call Technical and Coordination Services

The CONSULTANT will provide strategic advice and other technical and coordination services as requested by Project Managers. Major tasks may include, as requested:

- Prepare legislative proposals in support of CRC Project
- Review transportation network assumptions and policies for DEIS
- Review and comment on evaluation of transit packages by Transit Team
- Review and comment on locally preferred alternative report
- Assist in LPA decision-making process
- Provide review and comment on draft chapters of the DEIS
- Research regulatory and technical issues relating to EIS and project
- Meet with FTA and FHWA as requested by Project Managers
- Review and comment on documentation for New Starts submittal

Assumptions:

- Request for supplemental services will be limited to available budget.
- The CONSULTANT will provide memoranda and/or participation in meetings as requested by Project Managers.

4.0 COMMUNICATIONS

The purpose of this work element is to provide timely and accurate information to stakeholders and the general public in Oregon and Washington to engage their interest, enhance their understanding, and gain their support for the project development process.

4.1 Communications Team Project Management and Quality Control

This work element is to develop a coordinated communications strategy and implement for the project. This will promote the delivery of the communications tasks and that materials are completed with thorough quality control, proper team coordination and team member supervision.

Assumptions:

- The existing Communications Plan will need to be updated to take the project through the LPA.
- The CONSULTANT Communications Team will continue to provide strategic support to CRC project and STATE leadership.
- Manage day-to-day public involvement and communications activities, and related cost and schedule tracking.
- Time includes QA/QC.
- Manage up to three Environmental Team CONSULTANTs.

Deliverables:

- The CONSULTANT will provide draft and final versions of an updated Communications Plan (AD4001).

4.2 Group Support

This work element is to help ensure that the CONSULTANT Communications Team is working closely with other team members to gain day-to-day project information; to share communications strategies and materials, and closely coordinate overall project direction and details.

In addition to internal coordination, this work element calls for providing leadership, coordination and staff support for project-sponsored committees.

4.2.1 The Community and Environmental Justice Group

The Community and Environmental Justice Group (CEJG) will meet monthly, with occasional special meetings through 2007. Properly supporting the committee will require duties such as internal staff preparation meetings, facilitation, preparing meeting agendas, materials and summaries, tracking items for follow up, and posting materials on the web.

Assumptions:

- The STATE will provide leadership and participation for the CEJG.

- There will be typically four CONSULTANT Communications Team staff at each CEJG meeting: facilitator in a lead or supporting role, a flip chart note-taker, a computer note-taker and a senior level staff member.
- Meals and/or refreshments from local vendors will be provided for each CEJG meeting.
- Membership roster updates will be as needed.
- Up to 36 internal staff coordination/preparation meetings.

Deliverables:

The CONSULTANT will provide:

- Meeting facilitation (through June) and support for facilitation at 16 CEJG meetings (AD4003)
- Agendas, summaries and materials for each meeting (AD4003 with above)
- Monthly CEJG web site updates (AD4002)

4.2.2 Project Task Force

Task Force will continue to meet monthly and require the same level of support as under Task AC, including: facilitating meetings, preparing meeting materials and written summaries, managing membership and member correspondence, tracking items for follow up, and posting meeting materials on the web.

Assumptions:

- There will be at least five CONSULTANT Communications Team staff at each Task Force meeting: one facilitator, two people for logistics and set up, one note-taker and a senior level staff member.
- Coordination with WSDOT IT is necessary for timely posting of Task Force meeting materials and updates to website.
- Meeting facilitation will be provided for 14 Task Force meetings.
- Task Force meeting schedule and updates will be provided as needed.
- Task Force membership roster updates will be performed as needed.
- Up to 14 monthly Task Force co-chair briefings will be provided.

Deliverables:

The CONSULTANT will provide:

- Draft and final meeting agendas for up to 14 Task Force meetings (AD4004)
- Draft and final meeting summaries for up to 14 Task Force meetings (AD4005)
- Audio and video of each Task Force meeting (note: this task does not include a verbatim transcript of each meeting) (AD4006)
- Draft and final press releases for each Task Force meeting (AD4007)
- Monthly email for Task Force members with meeting materials (AD4008)

4.2.3 General Project Meetings

Up to two CONSULTANT Communications Team members will participate in the following project meetings: PDT, Mini-PDT, Task Managers, Leadership Team, Sponsor Agency Senior Staff (SASS), Project Sponsors Council (PSC), and the newly formed City of Portland Technical Advisory Council (TAC) meeting.

Assumptions:

- 64 PDT meetings
- 30 Task Manager meetings
- 64 leadership meetings
- 16 SASS meetings
- 8 PSC meetings
- 16 City of Portland TAC meetings

Deliverables:

The CONSULTANT will provide:

- Regular verbal update on project communications at each meeting (no deliverable number)
- Bi-monthly written summary of project communications and outreach (AD4009)

4.2.4 Discipline Area Coordination

Interaction with the Finance, Environmental Team; Transit, Traffic and Design teams will increase as the DEIS gets underway. CONSULTANT involvement will include:

Assumptions:

- Up to six planning and coordination meetings with the CONSULTANT Finance Team staff regarding tolling and funding issues.
- One overview meeting for CONSULTANT Environmental Team staff regarding previous WSDOT experience and lessons learned from archaeological findings at Port Angeles.
- Up to eight internal coordinating meetings with CONSULTANT Environmental Team staff regarding archaeology, air quality, noise and economics technical reports (see Work Elements 6.7.1 through 6.7.5) and community outreach issues.
- Up to 12 internal coordination meetings regarding transit siting and design outreach.
- Up to 10 planning meetings with CONSULTANT Traffic Team staff regarding media and outreach for each of the 10 traffic simulations under development (see Work Element 5.2.1).
- Up to 32 internal coordination meetings with highway design regarding design, constructability, aesthetics and cost estimates.

- Up to three Interagency Collaborative Environmental Process (InterCEP) meetings for project and communications support.
- Provide up to three training sessions for staff managers/task managers on media relations, public presentations and interacting with the public.

4.2.5 Communications Team Coordination

The CONSULTANT Communications Team will continue to meet weekly. The Communications Working Group will not be reconvened, but coordination with agency partners will occur within our regular communications meetings, and sharing of the communications summary report.

Assumptions:

- CONSULTANT coordination will include up to 64 communications meetings.

4.2.6 Interagency Coordination

The CONSULTANT will coordinate with stakeholder agencies and groups to assist in achieving agreement on activities that will lead to the selection of the LPA.

Deliverables:

The CONSULTANT will provide:

- Written monthly updates to communications and outreach calendar (AD4010)
- Written summary of each meeting listing attendance, key issues, and questions received (AD4011)

4.2.7 Key Stakeholder Support

The CONSULTANT will provide one-on-one communication with key stakeholders and groups to facilitate their understanding of project issues, solicit their input on project direction, obtain feedback on project progress and identify opportunities for effective participation. When appropriate, the CONSULTANT will coordinate activities through STATE staff outside of the project office.

The CONSULTANT will attend meetings as directed by CRC staff and may include the PDT, Task Force, Joint Policy Advisory Committee on Transportation (JPACT), Transportation Management and Coordination, Vancouver Chamber, Portland Business Alliance, Identity Clark County and others as identified.

Assumptions:

- A maximum of 15 hours per week for one FTE will be spent on these activities.

Deliverables:

- The CONSULTANT will provide twice monthly verbal updates to CRC project co-directors (no deliverable number)

4.3 Communications Materials

The purpose of this work element is to see that information is created and disseminated to a broad range of audiences to promote awareness, understanding, and support for the project. Materials will be written in a style appropriate for general audiences, and visuals will be used as often as practical to convey the information. Translations will be made as appropriate. Dissemination of the materials is included in Work Element 4.6 (public outreach and engagement).

Assumptions:

- There will be more printed materials than in Task AC to support the work and findings coming out of the DEIS.
- CONSULTANT translation costs for print and web will be moved into this category (formerly Work Element 4.4.2).
- An overhaul to move web documents out of .pdf format and into html is necessary.
- The CONSULTANT team will continue to produce the same types of documents as in the past—fact sheets, display boards, mailers, newsletters, monthly email project updates, display ads, presentation materials, etc.
- To reach more people, the CONSULTANT communications team will expand use of electronic media, including TV and radio.
- The need to provide information, presentation support and materials for elected officials will increase during the first quarter of the year as both state legislatures will be in session.
- The CONSULTANT will continue to rely on WSDOT IT staff for posting website updates.
- The CONSULTANT will provide monthly contributions to local transportation and current affairs blogs.
- Twice weekly updates to the website.
- Develop new web content for emerging issues, including tolling and funding, transit siting and design, air quality, noise, natural and cultural resources, etc., estimate up to 20 issues, with 10 pages per issue.
- Website enhancements and revisions—ongoing effort to make the project website more user-friendly, informative and accessible.
- Convert up to 100 .pdfs to html pages.
- Monthly update and organize the project Power Point library.
- Revise existing or create new Power Point presentations up to 75 times for project team members to use in public meetings.

Deliverables:

The CONSULTANT will provide:

- Up to 16 fact sheets (one per month)—up to half will be translated into Spanish, Vietnamese and Russian. These will include topics such as transit siting and design, the Hayden Island Moratorium, tolling, air quality, noise, highway design issues Environmental Justice and property acquisitions (AD4012)
- Up to 100 display boards for use in fairs and festivals, public presentations and open houses. Translated versions in three languages will be available for up to 50 of the boards Up to 24 display boards for transit siting and design meetings (AD4013)
- Up to 16 maps of park and ride and transit station locations (AD4014)
- Two project newsletters to update participants about the DEIS and LPA, mailed to 15,000 households as per the database. Each will be translated into Spanish, Russian and Vietnamese (AD4015 DEIS and AD4016 LPA)
- Postcards for mailing to up to 15,000 names on project list up to three weeks prior to each Open House and before summer outreach season to notify public about the project and opportunities to comment. Up to three sets will be created at different project milestones (AD4017)
- Monthly e-news updates distributed to individuals and groups in the project database (AD4018)

4.4 Communications Tracking and Response

The purpose of this work element is to monitor that the project is reaching people effectively, responding to their questions, input and ideas and forwarding their comments to project team members. The CONSULTANT will manage and maintain a system to track contacts and comments, synthesize key themes, and report the information in a form for the STATES and the committees.

Assumptions:

- Continue to manage and expand project mailing list and email subscriber list.
- Continue to coordinate responses to public correspondence, by email and USPS. The CONSULTANT will draft the responses, but agency staff will finalize the material.
- Collect and summarize public comment at the selection of the alternatives going into the DEIS and at the selection of the LPA/release of the DEIS.
- Communications is the lead for collecting general input; Environmental is the lead for DEIS comment reports and summaries.
- Ongoing data base management – bi-monthly updates to database; up to 32 updates.
- Up to 24 standard draft and email/letters or other responses to correspondence coming into the project office; these will be used as the basis for response to common inquiries.
- Up to 100 draft responses to individual letters, email, etc., to be entered into database.

Deliverables:

The CONSULTANT will provide:

- Quarterly reports summarizing all comments coming in, regardless of their source, and the number of people in the database (AD4020)
- Three public comment summaries—one for the alternatives to be included in the DEIS, one for the release of the DEIS and one for the LPA (AD4021 Alternatives, AD4022 DEIS, AD4023 LPA)

4.5 Public Outreach and Engagement

The CONSULTANT will initiate activities for meeting with people where they work, play, gather and volunteer for the purpose of reaching a broad audience.

Assumptions:

- The CONSULTANT will continue its outreach to communities, events, businesses and jurisdictions. Up to 30 community events; 50 jurisdictional briefings; 50 community briefings, 25 business briefings. This will include outreach to low-income and minority communities.
- The CONSULTANT will cultivate relationships with at least one social service, cultural or religious organization serving each of the low income and minority communities identified in the Demographic analysis on each side of the river. This could add up to 20 meetings per year (two to five organizations, two to four times per year).
- Neighborhood design meetings will continue at a quarterly rate on each side of the river.
- The CONSULTANT will provide support for emerging issues within the finance, environmental, transit, and design disciplines, as well as in the community:
 - Tolling and funding issues will require public education and outreach
 - Transit station and park and ride siting issues will require extensive public outreach
 - The Hayden Island development moratorium and neighborhood planning effort conducted by the City of Portland will require substantial support from the communications team in terms of attending meetings, producing/editing materials, providing data and overall coordination between the projects
 - DEIS issues such as air quality, noise, water quality will require additional outreach efforts
 - Real estate and right-of-way issues will need an outreach strategy and/or print support
 - Highway design and aesthetics will become more prominent this year
 - Cost estimates will require internal coordination prior to public release
- There will be two sets of open houses at the selection of the LPA/release of the DEIS.
- Static displays will be placed in various community gathering locations in Clark County and Portland.

- Up to eight meetings (two in each state) for meetings related to funding and tolling issues.
- Up to 250 individual meeting summaries, 32 bi-weekly roll-ups, and 16 monthly summary reports.
- Up to 64 updates to the community outreach calendar posted for office-wide access (one per week).
- Scheduling and participation at up to 30 fairs and festivals.
- Scheduling for up to 50 jurisdictional briefings (to be conducted by CRC project co-directors or other STATE staff).
- Scheduling and presenting for up to 50 community briefings.
- Scheduling for up to 25 business briefings (to be conducted by CRC project co-directors or other STATE staff).
- Scheduling up to 20 meetings/briefings with religious and social service agencies serving minorities and low income populations.
- Calendar of outreach activities to be updated twice per month.
- Written summary of each meeting listing attendance, key issues and questions received.
- Scheduling, attending and preparing for up to 24 meetings related to transit station and park and ride locations and design.
- Provide communications support for up to five workshops on environmental topics. Includes community events, coordinating all logistics (agenda, facilities and speakers), promotions and advertising.

Deliverables:

The CONSULTANT will provide:

- Monthly summary reports tracking public comments from outreach (AD4024)
- A draft and final outreach strategy for right-of-way discussions with businesses and homeowners (AD4025)
- Up to 12 community meetings for highway engineering design issues (two per quarter—one on each side of the river) (AD4026)
- Up to four meetings (two in each state) regarding constructability issues (AD4027)
- Up to four meetings (two in each state) regarding aesthetics and urban design issues (AD4028)
- Two sets of Open Houses: one at LPA (January 2008) and one at DEIS (February 2008) (LPA AD4029 and DEIS AD4030)
 - Meeting plan with agenda, format, roles, meeting locations, schedule
 - Secure transit and Americans with Disabilities Act facilities for the meetings
 - Coordinate material production for display boards, handouts, comment forms, etc.

- Coordinate logistics (set up, staffing, directional signage, etc.)
- Develop an event budget for STATE review and approval and process payments (to include advertising, rental fees, printing, postage, materials, refreshments, etc.)
- Static display will be placed in up to 30 locations (15 on each side of the river) (AD4031)

4.6 Media Support

The CONSULTANT will be responsible for supporting print and visual media coverage and interaction. The project is moving into new directions and needs a more proactive media relations program that creates opportunities to gain media coverage for the project which advance awareness and support. The STATES will be responsible for developing the media plan and activities relating to editorial board visits.

Assumptions:

- The CONSULTANT will provide background support, but the STATE will serve as the “face” of the project.

Deliverables:

The CONSULTANT will provide:

- One draft and one final media plan (AD4032)
- Up to three editorial board briefings each with Columbian, Oregonian, Portland Tribune, Skanner and El Hispanic News (AD4033)
- Up to 18 reporter briefings as needed
- One media contact report for each media contact
- Daily clipping of media stories and filing in notebook for project records and reference (AD4034)
- Up to 16 draft and final articles for placement to community-based weekly newspapers (AD4035)
- Up to 16 monthly reports to Task Force with summary of CRC media coverage (AD4036)

4.7 Market Research

The purpose of this work element is to supplement public outreach with market research that allows the project to achieve several goals. First, to test awareness levels about the project beyond the people we are already reaching; second, to learn which issues the team needs to emphasize in broader contexts; and third, it allows the team to gain quantitative information about public perceptions on the project.

The CRC project will continue to seek public input through market research to add quantitative support and information regarding to the anecdotal information collected through the grass roots outreach efforts.

Deliverables:

The CONSULTANT will provide:

- Focus Groups (AD4037)
 - Draft and final discussion guides for the focus groups
 - Draft and final summaries of focus groups and findings
 - Two random sample, scientifically quantifiable surveys with comprehensive report on top line and cross tab results, relating to tolling issues and the LPA
 - Draft and final questions for each survey conducted
 - Hard copy of survey results showing top line and cross tab results
 - Summary of each survey of key findings
- Two series of focus groups in Portland and Clark County; relating to tolling (AD4038) and the LPA (AD4039)

4.8 Project Advertising

This work element includes efforts to build broad-based awareness and support exists across Portland and Vancouver of the project, its necessity and the likely solutions. The CONSULTANT will provide for advertising opportunities in support of the project as approved by the STATES,

Deliverables:

The CONSULTANT will provide:

- Internal bus advertising placards on C-TRAN and TriMet buses and light rail cars (AD4039)
- Radio advertising prior to release of DEIS to encourage attendance at open houses (AD4040)
- Advertising on outdoor billboards (AD4041)
- Display ads in community-based newspapers at key project milestones, and to advertise our participation at local fairs and festivals. Up to four series of ads will be run in up to 12 newspapers each time (AD4042)

5.0 TRANSPORTATION PLANNING

The purpose of this work element is to provide multimodal transportation planning and traffic engineering to evaluate one future No Build and up to two future Build alternatives for the DEIS. Major elements of this work element include alternatives design refinement, travel demand forecasting and traffic operations analysis for the alternatives, and development of technical studies to support the DEIS.

To accomplish these tasks, the transportation planning and traffic engineering work element is broken down into 10 subtasks, which are listed below. Significant assumptions and deliverables are listed under each subtask. The work will focus on one 2030 No Build alternative and two 2030 Build alternatives.

5.1 Transportation Team Project Management and Quality Control

The CONSULTANT will manage all individual tasks related to transportation planning and traffic engineering, participate and collaborate with other task managers on related work items, and oversee progress reporting. Monthly progress reports will be developed and the CONSULTANT will attend up to 64 project development team meetings. The CONSULTANT will adhere to the CRC quality plan. Activities under this subtask include:

- Task implementation
- Monthly progress reports (16)
- Attend PDT meetings (64)
- Attend special meetings as needed (24)
- Quality control plan update (as needed) and implementation
- Bi-weekly coordination meetings with the highway and transit teams

Assumptions:

- The CONSULTANT will attend a bi-weekly PDT meeting through the end of the DEIS.
- The CONSULTANT will attend special meetings with Federal, City, County, FHWA, FTA, and other officials or consultants as directed by the STATE.

5.2 Agency and Public Outreach Support

The CONSULTANT will support the agency and public outreach efforts undertaken by the CRC project team throughout the duration of Task AD. Support efforts will include attendance at and preparation for Task Force meetings, including the development of up to eight PowerPoint presentations, up to two corridor-wide VISSIM simulations for I-5, and up to eight interchange area SimTraffic simulations.

Assumptions:

- Attendance at up to 12 Task Force meetings.

Deliverables:

The CONSULTANT will provide:

- Up to two corridor-wide VISSIM simulations for outreach purposes (AD5001)
- Up to eight interchange area SimTraffic simulations for outreach purposes (AD5002)
- Up to eight Task Force PowerPoint presentations (AD5003)

5.3 Alternatives Design Refinement

The purpose of this work element is to identify up to two Build alternatives that will be evaluated in the DEIS. Working closely with the highway and transit teams, the transportation planning team will assist in the development and evaluation of various alternatives, assessing factors such as mainline and interchange area traffic operations, right-of-way impacts, costs, environmental resource impacts, constructability, and travel speeds.

Assumptions:

- Analysis will be based upon Build alternative travel projections developed in Task AC.
- Additional travel demand modeling, if needed, will be conducted by Metro.

Deliverables:

- The CONSULTANT will provide memoranda documenting travel demands and traffic engineering results for alternatives design refinement (AD5004)

5.4 Traffic Methods and Data Report, Traffic Data Plan and Safety Analysis

The CONSULTANT will prepare a Traffic Methods and Data Report (MDR), summarizing the methodologies used in modeling and evaluating alternatives from a traffic performance perspective.

The CONSULTANT will develop a Traffic Data Collection Plan documenting traffic data to be collected as a part of Task AD. Data to be collected may include, but is not limited to, the following:

- I-5 and I-205 mainline and interchange area traffic counts
- Arterial roadway and local roadway traffic counts
- Traffic counts in the vicinity of proposed transit stations
- Travel time, occupancy, vehicular queuing, and other data, as appropriate

The CONSULTANT will collect, review and compile the data as outlined in the Traffic Data Collection Plan.

The CONSULTANT will update the Safety Analysis Memorandum undertaken in Task AC with data available for the year 2005. Key graphics will be updated, as appropriate.

Assumptions:

- Data collection, conducted by qualified contractor(s), to be limited to \$125,000.

Deliverables:

The CONSULTANT will provide:

- Traffic MDR (AD5005)

- Traffic Data Collection Plan (AD5006)
- Traffic Data Collection Memorandum (AD5007)
- Safety Analysis Memorandum (AD5008)

5.5 Regional Travel Demand Modeling

The CONSULTANT, with input from project partners, will prepare a Modeling Approach Memorandum outlining the travel demand and transit patronage modeling approach.

The CONSULTANT will conduct EMME/2 and VISUM modeling for the one No Build and two distinct Build alternatives developed as a result of Work Element 5.3. The modeling will be based upon updated 2030 land use information provided on a per TAZ basis by Metro and RTC. All transit output will be provided via EMME/2 assignments and all automobile and truck output will be provided by both VISUM and EMME/2 assignments.

The modeling will be conducted for four-hour a.m. peak period conditions, one-hour midday peak period conditions, and four-hour p.m. peak period conditions.

Up to three modeling runs per each No Build and Build alternative will be provided. This accounts for up to two iterations per alternative, based upon feedback from the VISSIM traffic operations model. The CONSULTANT will document modeling inputs and outputs.

The CONSULTANT will post-process travel demand output using procedures developed during Task AC activities.

The CONSULTANT will facilitate Modeling Working Group meetings as a part of this work element.

Assumptions:

- All Build alternatives assume similar highway capacities.
- Travel demand modeling for tolling alternatives conducted under Work Element 3.4.2.
- Facilitation of up to 30 Modeling Working Group meetings.
- Metro and RTC oversight, support and quality assurance of modeling results.

Deliverables:

The CONSULTANT will provide:

- Modeling Approach (White Paper) Memorandum (AD5009)
- Alternatives Network Descriptions (AD5010)
- Meeting notices and notes for Modeling Working Group meetings (AD5011)
- Modeling output results (AD5012)
- Travel Demand Modeling Memorandum (AD5013)

5.6 Transportation Analysis

The CONSULTANT will conduct transportation performance analysis for one No Build and up to two Build alternatives. In addition, the CONSULTANT will conduct transportation performance analysis for up to two distinct tolling scenarios. The traffic operations analysis for I-

5 will focus on the interstate between Pioneer Street in Washington and I-84 in Oregon using VISSIM traffic operations software. The VISSIM model will be used to evaluate mainline and ramp operations.

A VISSIM model will be developed for the I-205 corridor between and including SR 500 in Washington and I-84 in Oregon. The I-205 model will be developed to provide a refined assessment of potential travel pattern shifts to and from the I-5 corridor resulting from potential added capacity to I-5 and to evaluate the travel pattern shifts likely to result under tolling scenarios. The I-205 model will be prepared for two scenarios: existing conditions and for one 2030 scenario.

The CONSULTANT will evaluate the eight interchanges in I-5's Bridge Influence Area using Synchro/SimTraffic. The interchange operations analysis will focus on the ramp terminal intersections plus up to four additional intersections for each interchange area.

The CONSULTANT will conduct intersection level traffic operations analyses for up to six transit station locations. Up to 30 intersections overall will be evaluated for existing conditions, 2030 No Build, and for up to two 2030 Build alternatives. The analyses will be conducted using Synchro/SimTraffic.

The CONSULTANT will report arterial and local roadway effects using screenline data. Up to 12 screenlines will be used.

The traffic analysis will evaluate freight-related performance, including truck volumes and truck travel patterns, and freight-related impacts.

As a part of the VISSIM analysis, managed lane operations will be evaluated. It is assumed that managed lanes will be included in the two Build alternatives.

The transportation planning team will work closely with the highway team to evaluate potential pedestrian and bicycle effects resulting from the alternatives.

Assumptions:

- Freeway and interchange traffic analysis for I-5 mainline in 23-mile corridor, I-5 ramp terminal intersections in Bridge Influence Area, and for I-205 Columbia River Crossing influence area.
- Arterial and local roadway analysis limited to 12 screenlines, except in Bridge Influence Area.
- Up to 10 arterial roadways analyzed within Bridge Influence Area.
- Up to 50 non-ramp terminal intersections to be evaluated, including non-ramp terminal intersections and intersections in the vicinity of proposed transit stations.
- Up to three VISSIM runs to be completed for each future alternative (No Build and up to two Build alternatives).
- Synchro/SimTraffic to be used to evaluate all study interchanges in Bridge Influence Area and for transit station areas.
- Managed lane analysis for up to two managed lane scenarios.

Deliverables:

The CONSULTANT will provide:

- Traffic Analysis Findings Memorandum (AD5014)
- Freight Analysis Findings Memorandum (AD5015)
- Managed Lanes Analysis Findings Memorandum (AD5016)
- Pedestrian and Bicycle Analysis Findings Memorandum (AD5017)

5.7 IJR, IAMP, and IMR Draft Reports

The CONSULTANT will prepare a draft corridor Interchange Justification Report (IJR) for I-5 Bridge Influence Area interchanges in Washington, and will prepare a draft corridor Interchange Area Management Plan (IAMP) and a draft Interchange Modification Request (IMR) for I-5 Bridge Influence Area interchanges in Oregon. The draft reports will be prepared to coincide with development of the DEIS, with the draft reports completed after the DEIS is published. The final reports will be completed in conjunction with the FEIS and is not included in this SOW.

5.7.1 Interchange Justification Report

The CONSULTANT will initiate development of a draft IJR to be completed in accordance with Chapter 1425 of the Washington State Design Manual. Elements to be considered in the IJR are as follows:

- Need for the Access Point Revision
- Reasonable Alternatives
- Operational and Accident Analyses
- Access Connections and Design
- Land Use and Transportation Plans
- Future Interchanges
- Coordination
- Environmental Processes

The CONSULTANT will meet with a support team consisting of staff from FHWA, WSDOT Headquarters, WSDOT SW Region, and Local Agencies for support and direction of the IJR.

Assumptions:

- Traffic methods, data, and analysis will be completed in coordination with Work Elements 5.4 through 5.6.
- Analyses will be based upon Build alternative travel projections developed in Task AC.
- Analysis will be completed for current year and design year for the No Build Analysis.
- Build Analysis will be completed for the design year.
- Opening year analysis will be completed in conjunction with the FEIS.

- One IJR will be developed to cover all Interchanges in Washington that fall within the CRC project limits.
- Facilitation of up to six IJR Support Team meetings.

Deliverables:

- The CONSULTANT will prepare the Draft Interchange Justification Report for all Washington interchanges within the I-5 Bridge Influence Area. (AD5019)

5.7.2 Interchange Area Management Plan

The CONSULTANT will initiate the development of a draft IAMP to be completed in accordance with ODOT’s Guidelines for Interchange Area Management Plans. The IAMP will consider the following elements:

- IAMP Purpose and Background
- Existing Conditions Inventory and Data Analysis
- Future Conditions Analysis
- Alternatives Development and Analysis
- Interchange Area Management Plan
- Adoption and Implementation
- IAMP Monitoring and Updates

The CONSULTANT will meet with a Technical Advisory Committee (TAC) consisting of staff from FHWA, ODOT, and Local Agencies for support and direction of the IAMP. The final IAMP will be completed in conjunction with the FEIS.

Assumptions:

- Traffic methods, data, and analysis will be completed in coordination with Work Elements 5.4 through 5.6.
- Analyses will be based upon Build alternative travel projections developed in Task AC.
- Analysis will be completed for current year and design year for the “No Build” Analysis.
- “Build” Analysis will be completed for the design year.
- Opening year analysis will be completed in conjunction with the FEIS.
- Facilitation of up to six IAMP TAC meetings.
- Facilitation of up to two Public Involvement meetings.

Deliverables:

- The CONSULTANT will prepare the Draft Interchange Area Management Plan for all Oregon interchanges within the I-5 Bridge Influence Area. (AD5018)

5.7.3 Interchange Modification Request (IMR)

The CONSULTANT will initiate development of a draft IMR to be completed in accordance with Federal and ODOT policy relating to additional access to the Interstate System. The new or revised access points to the Interstate System follow the same eight criteria as listed in 5.7.1 (IJR) listed above.

The CONSULTANT will meet with a support team consisting of staff from FHWA, ODOT, and Local agencies for support and direction of developing the draft IMR.

Assumptions:

- Traffic methods, data, and analysis will be completed in coordination with Work Elements 5.4 through 5.6.
- Analyses will be based upon Build alternative travel projections developed in Task AC.
- Analysis will be completed for current year and design year for the No Build Analysis.
- Build Analysis will be completed for the design year.
- Opening year analysis will be completed in conjunction with the FEIS.
- One IMR will be developed to cover all Interchanges in Oregon that fall within the CRC project limits.
- Facilitation of up to six IMR Support Team meetings.

Deliverables:

- The CONSULTANT will prepare the Draft Interchange Modification Report. (AD5020)

5.8 Special Technical Studies

The CONSULTANT will conduct special technical studies related to traffic, freight, managed lanes, pedestrian and/or bicycle conditions. The special technical studies will be conducted on an as-needed basis.

A special technical study could involve items not described elsewhere in Work Element 5.0 such as:

- Research
- Development of presentation materials
- Evaluation of conditions
- Preparation of technical analysis

Assumptions:

- Individual work orders will be prepared for all Special Technical Studies.
- Assumed not-to-exceed fee for Special Technical Studies.

Deliverables:

- The CONSULTANT will prepare Technical Memoranda for Special Technical Studies, as appropriate (deliverable number assigned when identified)

5.9 Alternatives Evaluation and DEIS Preparation

The CONSULTANT will undertake an evaluation of existing conditions, the No Build and two Build alternatives. The CONSULTANT will prepare a report summarizing the findings of the alternatives evaluation for incorporation into the administrative and draft DEIS documents for review. The DEIS process and the work under this work element would culminate in the selection of a locally preferred alternative. In this work element, the CONSULTANT will assess the impacts to the existing and future roadway system, and identify mitigation measures as appropriate. Activities to be done in this work element include:

- DEIS alternatives preparation
- Traffic technical report following MDR procedures
- Traffic information for the DEIS:
 - First draft DEIS
 - Administrative Review DEIS
 - Second Administrative Review DEIS
 - Final DEIS
 - Response to DEIS comments
- Document DEIS mitigation measures
- Prepare locally preferred alternative

Assumptions:

- CRC transportation planning team to support preparation of the DEIS in coordination with the environmental work element.
- DEIS comments are received in a database or other administrative tracking format.
- Alternatives will be evaluated to a level to support an LPA decision.

Deliverables:

The CONSULTANT will provide:

- Background Conditions Outline (AD5021)
- Background Conditions Report (AD5022)
- No Build and Build Conditions Outline (AD5023)
- No Build and Build Conditions Report (AD5024)
- Traffic Technical Report (AD5025)

5.10 Traffic Support for Other Disciplines

The CONSULTANT will support other CRC disciplines with technical data and products on an as-needed basis throughout the duration of the task order. CONSULTANT traffic support for the environmental team will include:

- Transportation Planning
- Air Quality Analysis
- Noise Analysis

The CONSULTANT transportation planning team will support the following project teams:

- Transit Team
- Engineering Team
- Environmental Team
- Tolling Team
- Traffic Support for Other Disciplines

The CONSULTANT transportation planning team will provide support to the following working groups:

- Modeling Working Group
- Transit Working Group
- Freight Working Group
- Pedestrian and Bicycle Working Group
- Engineering Working Group
- Community and Environmental Justice Working Group
- Traffic Support for Other Working Groups

Assumptions:

- Air quality and noise data to be consistent with data developed from VISUM, VISSIM and Synchro/SimTraffic models.
- The CONSULTANT Transportation Planning/Traffic Engineering Task Leader will facilitate Modeling Working Group and Freight Working Group.
- Modeling Working Group to meet every two weeks.
- Freight Working Group to meet approximately every two months.
- Pedestrian and Bicycle Working Group to be developed and to meet approximately every two months.

Deliverables:

The CONSULTANT will provide:

- Air Quality Data Memorandum (AD5026)

- Noise Data Memorandum (AD5027)
- Meeting Summaries for Working Groups, as appropriate (deliverable number assigned when identified)

6.0 ENVIRONMENTAL

The purpose of this work element is to coordinate and prepare the technical reports and the Alternatives Analysis (AA)/DEIS to comply with NEPA and FTA New Starts requirements. The assumed timeframe for these services is approximately 16 months.

Significant assumptions and deliverables are listed under each work element below.

6.1 Environmental Team Project Management and Quality Control

The CONSULTANT Environmental Team Task Manager will oversee all tasks related to this work element. This work will include coordination with the STATES as well as coordination and management of the CONSULTANT Environmental Team. The CONSULTANT Environmental Team will provide input and updates to environmental elements of the schedule, track budget, and provide monthly progress reports.

Assumptions:

- Efforts under this work element will continue for the duration of this SOW, which is assumed to begin March 1, 2007 and run through June 30, 2008.
- Bi-weekly participation in PDT meetings.
- Bi-weekly meetings with CONSULTANT Project Managers.
- Attendance and participation in approximately 14 Task Force meetings.
- Attendance at special meetings with federal, City, County, FHWA, FTA, and other officials as directed by the CONSULTANT Project Manager.
- Participation in approximately 12 SASS meetings or mini-PDT meetings.
- Weekly CONSULTANT Environmental Task Manager meetings.
- Up to four full CONSULTANT Environmental Team meetings.
- Ongoing task management, other administration, and general administrative duties

Deliverables:

The CONSULTANT will provide:

- Input to master schedule for tasks covered in this work element, monthly updates (16)

6.2 NEPA Public Involvement Support

The CONSULTANT will provide support to the communications and public involvement efforts. This will include staffing at selected meetings and events and environmental information for displays and communication. This work element will focus on supporting efforts so that the information collected during the public outreach process is fully documented in the DEIS, and meets the procedural requirements of NEPA. This work element will also include the public involvement report for the DEIS.

Assumptions:

- One CONSULTANT Environmental Team member will participate in up to 32 meetings (bi-weekly) with the CONSULTANT Communications Team, by phone or in person.

- Two CONSULTANT Environmental Team members will participate in up to eight meetings with the CEJG. The CONSULTANT Communications Team will manage the CEJG meetings.
- Two CONSULTANT Environmental Team members will participate in up to six community outreach events. The CONSULTANT Communication Team will manage the community outreach events.
- Three CONSULTANT Environmental Team members will participate in up to three environmental issue workshops and/or meetings. The CONSULTANT Communications Team will organize these workshops/meetings. Staff from the CONSULTANT Environmental Team will help organize, prepare materials for, and participate in these workshops/meetings. In addition to air quality, focus areas may include noise, archaeology and other topics. Public involvement and communications related to the environmental issue workshops and/or meetings will be managed under Work Element 4.0. The CONSULTANT Environmental Team will participate in strategy and delivery related to NEPA, regulatory requirements and environmental issues.
- Two CONSULTANT Environmental Team members will participate in two air quality panel discussions/workshops. These workshops will be open to members of the public. Panelists will include the air quality specialist from the CONSULTANT Environmental Team, and may include other air quality experts from state or federal agencies or non-governmental organizations. The CONSULTANT Environmental Team will help define the format, approach, and materials for this workshop. The CONSULTANT Communications Team will provide logistical support for these workshops.
- The CONSULTANT Communications Team will provide the CONSULTANT Environmental Team with a summary of the relevant communications activities conducted during each month of the scoping process.
- The CONSULTANT Project Controls Team will provide the software the CONSULTANT Environmental Team will use to load and organize public comments..
- The CONSULTANT Communications Team will gather public and agency comments that relate to the overall project, and pass them along to the CONSULTANT Environmental Team. Comments that are specific to the DEIS will be collected and organized by the CONSULTANT Project Controls Team and the CONSULTANT Environmental Team.
- Responses to scoping comments will be prepared by the CONSULTANT team or Agency staff responsible for the given subject matter.
- Information provided by the Tribal governments and determined by them to be sensitive due to the need to maintain cultural integrity and inappropriate for distribution to the general public, will not be included in documents issued for general public access, or in other documents that are accessible to the general public via the Freedom of Information Act (FOIA). The CONSULTANT, WSDOT, ODOT, FHWA and FTA will provide sensitive information only to internal staff with a need to know, or to other parties as determined appropriate by the Director of FHWA and/or FTA pursuant to the FOIA.

Deliverables:

The CONSULTANT will:

- Provide court reporter transcripts for up to four public meetings (AD6001)
- Prepare up to six quarterly comment summaries (AD6002)
- Prepare one Draft public involvement report (AD6003)
- Prepare one Final public involvement report (AD6003)

6.2.1 CONSULTANT COMMUNICATIONS TEAM

As noted in the assumptions above, one CONSULTANT Environmental staff will attend the CONSULTANT Communications Team’s bi-weekly communications meetings to provide ongoing coordination between the public involvement and environmental teams.

6.2.2 Working Groups, Outreach Events and Issue Workshops

The CONSULTANT Communications Team will manage the Community and Environmental Justice Group meetings, the community outreach events and the environmental issue workshops and/or meetings. Public involvement and communications related to the environmental issue workshops and/or meetings will be managed by other work elements described in this SOW. The CONSULTANT Environmental Team’s role is to participate in strategy and deliveries related to NEPA, regulatory requirements, and environmental issues, and obtain court reporter services, when needed.

6.2.3 Quarterly Comment Summaries

The CONSULTANT Environmental Team will prepare quarterly memos summarizing the public input received. These memos will summarize scoping input to support project development and implementation. The CONSULTANT Environmental Team will:

- Receive public, agency, and Tribal government comments from the CONSULTANT Communications Team. Comments may come from public meetings, the project team website, the CRC contact database, and from the CONSULTANT Communications Team.
- Load comments into the Prolog database, and organize comments according to the elements of the environment in the EIS.
- Summarize and paraphrase the comments into comment “groups” or “themes.”

6.2.4 Public Involvement Report

The CONSULTANT will prepare a report summarizing the scoping activities, input received, and actions taken. The purposes of the report will be to 1) provide the CRC Project Team with a summarized version of scoping input received so that input can be incorporated, as appropriate, into project development and implementation, and 2) provide to the public and other stakeholders, a summary record of comments received and how those comments will influence project development and implementation. Activities include:

- Receive public, agency, and Tribal government comments. Comments may come from public meetings, the CRC website, the CRC contact database, and from the CONSULTANT Communications Team.
- Load comments into a database, and organize comments according to the elements of the environment in the EIS.

- Summarize and paraphrase the comments into comment “groups” or “themes.”
- Prepare and circulate preliminary draft (including summary of scoping activities and summary of comments) for ODOT and WSDOT review.
- Assign responses to appropriate project team members (note: the CONSULTANT team will not develop responses to each comment. The team will develop a general response to each comment “group.”) The intent of the responses will be to summarize how the comments will be incorporated into project development and implementation (e.g., the analysis of impacts, development of alternatives or other project activity).
- Prepare and circulate draft scoping report for review and comment by: WSDOT, ODOT, FTA, FHWA, Metro, TriMet, C-TRAN, and RTC.
- Revise preliminary and draft scoping reports and produce final scoping report.
- Provide the final report to the CONSULTANT Communications Team for posting on the project web site.

6.3 Engineering, Traffic and Transit Team Support

The CONSULTANT Environmental Team will provide support to and coordination with the CONSULTANT Engineering, Traffic and Transit teams. This will include identifying data and information needed from these other teams for environmental analysis, coordinating analytical approaches and results, reviewing draft documents produced by other teams, and providing data and analysis for various products produced by other teams.

Assumptions:

- Review comments on selected transit, engineering and traffic documents

Deliverables:

The CONSULTANT will provide:

- Descriptions of data needed from other teams in order to conduct environmental analysis (AD6004)
- Input to selected reports including the IAMPs, IJR, and Definition of Alternatives (AD6005)

6.4 Regulatory Agency Coordination and Compliance

The CONSULTANT Environmental Team will facilitate coordination efforts with state and federal regulatory agencies regarding decisions to be made during the DEIS phase of the project and prepare for decisions to be made in the FEIS phase. This includes implementation of the InterCEP agreement as well as other agency coordination and regulatory compliance. Tasks will include:

- Organize and help direct and facilitate monthly meetings with the InterCEP resource agency representatives as well as overall coordination with these agencies.
- Maintain regular communication between the CONSULTANT Environmental Team and the FTA, FHWA, WSDOT, ODOT and resource agencies.

- Coordinate key milestones of technical analysis and findings with designated WSDOT and/or ODOT technical specialists.
- Organize and help direct subgroup meetings with selected representatives from resource agencies. Subgroups may include: 4(f)/Section 106, Stormwater, Aquatic Resources, Air Quality/Air Toxics.
- Develop agency concurrence packages on up to two major decision points for review and comment, revision and refinement.
- Coordinate environmental team's work is coordinated with CRC and agencies' efforts.
- Participate in regular meetings and coordination with agency sponsors through the Environmental Working Group.
- Participate in regular meetings and coordination with Participating Agencies.
- Develop preliminary Permitting Strategy for local, state and federal environmental .permits and approvals. This will be a precursor to a Permitting Plan that would be prepared as part of the FEIS.

Assumptions:

- Participation in:
 - Up to 18 InterCEP meetings (monthly).
 - Up to 18 Environmental Working Group meetings (monthly).
 - Up to six Participating Agency meetings.
 - Up to 14 Portland TAC meetings.
 - Up to 24 subgroup meetings. Subgroup meetings will only be developed as needed and only as long as needed, to resolve specific issues.
- Coordination with resource agencies will largely follow the InterCEP agreement process.
- Key points of decision with resource agencies will include the range of alternatives for the DEIS and the locally preferred alternative. Other key coordination points will include technical analysis and findings and the DEIS itself.

Deliverables:

The CONSULTANT will provide:

- Agendas and meeting notes for all InterCEP, Subgroup, Environmental Working Group and Participating Agency meetings (AD6006 InterCEP, AD6007 Subgroup, AD6008 Environmental Working Group, AD6009 Participating Agency)
- Concurrence packages on up to two major decision points (AD6010)
- Coordination packages on up to two coordination points (AD6011)
- Preliminary Environmental Permitting Strategy (AD6012)

6.5 Cultural and Related Resources Coordination

Under this work element, the CONSULTANT will address the policy and procedural requirements of NEPA and the Washington State Environmental Policy Act, Section 106 of the National Historic Preservation Act (NHPA), DOT Act Section 4(f) (with respect to archaeological and traditional cultural properties [TCPs]) and state cultural resource regulations, with the Oregon and Washington state historic preservation offices (SHPOs), the National Park Service, the US Army, the cities of Vancouver and Portland, and other Section 106 consulting and interested parties. This work element also will include assisting WSDOT and ODOT in informing tribal governments on the process for soliciting public comments and with preparation and staffing for tribal scoping and/or Consultation and coordination meetings as required by federal and state laws and the November 8, 2006, Draft First Amended Programmatic Agreement (PA) Implementing Section 106 of the NHPA for the federal-aid Highway Program Administered by the FHWA (Washington DOT-related PA).

The CONSULTANT will make the logistical arrangements for, conducting and documenting:

- Up to four meetings with the public/private partners of the Fort Vancouver National Historic Site/Vancouver National Historic Reserve to identify and address overall cultural resources, Section 4(f), visual and other potential resource policies and procedural concerns regarding the project.
- Up to eight total meetings with the Historic Resources Technical Advisory Group, Archaeological Resources Technical Advisory Group, or the Cultural Resources/Section 4(f) Work Group to address technical issues advanced to them by WSDOT and ODOT.

The CONSULTANT will assist the project's tribal liaison by aiding in making arrangements, attending, helping to conduct, and documenting up to four meetings with individual tribes at their tribal offices, and up to three inter-tribal meetings in Vancouver (these latter three meetings may be held in-field or at covered locations, whichever is agreed to by the participating tribes and WSDOT and ODOT). The project's tribal liaison shall lead all meetings. The purpose of these meetings shall be to identify any potential TCPs or concerns that the tribes might have with the project. The CONSULTANT will provide court reporters at each meeting, who will generate verbatim transcripts of each meeting's proceedings.

The CONSULTANT will prepare for and attend:

- Per Work Element 4.2.4, Internal Coordination Meeting, one meeting with the CONSULTANT Communication Team to establish coordination between CONSULTANT and the team for meetings with the Portland/Vancouver neighborhood downtown and historic landmarks organizations.
- Up to four community events/briefings in the Portland/Vancouver area with neighborhood and downtown organizations, and Certified Local Governments (CLGs) to address cultural resources issues,
- Up to two jurisdictional briefings with City of Vancouver planning staff regarding potential concerns focused on cultural resource issues.

Per Work Element 4.5, the CONSULTANT Communication Team will provide logistical support for the six community events/briefings or jurisdictional briefings.

The CONSULTANT will make logistical arrangements, prepare for, attend, and record:

- Up to 20 meetings between the CONSULTANT technical cultural (above ground and archaeological) resources staff and technical staff from WSDOT/ODOT jointly, Washington and Oregon SHPOs jointly, the US Army Corps of Engineers, and FHWA/FTA jointly.

CONSULTANT shall prepare a plan for coordinating with consulting parties on the preparation of the Cultural Resources Survey Report. The plan will rely on:

- The community events/briefings and jurisdictional briefings as described in this work element and Work Element 4.5 to address coordination and consultation with non-tribal parties.
- The tribal meetings described in this work element.
- Additional consultation and coordination efforts that the Agency cultural resources, project management, and/or project tribal liaison plan to conduct independent of CONSULTANT's efforts. Agency will provide the descriptions of these activities to the CONSULTANT for inclusion into the plan.

Assumptions:

- Up to two CONSULTANT staff will attend each meeting (not including court reporter for tribal meetings).
- Because of the fluid nature of this work element, the level of effort with respect to this work element will be limited to the number of professional hours assigned to it in Exhibit B.
- Agency shall be responsible for:
 - All formal consultation with Indian tribes, including but not limited to inviting appropriate Indian tribes to be consulting parties, providing tribes with opportunity to consult with respect to determining the Area of Potential Effect (APE), and finding and resolution of adverse effects. Agency shall further determine if other consultation points or coordination activities should be conducted with Indian tribes in accordance with the PA and the NHPA, and shall inform Consultant of such needs and coordinate with them regarding how to incorporate tribal input into the project's historic resources program.
 - Keeping FHWA and SHPO informed of the status of consultation with Indian tribes per section VII of the PA.

Deliverables:

The CONSULTANT will provide:

- Agendas and Meeting notes for up to 27 meetings (AD6013)
- Transcripts of up to seven tribal meetings (AD6014)

6.6 Alternatives Refinement

The CONSULTANT will provide on-going review and input on the alternatives to be developed and carried forward into the DEIS. It is expected that ongoing analysis and review will be required to refine and finalize the specific designs and operational assumptions for the short list of alternatives before initiating the DEIS. This would be a continuation of the alternatives screening conducted in 2006. Finalizing the content of those alternative packages and developing designs for those alternatives will require additional analysis, screening and refinement during and after the public review in early 2007 in order to develop appropriate definitions and levels of design refinement for the DEIS analysis.

Assumptions:

- Other CONSULTANT teams will be preparing all design drawings. The CONSULTANT Environmental Team will provide input related to environmental constraints and opportunities as well as regulatory needs associated with the range of alternatives.
- The CONSULTANT will provide comments and input on the designs and design questions leading to the range of alternatives for the DEIS.

6.7 DEIS Framework

Under this work element, the CONSULTANT will continue efforts begun under Task AC–DEIS Framework.

As part of this work element, the CONSULTANT will develop the DEIS general framework and document outline. The framework will identify key elements of report content, and report design. This work element will also include efforts to establish guidelines for the technical reports that feed into the DEIS.

- Content: Prepare a high-level outline for the DEIS describing major sections, order of sections, general contents and any associated or supplemental reports or documents (i.e., summary reports).
- Design: Prepare a schematic of DEIS design elements. This schematic will replicate the graphic elements planned for the reader-friendly document. Elements to be articulated in this mock-up will include: layout, paper style, type faces, column styles, sidebars, captions, headers and/or footers, photos and graphics. This mock-up will be no more than 10 pages, but will be of sufficient length to identify the main design elements for the DEIS.
- Guidance: Prepare an internal guidance document for technical specialists prior to the commencement of drafting technical reports. This document will guide technical writers on: suggested outline and heading levels; writing style requirements; appropriate terminology; instructions for references, citations and footnotes; templates for figures and exhibits; and units. It will also outline the technical report preparation process; timelines and review schedule; and communications/contact information.

Assumptions:

- There will be up to three rounds of internal review for the DEIS framework.
- For each review draft, we have budgeted to provide an electronic copy and one reproducible copy of the document.

- Final design and content elements for the DEIS may be modified once this work element is complete. Modifications to design and content may occur due to the introduction of new alternatives, updated information on project impacts or other factors.

Deliverables:

The CONSULTANT will:

- Provide one reproducible copy and an electronic copy of the outline of the preliminary framework for the DEIS (AD6015)
- Provide one reproducible copy and an electronic copy of the draft framework for the DEIS content and design elements (AD6016)
- Provide internal technical report guidance document (AD6017)

6.8 Technical Reports

Cultural Resources Discipline Report

- Two versions of the Cultural Resources Discipline Report shall be prepared:
 - Agency Version: Will include discussion of all historic built-environment, archaeological and Traditional Cultural Property (and appropriate tribal input) information.
 - Public Version: Will include all historic built-environment information, and will not include sensitive archaeological data in accordance with RCW 42.56.300 and ORS 192.501.
- Bibliography of resources for Historic Resources Technical Report and Section 106 Findings of Effect.
- Historic Property Inventory Database forms to the Oregon SHPO and the Washington Department of Archaeology and Historic Preservation (DAHP) for each property determined to be 40 years old or older that are not already identified in either database.
- Up to 10 individual Determination of Eligibilities (DOEs) and one Historic District DOE Report and Project Submittal Letter to Agency.
- Up to 25 Finding of Effect (FOE) Reports that addresses up to 25 historic properties that are either National Register of Historic Places (NRHP)-listed or NRHP-eligible and that are affected by the Project alternative.
- Records regarding coordination with appropriate parties.
- Archaeological site forms.

Assumptions:

- The CONSULTANT Environmental Team will prepare a style guide, document template and graphics guidelines for technical reports.
- Technical reports will address a No Build alternative and up to two Build alternatives.
- This work element will cover three drafts and one final technical report for each discipline area: Draft 1 for CONSULTANT review; Draft 2 for internal agency review; Draft 3 for

external agency and/or tribal review; Final technical report. The CEJG will be included in the second review cycle for the Environmental Justice technical report.

- Technical report comments for each review draft will be submitted as line-by-line written comments using the templates provided by the CONSULTANT Environmental Team.
- Technical reports will include: regulations and standards, affected environment, environmental consequences, mitigation measures, permits and approvals, appendices. The specific format and writing guidelines for technical reports will be defined through the technical report work plan, described in Work Element 6.7.
- This work element includes coordination with other technical report writers covering: traffic, transit, aviation, navigation and construction methods.
- The technical report schedule may be subject to change if there are changes to design assumptions or other input necessary from other CRC team members or the STATES.
- STATE will directly provide or direct pay for technical report printing costs.
- For the environmental justice technical report, two staff from the CONSULTANT Environmental Team will attend up to four of the monthly CEJG group meetings described in Work Element 4.2.1.

The CONSULTANT Environmental Team will receive the following deliverables from other project team members to complete their work in this work element.

- Transit Technical Report
- Transportation Technical Report (traffic, freight, ped/bike, parking)
- Navigation Technical Report
- Aviation Technical Report
- Utilities Technical Report
- Transportation Modeling Technical Report
- New Starts Documentation
- Finance Plan
- Public Involvement Report
- Hydraulics Report
- Stormwater Report
- Geotechnical Report

The CONSULTANT Environmental Team will receive the following *data* from other project team members to complete their work in this work element.

- Regional Model output
- Traffic analysis output
- Project designs, plans, profiles, cross-sections, selected details
- Project descriptions

- Right-of-way data
- Cost estimates
- Description of assumed construction schedule and techniques

Historic Resources

- This effort will be scoped as a specific number of hours, with the understanding that historic resources work may be modified or expanded if the project team encounters unanticipated issues from background research and/or field investigations.

Deliverables:

The CONSULTANT will provide:

All Reports

- Up to two draft technical reports and one final technical report for each discipline.
- Responses to all comments received to technical report drafts 1 and 2 in the format provided by the CONSULTANT Environmental Team.
- Documentation of coordination and potential mitigation strategy/approaches/options that have been identified.
- All records of communication, meetings and memoranda concerning technical research and findings.

Section 4(f)/6(f) and Parks

- Up to five Draft Section 4(f) Evaluation and Submittal Letters for each 4(f) evaluation.
- Distribute the approved Draft Section 4(f) Evaluations for public comment, per a distribution list provided by Agency.

6.8.1 Acquisitions, Displacements and Relocations (AD6018)

The Acquisitions, Displacements, and Relocations technical report will address the following, based on conceptual designs available during the EIS process:

- Acres of land and number of parcels that would be acquired under each project alternative. This work element will detail the current uses of land and current zoning designations of the land that would be acquired under each alternative.
- Number of displacements that would occur under each project alternative. This work element will estimate how many of the displacements are businesses, how many households would be displaced, and how many people would be displaced under each alternative. Additionally, as data are available, the work element will describe the social characteristics (age, race, income level) of the people subject to displacement.
- To address potential mitigation strategies, the technical report will contain an assessment of vacancy rates for similar space in the area to accommodate potentially displaced businesses and/or households.

The acquisitions and displacements analysis will include potential acquisitions, displacements, or relocations in the primary area of potential impact (API), and will focus on the direct impact area using Geographic Information Systems (GIS) data, assessors' records, field investigations, and interviews with representatives from local jurisdictions and relevant agencies. Potential short- and long-term effects will be discussed in the technical report.

6.8.2 Ecosystems (AD6019)

The Ecosystems technical report will discuss the I-5 CRC project as it applies to fish, wildlife, and plants, and their habitats, occurring within the APIs. The report will evaluate impacts to special-status species; to habitats that support fish, wildlife, and plants; to local, state, and federally protected habitats; and to other ecosystem resources, including migratory birds, marine mammals, rare plants, and noxious weeds.

Data sources and data collection methodologies will be consistent with those described in the MDR. In a previous phase of work, the environmental team collected a list of potential special-status species and their habitats and conducted field surveys to verify these habitat types within the APIs. The team also conducted rare plant surveys, and inspected bridges for bridge-nesting species. Habitat types were characterized and mapped using Johnson & O'Neil (2001) species/habitat matrix.

The technical report will analyze short- and long-term impacts to ecosystem resources. For aquatic resources, impacts to fish passage, sensitive habitats, and suitable and critical habitat for listed fish will be analyzed. For terrestrial resources, impacts to wildlife passage and habitats, including suitable, critical, and other protected habitats, will be analyzed. The report will also analyze the potential for adverse effects to listed species under the federal Endangered Species Act (ESA). Potential beneficial impacts of the proposed alternatives will also be evaluated. Information from this analysis will support the selection of the preferred alternative.

A biological assessment (BA) to address compliance with Section 7 of the ESA will be prepared in draft form. The draft BA will address baseline conditions and identify species listed as endangered, threatened, proposed, or candidate and their habitats that occur in the project area. Analysis of impacts to listed species and their habitats will occur if a preferred alternative has been identified prior to the end of this work order. The BA will consist of one document, follow either ODOT or WSDOT's template, and will address species under the jurisdiction of National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS).

6.8.3 Energy, Electro-magnetic Fields and Greenhouse Gases (AD6020)

This report will combine three topics. The energy analysis will estimate and evaluate the energy consumption for construction and operation of the I-5 CRC alternatives and their potential effect on the regional supply and demand for petroleum and electricity. Energy demand and supply in the greater Portland/Vancouver area will be generally characterized for petroleum and electricity including supply sources, rates of energy use, and demand forecasts for the existing and future forecast design years.

The energy content used for constructing the extension of the light rail system across the Columbia River and highway/bridge construction will be estimated for the various alternatives. This analysis will include estimating energy use for constructing light rail facilities such as track elements, stations/stops, signals, support facilities and site work. It will also address energy used in constructing highway facilities such as interchanges, lighting, signals, landscaping, and road

widening, as well as bridge construction. The total construction energy use will then be compared to short-term supply and demand for energy in the regional area.

The analysis of operational energy use will focus on petroleum use for vehicle operation and maintenance and electrical use for light rail operation. Existing operational energy use will determine the use of gasoline and diesel for passenger cars, light trucks, heavy trucks and motorcycles, and determine the existing use of electricity by light rail. Future electrical and petroleum use will be estimated for these same transportation elements, which will provide the basis for assessing the effect of operational use on the regional supply and demand for energy.

An estimate of greenhouse gas emissions will be included in this report. The report will calculate, based on a standard multiplier, total greenhouse gas emissions for each alternative package.

The Energy, Electro-magnetic fields (EMF) analysis will characterize the potential sources of electric and magnetic fields in the project area and identify the location of sensitive receptors that may be affected by EMF. It will assess project-related generation of EMF from construction and operation and describe the potential for significant human health impacts from exposure to EMF resulting from the project alternatives.

Generally, short-term exposure to low levels of EMF, particularly the type that would likely be generated during construction, aren't considered hazardous to public health. However, an assessment of risk from EMF on sensitive receptors would be determined for construction.

Long-term or operational effects of exposure to EMF have the potential to be harmful to human health. Long-term impacts from EMF will be assessed by identifying sensitive receptors that would be in close proximity to EMF sources where there would be potential long-term exposure (for example, residents located near electrical lines may be exposed to electrical fields over many years). This will be assessed by examining the number of homes, schools, and other sensitive land uses near the proposed project particularly where electric and magnetic field exposures may be created by the proposed project.

6.8.4 Environmental Justice (AD6021)

The Environmental Justice technical report will evaluate whether the project will result in disproportionately high and adverse impacts to low-income or minority populations. This analysis will address both short-term and long-term impacts.

Short-term impacts include construction-related environmental health impacts and whether property acquisitions and takings disproportionately affect low-income and minority populations.

Long-term impacts include whether the project results in increased traffic-related environmental health issues or severe Environmental Justice populations from the broader community.

The Environmental Justice technical report will use information from other technical reports to identify potential impacts. For example, technical reports on air quality, noise and vibration, and transportation will provide data on the location, intensity, and duration of potential environmental effects within the region.

The potential adverse and beneficial effects of tolling on minority and low-income populations will be assessed. This evaluation may include a literature review of past research on the equity of tolling, a summary of concerns about tolling as collected from public outreach, travel time

savings, and alternate routes effects. Finally, this technical report will suggest potential measures to mitigate any adverse impacts to Environmental Justice populations.

6.8.5 Geology and Soils (AD6022)

This technical report will present the results of geologic hazards assessment within the I-5 CRC project area of API. Relevant data includes but not limited to steep slopes, landslide, seismic hazards, and soil type. These results will be used to help determine to what extent project alternatives will impact geologic hazards, and how those impacts will affect implementation, constructability and operation of the proposed project. Information from this determination will be used to support the selection of the preferred alternative and the design.

Data sources and data collection methodologies presented in this technical report are consistent with those described in the MDR for Geology and Soils. These include review of applicable and attainable regulatory agency records, geologic hazards and hydro-geologic maps, geotechnical reports, and soil type information.

6.8.6 Hazardous Materials (AD6023)

This technical report will present the analytical results of sites within the I-5 CRC project API that have known or suspected contamination by hazardous substances, petroleum products, and/or asbestos containing materials. These results will be used to help determine to what extent project alternatives will impact hazardous material sites, and how those impacts will affect human health and the environment. Information from this determination will be used to support the selection of the preferred alternative and the design.

Data sources and data collection methodologies presented in this technical report are consistent with those described in the MDR for hazardous material sites. These include review of applicable and attainable regulatory agency records; review of historic land use; and site reconnaissance.

6.8.7 Historic Resources (AD6024)

The purpose of this work element is to continue the process of identifying and evaluating historic built-environment resources that may be affected during the proposed project. The information will be used to help inform the design of alternatives and to contribute to the assessment of impacts and potential mitigation measures for unavoidable impacts. Activities will initiate Phase 2 as outlined in the Historic Resources MDR, and will be conducted in accordance with the November 8, 2006 Draft First Amended Programmatic Agreement Implementing Section 106 of the NHPA for the Federal-aid Highway Program Administered by the Federal Highway Administration (PA).

Establish Area of Potential Effect

The CONSULTANT will meet with ODOT and WSDOT cultural resources staff to help establish the APE. Consultant shall coordinate with ODOT and WSDOT cultural resources staff to generate any justification for revising/amending the APE, if warranted (based on field survey or background research).

Literature Search and Document Review

The CONSULTANT will review the historic Built Environment Preliminary Baseline Report (PBR) and for areas not covered in the PBR, the CONSULTANT will research the DAHP, Clark

County, Oregon SHPO, Multnomah County, Vancouver and Portland, and other records as appropriate for known historic resources and for project background information.

Historic Property Field Survey

The CONSULTANT will conduct an intensive survey of the historic built environment of the areas not covered in the PBR and an intensive survey for properties identified in the PBR. Using discretion when choosing historic buildings and structures to be inventoried (i.e., those resources bearing integrity worthy of documentation within the APE's context), the CONSULTANT will prepare Historic Property Inventory Database Forms for Oregon SHPO and Washington DAHP for each property determined to be 40 years old or older for sites not already identified in either database. The intensive level survey will include preparing information regarding each resource in a digital database that will be linked to spatial data for each resource in the project's GIS historic resources layer. The documentation will be provided to WSDOT/ODOT in electronic (CD) and hard copy formats. The CONSULTANT shall submit all forms to the WSDOT/ODOT cultural resources staff member assigned to the project prior to submittal to DAHP/SHPO for assignment of permanent resource numbers.

Prepare Determinations of Eligibility for the National Register of Historic Places

A DOE will include a brief physical description, history, context, significance statement, map and photographs of resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association. If Agency staff request, then the CONSULTANT will prepare draft and final DOE Reports for each historic resource that is considered potentially eligible for the NRHP. For authorized DOE Report(s), the CONSULTANT will also prepare a Project Submittal Letter in Agency-approved format.

Section 106 Finding of Effect Report

Following coordination with Agency staff, the CONSULTANT will prepare Section 106 FOE documentation for historic resources that have been listed or determined eligible for the NRHP for historic resources. The FOEs will describe the project, identify the historic resources, and assess the project's effects on the historic resources including beneficial effects, physical destruction or damage; alteration or rehabilitation; removal; change of setting; introduction of visual, atmospheric or audible elements; neglect of a property; or transfer or sale of ownership. The CONSULTANT will include in the FOE documentation an assessment of the alternatives or alternative modifications that may avoid or minimize adverse effects to historic resources. The CONSULTANT will include in the FOE documentation of Public Involvement regarding impacts to historic resources. This will include demonstrating that the project has briefed and heard comments from CLGs in Vancouver and Portland (the CLG-related activities are addressed in Work Element 6.2 – NEPA Public Involvement Support). The CONSULTANT will coordinate with Agency, when requested, regarding avoidance or minimization of adverse effects and concurrence on findings. The FOE documentation will be included in the "Recommendations" section of the Cultural Resources Technical Report.

Initiate coordination regarding identification of mitigation options for unavoidable Adverse Affects

When unavoidable adverse effects to historic properties affected by multiple alternatives have been identified, and subsequent to receipt of public comments on the DEIS, the CONSULTANT

may assist FHWA, WSDOT and/or ODOT in initiating coordination with appropriate parties to begin identifying options to mitigate the effects.

Prepare Cultural Resources Technical Report (Discipline) Report

The CONSULTANT will prepare the historic built-environment portion of both the Agency and public versions of a Cultural Resource Discipline Report that identifies the historic built-environment resources and the effects of different alternatives, and indicates that the Section 106 processes have been part of project development. The Cultural Resource Discipline Report will include DOE and FOE references and possible minimization and mitigation strategies. Following coordination with Agency staff, the CONSULTANT will prepare the report in Agency-approved format, and consistent with the guidance provided in Exhibit C of the PA.

Assumptions

- CONSULTANT shall provide to the Agency written notes of any coordination conducted, as approved by Agency, with consulting parties or other parties regarding historic resource investigations and evaluation.
- CONSULTANT shall assign professional responsibilities for work elements only to persons who are qualified for the work under the Professional Standards of the Secretary of Interior, unless otherwise provided pursuant to the PA, Appendix C provisions.
- Agency shall be responsible for:
 - Submitting formal requests for response on consultation points to consulting parties.
- Because the parameters of several of the CONSULTANT activities in this work element are at least in part dependent upon the currently unknown results of other activities, the level of effort with respect to completing the activities in this work element will be limited to the number of professional hours assigned to it in Exhibit B.

CONSULTANT's participation in coordination and consultation consulting parties or other parties shall be accomplished through Work Element 6.5.

6.8.8 Land Use (AD6025)

The land use evaluation will address the project's impacts to local land use and compliance with local, regional, and state land use plans. The evaluation will also address development regulations that are applicable to this project, including allowed uses, special districts, and overlay zones.

The analysis will identify the short-term impacts of construction. The CONSULTANT will evaluate the impacts of construction activities on surrounding uses, special districts, overlays and plan areas. Such impacts could include temporary reduction or loss of accessibility to businesses or residences, disturbance of livability, or disruption of significant public activities or events.

The analysis of long-term land use impacts will be based on comparing the alternatives to the information collected on existing land uses, zoning, comprehensive plan designations, and up to seven designated special districts, overlays, and sub-area plans. The findings from other reports, such as Traffic, Displacements, Air Quality and others, will also help identify land use impacts. The analysis of long-term impacts will also include a review for consistency and or compliance with state, regional, and local plans. Further evaluation of impacts to land use will include a

review of the literature and modeling outputs regarding the possibility of induced growth, especially where it may be inconsistent with growth plans.

6.8.9 Neighborhoods and Population (AD6026)

The Neighborhoods and Population technical report will analyze the following potential impacts: major displacements of people or community resources, separation of a neighborhood from its community resources, impacts to traffic circulation patterns, impacts on community cohesion, and inconsistencies with adopted neighborhood plan goals.

A profile for each neighborhood within the Primary API will be prepared in order to evaluate impacts. Each neighborhood profile will contain demographic information, such as the percentage of minority, low-income, and disabled population, as well as the percentage of population over 65 years of age. The profiles will also contain housing information, such as the percentage of renters, longevity of home ownership, and estimated value of each residential property in the neighborhood. Additionally, project staff will work with neighborhood and other community groups to identify community resources within each neighborhood.

Neighborhood and community plans will be reviewed to determine if the project is consistent with plans adopted by the City of Vancouver and the City of Portland. The findings from other reports, such as Land Use, Environmental Justice, Traffic, Transit, and Parks will also help identify impacts to Neighborhoods and Population.

6.8.10 Public Services (AD6027)

Public services include law enforcement, fire and emergency medical services (including hospitals), solid waste collection and disposal, federal post office service, and public school transportation. Data for each public service will be gathered and analyzed within the primary API. Where the facilities or key routes exist only within the secondary API, data will be collected within the secondary API. The intent of the Public Services technical report is to answer two key questions:

- Will the long-term use and operation of a new I-5 crossing affect the facilities or provision of services provided by public services? For instance, will the alternatives affect the response time for fire and emergency medical response teams to reach victims?
- Will the construction activities of a new I-5 crossing affect the facilities or provision of services provided by public services? For instance, will detours or increased traffic due to construction prevent the use of critical access routes such that service is detrimentally delayed?

To answer these key questions, the project team will collect information from existing facility and operations reports, available maps for route information, and interviews with representatives from public services. Existing reports and maps will provide the basic understanding of how public services function within the primary and secondary APIs. Interviews with public services representatives will provide the additional knowledge necessary to answer the key questions posed above. Where specific roadway or intersection forecast analysis is deemed necessary, this analysis will rely on data provided in the Traffic and Transportation Technical Report. In addition, project staff will evaluate land identified for potential future use as public service facility sites within the primary API to determine if any direct impacts to these sites would occur.

6.8.11 Section 4(f), 6(f) and Parks (AD6028)

The purpose of the Section 4(f)/6(f) and Parks technical report is to complete data collection, impacts analysis, and recommend mitigation for the project concerning Section 4(f)/6(f) resources and state recreation grant resources. The analysis will be developed to comply with NEPA, applicable state parklands policy legislation, and local and state parks and recreation planning policies and standards.

Because no wildlife or waterfowl refuge has been identified in the project area, the focus of the Section 4(f) efforts will be on park, recreational area, historic and cultural resources; however, project documentation will include confirmation that no wildlife refuges would be affected by the project. Wetlands and other resources that may provide habitat to sensitive species but are not managed as “wildlife refuges” as defined by Section 4(f) guidelines, will be addressed in other project analyses.

To promote compliance with Section 4(f) requirements, this report will require coordination with the Historic Resources, Visual Quality and Aesthetics, and Archaeological analysis and reports. The potential for *de minimus* Section 4(f) findings for recreational resources will be investigated but it is anticipated that evidence for possible *de minimus* findings will be addressed in a Section 4(f) Evaluation will be completed for the project (see below).

Potential impacts to park and recreation resources not subject to the legal and regulatory oversights identified above may nonetheless be considered adverse by the community (such as impacts to privately owned recreation resources, or facilities determined by federal authorities to be non-recreational). These impacts will be addressed in the public facilities section of the technical reports EIS.

Park and Recreational Resources Data Collection, Field Survey, and Documentation

The CONSULTANT will collect basic information regarding the character of the resources and important features within the resource that might be affected by the project, or are located in the primary and secondary APIs. As needed, limited supplemental field investigations will be conducted to refine information. CONSULTANT staff will contact local officials having jurisdiction over the recreational resources to obtain information about the character of the sites. All data collection will be closely coordinated with the historic and visual analyses conducted for this project to determine the relationship of any important historic and visual resources to potentially affected park and recreational resources.

The CONSULTANT will contact the Oregon Parks and Recreation Department, Vancouver-Clark Parks and Recreation Department, the Washington Interagency Committee on Outdoor Recreation, and the Portland Parks and Recreation Bureau to identify park and recreational sites that have received funds through Land and Water Conservation Fund, Local Government Grant Program, County Opportunity Grant Program, or the Interagency Committee for Outdoor Recreation, and Salmon Recovery Funding Board, and are subject to the protection procedures for each of these programs. The local official having jurisdiction over any park or recreational property will be requested to provide information about the grant and the availability of potential replacement properties meeting the requirements of the respective regulations.

Documentation of resources will be based on agency consultation, mapping of sites with specific use areas in each park or recreation site (e.g., access points, playgrounds, etc.), assessment of impacts of the project alternatives, and consideration of minimization and mitigation measures.

Close coordination with the Communications Working Group will be required to determine and formally document *de minimus* significance thresholds. Detailed information regarding the significance of Section 4(f) resources will be determined during this phase.

To address impacts to historic resources under Section 4(f), including any required Section 4(f) evaluations, this analysis will rely on the historical data developed separately for the Historic and the Archaeological and Cultural Resources analyses.

Prepare Draft Section 4(f) Evaluations for Recreation Resources and Historic Properties

It is assumed that a Section 4(f) Evaluation will be required for historical and recreation resources. For this project, the Section 4(f) Evaluation will demonstrate that no feasible and prudent alternative exists to the use of a recreational resource or NRHP-listed or eligible historic site. The Section 4(f) Evaluation will also demonstrate that all possible planning was conducted to minimize harm if there is a use of the property. The Section 4(f) Evaluation must be authorized by Agency. A two-step process is required, including a formal Draft 4(f) Evaluation reviewed by interested parties and agencies, and a Final 4(f) Evaluation. Following coordination with Agency staff, the CONSULTANT will prepare a Section 4(f) Evaluation for each resource authorized by Agency.

The CONSULTANT will prepare a draft of the Draft Section 4(f) Evaluation and submit to Agency for review. The CONSULTANT will then revise the draft based on Agency comments. The CONSULTANT will submit the revised Draft Section 4(f) Evaluation to Agency, who will forward to FHWA for review. The CONSULTANT will make additional revisions to the Draft Section 4(f) Evaluation, as necessary, based on FHWA comments. Agency will submit the revised Draft Section 4(f) Evaluation to FHWA for approval after final review by Agency.

After signed approval of the Draft Section 4(f) Evaluation is received from FHWA, the CONSULTANT will distribute copies of the Draft 4(f) Evaluation to interested agencies and to the public, per a distribution list provided by Agency. The Draft Section 4(f) Evaluation will be available for public comment for a minimum of 45 calendar days. Agency will provide copies of the public comments to the CONSULTANT. The CONSULTANT will incorporate the draft review comments into the draft Final Section 4(f) Evaluation.

The CONSULTANT will prepare and submit for review by Agency the draft Final Section 4(f) Evaluation based on public comments received. The CONSULTANT will revise the draft Final Section 4(f) Evaluation based on Agency review comments. Agency will submit the draft Final 4(f) Evaluation to FHWA for review. The CONSULTANT will revise the draft Final Section 4(f) Evaluation based on FHWA comments and submit to Agency for review and comment. After incorporating Agency comments, the CONSULTANT will submit the Final Section 4(f) Evaluation to Agency to submit to FHWA for approval.

The CONSULTANT will make copies and distribute the Final Section 4(f) Evaluation per distribution list provided by Agency after FHWA provides signed approval.

6.8.12 Visual Quality and Aesthetics (AD6029)

The Visual Quality and Aesthetics assessment will be conducted concurrently with the Structural Aesthetics element described in Work Element 8.10. However, the effort described in Work Element 6.8.12, below, must specifically follow FHWA guidelines to support the technical analysis for the DEIS. This work element will be closely coordinated with the work described in

Work Element 8.10, particularly with regard to identifying visual limits and evaluation viewpoints to use in visual simulations.

First, project staff will establish the project's visual limits and define the inherently distinctive sub-areas in the project area by visiting the project area and using geographic information system maps. The CONSULTANT will then determine who has views of the project and who has views from the project using project maps, understanding gained in the previous step, and by reviewing relevant planning documents.

Next, the CONSULTANT will describe and assess the built and natural environments that existed before the project. The CONSULTANT will then select evaluation viewpoints in the project area and assess the views from the viewpoints as they existed before, and as they are likely to be after the project. Next, project staff will select views and viewpoints to be used for graphical simulations that illustrate likely changes due to the project. Lastly, project staff will describe the likely changes in visual quality that will result from the proposed alternatives.

The findings from other reports, such as Land Use, Neighborhoods, Parks and Recreation, Navigation and Aviation, and Cultural and Historic Resources will also help identify impacts to Visual Quality and Aesthetics.

6.8.13 Water Quality (AD6030)

The Water Quality technical report will discuss the I-5 CRC project as it applies to water quality and hydrology within the API. The report will evaluate impacts to floodplains, water quality, and stormwater conveyance and treatment.

Data sources and data collection methodologies presented in this technical memorandum will be consistent with those described in the MDR. As part of a previous phase of work, studies and plans of local, state, and federal agencies were examined, and maps and GIS layers, including topography, soils, and floodplains, were reviewed. Water quality characterization studies, 303(d) and total maximum daily load (TMDL) listings, and municipal water quality management plans were also reviewed, along with stormwater system infrastructure plans and capacity.

The technical report will analyze short- and long-term impacts to water quality and hydrology. Potential long-term operational impacts on drainage systems and surface and ground water resources will be determined by analyzing and reviewing impacts to floodplains, stream shading, runoff quantity, water quality, and existing drainage system constraints. The technical report will determine potential short-term construction impacts by evaluating the impacts of demolition and construction activities of each project alternative on drainage systems and surface and ground water resources. Potential beneficial impacts of the proposed alternatives will also be evaluated. It is expected that one or more regulatory agencies will be especially concerned about copper and other metals in stormwater runoff. To address this issue the team will conduct a limited literature review of copper-related avoidance and toxicity research and will coordinate closely with ODOT and WSDOT water quality technical staff. This report will be prepared in coordination with the CONSULTANT Engineering Team. The CONSULTANT Engineering Team will provide engineering and design-related information and analysis for the report. The CONSULTANT Environmental Team will provide the resource and regulatory information and analysis.

6.8.14 Wetlands (AD6031)

The Wetlands technical report will discuss the I-5 CRC project as it applies to wetlands and jurisdictional waters occurring within the API. The report will evaluate impacts to wetlands and jurisdictional waters and their designated buffers from project construction and long-term operation. A wetland delineation report will also be completed.

Data sources and data collection methodologies presented in this technical memorandum will be consistent with those described in the MDR. As part of a previous phase of work, the CONSULTANT Environmental Team has delineated, classified, and performed functional assessments on wetlands within the primary API. The same methods were used for wetlands in Washington and Oregon. The team has also conducted windshield surveys with limited field reconnaissance for wetlands within the secondary API.

The technical report will analyze short- and long-term impacts to wetlands and jurisdictional waters and their designated buffers. Maps of delineated wetland boundaries and protected wetlands and designated buffers will be used to determine sensitive areas that may be impacted by the project. The area of impacted wetlands and designated buffers relative to undisturbed wetlands within the APIs will be quantified, along with the area of high-quality wetlands and designated buffers impacted by the proposed alternative. Potential beneficial impacts of the proposed alternatives will also be evaluated. Information from this analysis will be used to support the selection of the preferred alternative.

6.8.15 Technical Report Production

This will include the editing, word-processing, graphics and document coordination to develop the technical report documents.

6.8.16 Technical Report Oversight and Quality Control (??)

CONSULTANT will review and coordinate the environmental technical reports, including Air Quality, Noise, Vibration, Archaeology and Economics. This oversight will focus on coordination on data needs, schedules and reporting. The technical analysis and validity will be the responsibility of the respective CONSULTANT preparing each report.

This work element will also include QC of the environmental technical reports.

6.9 Technical Reports and DEIS Support

In this work element, other subcontractors will prepare technical reports to support the DEIS for the following disciplines: Air Quality, Archaeology, Economics, Noise and Vibration.

Assumptions:

- The same assumptions listed under Work Element 6.8 apply.
- The technical validity and accuracy of the reports prepared in this work element will be the responsibility of the respective CONSULTANT preparing each report.
- Metro will provide air emissions estimates for the region and subareas for criteria pollutants (CO, VOC, NOx, PM10, PM2.5) and the six priority Mobile Source Air Toxics.

Noise and Vibration Report:

The following data will be needed to support the noise and vibration report:

- Traffic Volumes for all project roadways (for existing conditions, as well as all Build and No Build scenarios):
 - Posted travel speed limits.
 - Peak-Vehicle Hour volumes to include breakdown by vehicle types (cars, medium trucks, heavy trucks) or by number of axels.
 - Peak-Truck Hour volumes to include breakdown by vehicle types (cars, medium trucks, heavy trucks) or by number of axels.
- MicroStation or AutoCAD files (for existing conditions, as well as all Build and No Build scenarios):
 - Roadway plans – existing roadway plans, preferably with aerial photos backgrounds referenced as an image file.
 - Roadway profiles – including detailed elevations along the project roadway.
 - All on and off ramps/arterial roads with profiles or spot elevations.
 - Outlines for all structures within 500 feet of the near lanes within the project corridor.
 - Spot elevations and/or contours for the ground within 500 feet of the nearest lane along the project corridor.
- MicroStation or AutoCAD files of new and revised roadways and/or high-capacity transit (HCT) alignments (for existing conditions, as well as all Build and No Build scenarios). The files must consist of:
 - Roadway - HCT plans – future build plans, preferably with aerial photos backgrounds referenced as an image file.
 - Roadway - HCT profiles – including detailed elevations along the entire highway for all new and revised roads.
 - Plans and profiles for any new or changed retaining walls, surface contours changes, property takes, or other changes in the existing roadway, structural or ground configurations that could have an effect on the transmission of noise.

Deliverables:

The CONSULTANT will provide:

All Reports

- Up to two draft technical reports and one final technical report for each discipline
- Responses to all comments received to technical report drafts 1 and 2 in the format provided by the environmental CONSULTANT team
- Documentation of coordination and potential mitigation strategy/approaches/options that have been identified
- All records of communication, meetings and memoranda concerning technical research and findings
- Data for incorporation into Project GIS system

- Mapping regarding evolution of development of the project area
- Archaeology MDR Appendix
- Archaeological Permit applications
- Archaeological resource forms
- Possible geo-probing memos

6.9.1 Air Quality Report and DEIS Support (AD6032)

The Air Quality Report will describe the air quality impacts of the alternatives carried forward into the DEIS phase. The data collection and analysis methodologies will follow the approach described in the MDR. Metro will prepare regional and subarea emission estimates for the Alternatives for use by CONSULTANT. CONSULTANT will perform the local hot spot analysis, will coordinate data and methods between the traffic team and other members of the team, will collect data from the Portland Air Toxics Assessment and will prepare the report to communicate the information to the public and decision-makers. A maximum of six intersections will be analyzed for the hot spots analysis.

The technical report will analyze short- and long-term impacts to air quality and will describe potential mitigation measures for impacts.

6.9.2 Archaeological Research, Reporting and DEIS Support (AD6033)

The purpose of this work element is to continue the process of identifying and evaluating archaeological resources that may be affected during the proposed project. The information will be used to help inform the design of alternatives and to contribute to the assessment of impacts and potential mitigation measures for unavoidable impacts. Activities will initiate Phase 2 as outlined in the Archaeological Resources MDR, and will be conducted in accordance with the November 8, 2006, Draft First Amended Programmatic Agreement Implementing Section 106 of the NHPA for the Federal-aid Highway Program Administered by the Federal Highway Administration.

Continued Background Research

The CONSULTANT will supplement previously collected information on known and potential prehistoric and historic archaeological resources in the project area. Additional archival research will be conducted to further refine data regarding known and potential resources. Coordination and consultation will continue with federal, state and local agencies having jurisdictions in the project area (assistance in consultation with tribes is included in Work Element 6.5, Cultural Resources Coordination). Data will be provided for incorporation into the project GIS mapping and findings will be reported in a separate report with restricted distribution. Activities will include:

Coordination with agencies and tribes. The CONSULTANT will coordinate through WSDOT's environmental manager with WSDOT, ODOT, Washington and Oregon SHPOs, National Park Service, cities of Portland and Vancouver, and potentially the US Army Corps of Engineers regarding the location and character of known and potential archaeological resources, documentation that may help determine the environmental reconstruction history of the area (especially as modified by human and river regime forces), definition of an APE, and appropriate site discovery methods for different settings. CONSULTANT's participation in coordination and

consultation with Indian Tribes, other consulting parties or other parties shall be accomplished through Work Element 6.5.

Research of historical resources. The CONSULTANT will conduct documentary research of primary and (published) secondary source materials, including materials on file at Oregon SHPO (to identify properties designated as National Register listed or eligible, or Statewide Planning Goal 5—protected historic or archaeological resources), Washington’s DAHP, the cities of Vancouver and Portland, other appropriate archives, and various appropriate published and unpublished sources for the project area. For budgeting purposes, resources of particular interest are expected to include the following:

- News accounts relating to any cultural resource finds in relation to the construction of I-5, as well as any mention of archaeological resources adjacent to I-5 and the proposed alternatives
- Historical maps and records and records on file at Fort Vancouver National Historic Site
- Previous underwater archaeological research
- Online General Land Office records
- Sanborn Fire Insurance maps and other historical maps that may show possible resource locations
- Historic photographs of the project area
- As available from the agencies, WSDOT and ODOT construction records, including right-of-way maps, geotech boring logs and as-built drawings, for the initial construction of, and improvements to I-5, in order to reconstruct the evolving ground conditions along I-5
- City of Vancouver and City of Portland construction records for construction activities, especially roadway and utility construction in the proposed project footprint
- Published ethnography/ethnohistory or oral history documents available at Oregon/Washington SHPOs, state archives, local museums, and NPS
- Ethnobotanical studies
- Information potentially provided by tribes through the consultation and coordination activities discussed under Work Element 6.5

Geomorphological Assessment. The analysis will include a geomorphological assessment that shall use published natural landform maps and documents, the aforementioned geotech boring logs and as-built drawings and city construction records, as well as historic development information (e.g., Sanborn mapping), to examine and interpret, relative to current local landform development theories, the naturally and anthropomorphically influenced depositional/erosional dynamics during the last 12,000 years within the APE. If made available from WSDOT and ODOT, CONSULTANT shall examine geological/soils fence diagrams, add refinements that are pertinent to archaeological study, and prepare up to two composite fence diagrams to support archaeological investigations, one generally following the I-5 corridor, and one for the downtown Vancouver area within the APE.

Background information from tribes regarding cultural resources will be relayed to CONSULTANT by the Agency and/or tribes as per Work Element 6.5, and/or as established in protocols developed by the Agency and tribes.

The CONSULTANT will analyze this information to generate an understanding (sufficient for the scope and scale of the project) of the prehistoric and historic context, land use patterns, and previously identified sites, and the likelihood of areas primarily within the APE containing archaeological resources.

Phase 2 Methods and Data Report

The CONSULTANT will coordinate with recognized experts (including but not limited to tribes) regarding the appropriate methodologies to use for locating various archaeological resources, including, but not limited to, wet sites and underwater resources.

The CONSULTANT will revise the Phase 1 MDR to include more detail about the methods that will be used during Phase 2 archaeological investigations. The CONSULTANT will review and follow appropriate elements of the guidelines included in Exhibit C of the PA. The Phase 1 MDR revisions will include a map of the APE. Phase 2 background research, field investigations, analytical approach, reporting formats, coordination, and bibliographic sources will be detailed to the extent needed to support project archaeological coordination, consultation, reporting format and permitting activities, and to establish the framework for supporting the project's regulatory compliance regarding archaeological resources. The Phase 2 MDR is expected to inform research design development, including establishment of an APE that will be necessary for permit applications and subsequent field investigations.

Field Investigations

The location of, and techniques to be used for, archaeological field investigations will be based on data and information obtained from background research, which will inform the MDR and research design. Discovery measures will be implemented for areas likely to contain cultural resources based on the distribution of known resources, historical records, results of the geomorphological assessment, testimony of knowledgeable persons, and other criteria determined to be pertinent in locating previously unrecorded archaeological sites. A range of discovery measures will be considered in order to maximize the opportunity to identify obscured resources for research design purposes. Project design information, such as location and depth of anticipated construction excavations, will also inform methodological analysis, especially the vertical extent of the APE. Once areas requiring discovery measures have been identified, specific discovery methods will be proposed in a research design for each particular area based on specific field conditions and the types of resources likely to be present based on background research. Discovery methods may include when practicable (given surface and soil matrix conditions and ownership permission) and within budgeting parameters, the following:

Primary Discovery Methods

- Intensive Pedestrian Survey
- Shovel test probes (STPs) and/or (supplemental) hand-auger probing

Additional Discovery Methods

- Monitoring of geotechnical borings (which may require the CONSULTANT developing up to four notification documents permit applications/authorizations, to

tribes and other interested parties/agencies as well as separate technical memorandums reporting results)

- Ground-penetrating radar
- Proton magnetometer
- Sediment coring
- Monitoring of ground-disturbing activities, such as utility relocation
- Mechanical exposures (for areas with fill layers)
- Underwater survey (contingency)

Although the methods to be used for discovery purposes, or the extent of coverage required is not precisely known at this time, for purposes of this work element, the CONSULTANT will conduct the following investigations intended to discovery archaeological resources:

APE Definition. The CONSULTANT will coordinate with WSDOT, ODOT, Washington and Oregon SHPOs, and the project's tribal liaison to develop a single APE, covering all alternatives addressed in the DEIS. The CONSULTANT shall coordinate with ODOT and WSDOT cultural resources staff, and with the project's tribal liaison as appropriate, to generate any justification for revising/amending the APE, if warranted (based on background research field survey, and/or Indian tribal input).

Research Design. To establish a framework for field investigations, CONSULTANT shall generate a draft and final Research Design for discovery field investigation activities, including an intensive archaeological (pedestrian) survey and subsurface discovery measures. By referring to data and information collected from the background research and (as made available in a timely manner) tribes, the Research Design shall focus on delineating: (1) a typology of archaeological site types that may be found within the APE; (2) potential refinements to site probability mapping if background data and information permit generation of reasonable site location hypotheses/prediction/likelihood—this will be based in large part on overlay mapping using the project base mapping, geomorphological mapping, and historic mapping to generate composite time series mapping ending with current ground surface; (3) the appropriate field archaeological intensive survey and subsurface discovery methods and techniques to use across the APE; (4) based on existing information, a preliminary approach for assessing the relative importance of archaeological resources that may be affected, to aid in the relative assessment of the impacts to archaeological resources resulting from the project alternatives; and (5) communication and (if available) inadvertent site discovery protocols to be provided by WSDOT and/or ODOT. Although not expected at this time, the Research Design may identify areas within which WSDOT, ODOT and/or Consulting Parties may determine subsurface excavations may not be appropriate as part of this work element.

Permit Applications. The CONSULTANT will prepare and submit up to five Oregon archaeological permit applications for the project, and an Archaeological Resources Protection Act permit for archaeological investigations that the CONSULTANT may need to conduct on the Fort Vancouver National Historic Site/Reserve.

Intensive Pedestrian Survey. The CONSULTANT will conduct an intensive pedestrian archaeological survey of the APE in locations determined in the research design to have the potential for containing archaeological resources (and for which rights-of-entry have been

obtained), which, for purposes of this scope is assumed to include up to 80 acres involving a combined-alternatives footprint.. Previously recorded archaeological resources will be revisited and site information, including current condition, will be updated. Archaeological resources encountered will be recorded on appropriate site/isolated find forms used by WSDOT and ODOT.

Subsurface Discovery Methods. CONSULTANT shall systematically excavate discovery STPs across the APE at surface locations that have been identified in the research design as having the potential for subsurface archaeological deposits that are not covered by paved/concrete/slope or surface stabilization features, and for which rights-of-access have been granted. For purpose of this work element, using methods that are the least invasive and appropriate to local conditions, and based on the need to identify buried archaeological resources and to help determine their spatial extent and other discovered site characteristics as practical, the CONSULTANT will excavate discovery STPs of up to 50 acres on dry land within the APE. The STPs shall: (1) measure 30 cm in diameter; (2) be excavated to either sterile, mineral soil or to a minimum depth of approximately 50 cm (unless bedrock or other impenetrable object is encountered), at which point sample control becomes significantly more problematic excavating 30 cm diameter holes with a shovel, or in cases when background (especially geomorphological/soils) research and/or on-site observance of soil matrices that suggest buried cultural deposits may lie deeper, an approximately 25 cm diameter auger probe will be excavated with a large bore bucket auger to a maximum of 2.5 meters (unless bedrock or other impenetrable object is encountered)—a probe may be terminated if the professional on-site archaeologist determines that enough cultural material has been encountered/recovered to warrant identification of a probable site and that further shovel/auger excavation would be more intrusive to site integrity than would test excavations, which likely would be required if project impacts are unavoidable; (3) excavated and recorded in 10 cm levels; and (4) shall be excavated at a 25-meter interval along transects space a maximum of 25 meters apart unless Agency, in consultation with SHPO, agrees that background research and/or field conditions warrant different excavation parameters, and provided the methodological changes can be accommodated within this SOW's budget. All matrix potentially containing cultural materials excavated in each STP shall be screened using 1/8-inch hardware mesh (matrix from obvious modern fill material will not be screened, with parameters defining "obvious modern fill" being provided in the MDR and/or Research Design prior to initiation of STP excavations).

Oregon state archaeological permits, a potential Archaeological Resources Protection Act permit for possible work on US Army and/or National Park Service property, and Tribal coordination (to be lead by WSDOT) will be required for these excavations.

Additional Discovery Methods. CONSULTANT shall provide up to \$30,000 of professional services in conducting additional discovery methods activities.

Within the timeframe approved by WSDOT for survey and subsurface discovery activities, CONSULTANT shall accommodate the presence and involvement of tribal monitor(s) during survey.

Archaeological resources encountered will be recorded on appropriate site/isolated find forms used by WSDOT and ODOT.

Discipline Report (Cultural Resources Discipline Report)

The CONSULTANT will prepare the archaeological resources component of two versions (an Agency version and Public version) of a draft and final Cultural Resources Discipline Report in accordance with the PA and that will satisfy Washington and Oregon DOT and SHPO reporting requirements. While the Agency version will include the all pertinent archaeological data and information, the Public version will exclude sensitive archaeological data and information in accordance with RCW 42.56.300 and ORS 192.501. The report will disclose the following data and information:

- Project description of the undertaking (including a map of the APE)
- Project location/setting
- Methods
- Prehistoric and ethnographic background
- Archaeological background
- Geomorphological assessment
- Field investigation results, including discussion of expectations for potential historic properties in the APE for which inventory was not completed (for example, in situations where conditions such as paved surfaces precluded surface or subsurface investigations), or properties not yet eligible at the time of the survey that could become eligible during the life of the project due to a change in circumstances or advancing age. Additionally, determination of evaluation documentation and findings of effects will be provided
- Impacts analysis
- Consultation/coordination summary
- Professional recommendations regarding, for example, additional investigation/mitigation approaches
- Bibliographic information
- Appropriate inventory forms
- Diagrams, plans, drawings, maps, and/or photographs necessary to clearly relay topics such as, but not limited to, general project area, specific locations of field inspections, shovel test locations, transect paths, surface cultural resources, prominent or exposed features, artifacts, and subsurface testing contents
- Resumes of the Principal Investigator and of any other individuals conducting or supervising the work of the survey
- CONSULTANT shall revise the draft report and finalize the report to address specific concerns or appropriate suggested modifications from WSDOT/ODOT and/or tribes

Mapping

The CONSULTANT will coordinate with the historic resources and Section 4(f) resources work elements to develop comprehensive relative effects evaluation criteria.

Assumptions

- Up to 500 artifacts may be collected, analyzed and curated in approved curatorial facilities; if additional artifacts must be recovered in order to achieve other scope requirements, an amendment to the scope and budget may be necessary.
- The CONSULTANT expects to conduct surface survey and subsurface discovery measures generally during blocks of time not including weekend or holiday breaks (potential underwater investigations may occur under separate schedule). This schedule shall be coordinated with WSDOT following Notice to Proceed (NTP).
- The CONSULTANT shall assign professional responsibilities for tasks only to persons who are qualified for the work under the Professional Standards of the Secretary of Interior, unless otherwise provided pursuant to the PA, Appendix C provisions. Specializations will be considered, such as qualifications to research wet site and underwater archaeological resources.
- The CONSULTANT shall provide to the Agency written notes of any coordination conducted, as approved by Agency, with consulting parties or other parties regarding historic resource investigations and evaluation.
- The CONSULTANT shall not coordinate or consult with Indian tribe consulting parties prior to proper introduction being made by WSDOT and/or ODOT. CONSULTANT shall keep written records of informal coordination with tribal representatives/monitors during field investigations, and shall provide such records to Agency.
- Agency shall be responsible for:
 - All formal consultation with Indian tribes, including but not limited to inviting appropriate Indian tribes to be consulting parties; providing tribes with opportunity to consult with respect (but not necessarily limited) to determining the APE; identifying potential TCPs; identifying and providing copies of ethnographic, ethnohistoric, ethnobotanical, oral histories or other documents that are not available at the Oregon and Washington SHPO, local (Portland/Vancouver) museums, and NPS; and finding and resolution of adverse effects. Agency shall further determine if other consultation points or coordination activities should be conducted with Indian tribes in accordance with the PA and the NHPA, and shall inform CONSULTANT of such needs and coordinate with them regarding how to incorporate tribal input into the project's historic resources program.
 - Agency shall be responsible for consulting and/or coordinating with tribes to determine the need for ethnographic, ethnohistoric, ethnobotanical, and/or oral history research, and for conducting possible and relevant ethnographic (e.g., traditional cultural property information) research and to inform the research conducted by CONSULTANT.
 - Following NTP, CONSULTANT shall coordinate with Agency to establish a work element schedule consistent with the mobilization assumptions of this work element's budget. Agency shall continue coordination with CONSULTANT to determine timing for CONSULTANT's field work, considering any input that tribes might provide to Agency with respect to their desire to participate/monitor such activity. Agency shall be responsible for determining the extent to which CONSULTANT's

schedule must be rearranged to accommodate tribal participation desires; any increase in the number of CONSULTANT's mobilizations beyond that originally anticipated, or extensions of schedule, in response to addressing tribal scheduling concerns, are outside the scope and budget of this SOW, and scheduling responsibility of CONSULTANT.

- Agency shall be responsible for potential payment to tribes for tribal consultation and related services performed pursuant to Section 106 of the NHPA.
- Keeping FHWA and SHPO informed of the status of consultation with Indian tribes per section VII of the PA.
- Submitting formal consultation requests to consulting parties.
- Facilitate collection of geotechnical information from WSDOT, ODOT, city, county and other agencies.
- The Research Design shall not exceed 30 text pages.
- Because the parameters of several of the CONSULTANT activities in this work element are at least in part dependent upon the currently unknown results of other activities, the level of effort with respect to completing the activities in this work element will be limited to the number of professional hours assigned to it in Exhibit B.
- This effort will be scoped as a specific number of hours, with the understanding that historic resources work may be modified or expanded if the project team encounters unanticipated issues from background research and/or field investigations.

Contingency

The CONSULTANT may need to conduct limited subsurface test excavations to 1) help project designers efficiently develop timely design refinements that may avoid or minimize potential impacts to archaeological site(s); 2) engage in approved inadvertent discovery protocols regarding grave/graves discovery treatment; 3) engage in activities needed to support potential identification and evaluation of traditional cultural property(ies); 4) further examine and update any previously recorded archaeological resources if previous investigations did not meet current standards, and/or 5) engage in other archaeological activities unforeseen but necessary to support project progress.

Test excavation would be conducted only when Agency determines it is necessary to determine the boundary and/or NRHP eligibility of potential and/or previously identified sites. Contingency may also be used to prepare DOEs for archaeological sites that have been tested.

Depending on timing of contingency activities, results may be reported in either the Cultural Resources Discipline Report, or in supplement(s) to the report (including additional review cycles).

Agency Project Manager will provide written approval of contingency activity scope(s) and budget(s).

6.9.3 Economics Report and DEIS Support (AD6034)

The economics report will address the economic impacts of the project alternatives. This will include identifying potential significant adverse impacts and beneficial effects on the local and

regional economy. The impact analysis will include a discussion of construction-related impacts, operational impacts, and cumulative impacts.

Short-term construction impacts may result from the dollars spent on construction activities, access changes to local businesses, parking changes, short-term construction activities that contributed to noise, vibration and visibility changes. The specific activities that will be conducted to analyze short-term construction impacts are documented in Section 1.7 of the Economic MDR.

Operational impacts may result from local and/or regional changes in access or mobility, and changes in tax revenues resulting from displacements. Limited effects associated with potential tolling will also be evaluated. The specific activities that will be conducted to analyze short-term construction impacts are documented in Section 1.6 of the Economic MDR. Cumulative impacts may result when the project's effects are combined with those from past, present, and reasonably foreseeable future projects. The CONSULTANT will request information about the potential economic impacts from such other projects, and assess the extent to which the alternatives may result in cumulative impacts. The work product from this work element will be a section for a separate technical report on cumulative impacts.

6.9.4 Noise Report and DEIS Support (AD6035)

The purpose of the noise analysis is to determine compliance with local, state and federal standards for noise and to help protect the health and welfare of noise sensitive land use near the project corridor. The study approach is intended to meet the requirements of the FHWA, the FTA and follow the requirements for traffic noise analysis as defined by the ODOT and the WSDOT.

As part of the analysis, the CONSULTANT shall perform an on-site visit to review the project corridor, perform a land use inventory, select noise monitoring locations and identify local topographical conditions that may affect the transmission of noise. Noise monitoring and traffic counts will also be performed and used to establish the existing environment. Non-traffic noise sources will also be identified.

Operational noise modeling will be used to predict operational noise levels from the project for the existing conditions, the No Build conditions, and up to two different Build alternatives. The noise model used for traffic analysis will be the FHWA Traffic Noise Model (TNM) version 2.5. High capacity transit (HCT) noise will be analyzed using the methods described in the FTA *Transit Noise and Vibration Assessment manual* (2006).

Noise mitigation measures will be considered where required by FHWA, FTA, ODOT, and WSDOT criteria. A noise technical report summarizing the finding of the noise study will be prepared. The contents will include land use, existing noise, methodology, impacts, and recommended mitigation. The report will include maps of existing and proposed alignments on a vicinity scale map. Impacts, monitoring locations and sensitive receivers will be shown on area maps at an appropriate scale. Tables will be prepared to aid in the understanding of project impacts and mitigation. This information will be condensed for inclusion in the EIS.

In addition to the operational noise study described, construction noise will also be analyzed and included in the report. The section will discuss potential noise sources, noise levels at different phases of construction, nighttime construction restrictions, and provide general construction noise mitigation measures that may be used to minimize construction noise impacts.

6.9.5 Vibration Report and DEIS Support (AD6036)

The vibration analysis will be primarily concerned with the high capacity transit option and construction activities, as there are no vibration criteria for traffic on public roadways. The FTA has vibration criteria that are used for fixed guideway transit systems, such as a light rail. As with the noise analysis, the purpose of the vibration analysis is to determine compliance with federal standards for vibration, and to help protect the health and welfare of residential land use near the project corridor. The vibration analysis will also consider potential impacts to other types of vibration sensitive land uses, such as hospitals, research facilities, schools and other areas where vibration could have an adverse affect on the operation of the facility.

Depending on the types of transit considered, the vibration analysis may require using vibration propagation information obtained during the draft South North Light Rail Project. This information is used to determine how well vibration will propagate from the source to nearby structures. Operational vibration analysis will only be performed for fixed guideway transit systems. Vibration levels from transit operation will be compared to the FTA vibration criteria, and, if impacts are identified, vibration mitigation will be considered.

A vibration technical report summarizing the finding of the study will be prepared. The contents will include land use, methodology, vibration impacts, and recommended mitigation measures. The report will include maps of the proposed alignments on a vicinity scale map with project related impacts clearly identified. Tables will be prepared to aid in the understanding of project impacts and mitigation. This information will be condensed for inclusion in the EIS.

Vibration from construction projects is caused by general equipment operations, and is usually highest during pile driving, soil compacting, jack-hammering and construction related demolition activities. Although the vibration is sometimes noticeable outdoors, it is almost exclusively an indoor problem. Although it is conceivable for ground-borne vibration from construction projects to cause building damage, the vibration from construction activities is almost never of sufficient amplitude to cause even minor cosmetic damage to buildings. The primary concern is that the vibration can be intrusive and annoying to building occupants.

Although there are no criteria for impact from construction vibration, the USDOT has guidelines for vibration levels from construction related to their activities, and recommends that the maximum peak-particle-velocity levels remain below 0.05 inches per second at the nearest structures. Vibration levels above 0.5 inches per second have the potential to cause architectural damage to normal dwellings. The USDOT also states that vibration levels above 0.015 inch per second are sometimes perceptible to people, and the level at which vibration becomes annoying to people is 0.64 inch per second. These criteria will be used to evaluate potential construction impacts.

A construction vibration section will be included. The section will discuss potential vibration sources, vibration sensitive land uses near the corridor, and any vibration mitigation measures that may help to minimize the affect of the construction project.

The data needs for the vibration analysis are the same as given for the noise analysis.

6.10 Draft Environmental Impact Statement

Assumptions:

The DEIS provides an opportunity for government agencies and the public to review a proposed project, including alternatives. The principal elements of a DEIS include 1) purpose of and need for action; 2) alternatives, including the proposed action; 3) the affected environment; and 4) environmental consequences. A DEIS must be approved concurrently by FTA and FHWA, and distributed by the local lead agency. Once approved, a second notice is published in the Federal Register by the FTA and advertised through local media to solicit public comment by the lead agency. The DEIS is circulated to interested and affected parties in response to the Notice and throughout the scoping process.

The DEIS will contain, in some form:

- A description of the Proposed Action and its environmental settings;
- A discussion of alternatives to the Proposed Action;
- A statement of the environmental impacts of the Proposed Action, including its short- and long-term effects, and typical associated environmental effects;
- An identification of any adverse environmental effects that cannot be avoided if the Proposed Action is implemented; and
- A description of mitigation measures proposed to minimize adverse environmental impacts.

This document will incorporate selected reader-friendly principles to be determined in consultation with STATE. The specific contents, organization and layout will be developed through efforts outlined in Work Element 6.7.

This work element will cover three review drafts prior to publication.

Deliverables:

The CONSULTANT will provide:

- DEIS Annotated Outline (AD6037 including each version)
- DEIS First Review Draft (AD6038 including each version)
- DEIS Second Review Draft
- DEIS Third Review Draft
- DEIS Draft for Publication

6.10.1 Annotated Outline

The first review draft will consist of an annotated outline of the DEIS. It will define main chapters, section headings, contents of each sections, figures and exhibits, appendices and supplemental reports. The annotated outline will be reviewed by the CRC project team.

6.10.2 First Review Draft

The first review draft will be for DOT and Project Sponsors. This effort will involve meeting with technical specialists to promote the conveyance of accurate technical information. This work element will also include word processing, technical editing and GIS/graphics support.

6.10.3 Second Review Draft

The second DEIS review draft will be for review by InterCEP, FTA and FHWA. This work element will also include word processing, technical editing and GIS/graphics support.

6.10.4 Third Review Draft

The third DEIS review draft will be submitted to FTA and FHWA for comment, prior to publication. This effort will involve coordination with technical specialists to promote the conveyance of accurate technical information. This work element will also include word processing, technical editing and GIS/graphics support.

6.10.5 Draft for Publication

The final publication draft will be prepared for electronic and hard copy distribution, and public review. This effort will involve substantial layout and graphics work to finalize the DEIS's reader-friendly look. This work element will also include word processing, technical editing and GIS/graphics support.

6.10.6 Document Production

This work effort will address technical editing and document production needs for each draft of the DEIS.

6.11 Public Comment Period and LPA Adoption

This work element supports the identification and adoption of the LPA. It includes organizing and managing comments received on the Draft EIS during the public comment period, preparing summary responses to those comments in order to inform and support LPA identification and adoption, and preparing an LPA report.

Assumptions:

- This work effort will address the management and organization of public comments on the DEIS, specifically to support the adoption of the LPA.
- The effort to manage public comments and prepare responses for inclusion in the Final EIS will be part of a future work order, and is not included in this scope of work.
- The CRC project team will use Prolog to manage the comment and response process.
- The environmental team will provide support for the delineation of public comments, response to comments and QA/QC of comments to responses.
- The CONSULTANT Project Controls Team will oversee the management and administrative process, and Prolog implementation for comments and responses.
- The LPA report will be developed after the DEIS has been prepared.

Deliverables:

The CONSULTANT will provide:

- Summary of DEIS comments and key responses to support decision-making process (AD6039)
- Draft and final LPA report (AD6040)

6.12 Geographic Information Systems Support

This work element covers the GIS and data management work necessary to support all work conducted under Work Element 6.0. It also provided for the completion of a Technical Memo documenting the specifics of any geo-processing required to complete work under Work Element 6.0. This work element also includes up to 10 hours per month for GIS staff from the environmental team to meet and coordinate with GIS and CAD staff from other members of the project team.

Assumptions:

- Spatial data for the FTA Baseline Alternative and the Build alternatives will be provided by others in an Environmental Systems Research Institute compatible file format in the Washington State Plane Coordinate system.
- Provide up to 10 hours per month for coordination with GIS and CADD staff from other project team members.

NEPA Public Involvement Support

- Provide access to all GIS data and map figures developed as part of the existing conditions/environmental baseline report and alternative analysis scopes to other entities for their use.
- Prepare up to five map figures and two plots for each Internal and Public meeting.
- Prepare up to 10 map figures and five plots for each Community Outreach Event.
- Prepare up to 15 preliminary map figures for draft and final Public Involvement Report.

Engineering, Traffic and Transit Team Support

- Provide access to all GIS data and map figures developed as part of the existing conditions/environmental baseline report and alternative analysis scopes.
- Conduct GIS analysis/modeling needed to support CONSULTANT Engineering, Traffic, and Transit needs for technical reports, modeling efforts, alternative refinement, and technical analysis for the DEIS.
- Provide map figures needed to support CONSULTANT Engineering, Traffic, and Transit needs for technical reports, modeling efforts, alternative refinement, and technical analysis for the DEIS.

Regulatory Agency Coordination and Compliance

- Provide access to all GIS data and map figures developed as part of the existing conditions/environmental baseline report and alternative analysis scopes to other entities for their use in creating additional map documents.

- Prepare up to 50 map figures and 10 plots for the meetings with regulatory agency representatives.

Alternatives Refinement

- Prepare up to 20 preliminary and final map figures for use in refining the alternatives evaluation.
- Conduct necessary data analysis to support the alternative analysis refinement.

Technical Reports and DEIS Support

- Provide access to all GIS data, GIS analysis results, and map figures developed as part of the existing conditions/environmental baseline report and alternative analysis scopes to each of the other teams.
- Prepare all map figures, and conduct all GIS analysis necessary for subcontractor teams to complete their technical analysis for the DEIS.
- Prepare map figures needed by each subcontractor team for Draft 1, Draft 2, Draft 3, and Final Technical Report.

Draft Environmental Impact Statement

- Prepare preliminary and final map figures for use in DEIS and FEIS.
- Conduct necessary data analysis to support the DEIS and FEIS.

Technical Memo on Geo-processing Analysis

- Prepare technical document detailing any geo-processing techniques used during any portion of the GIS support for Work Element 6.0 Environmental.

6.13 Sustainability Plan

The objectives of developing a Sustainability Plan for the CRC are as follows:

- Establish sustainability principles and goals for the project.
- Develop sustainability strategies to evaluate and improve the sustainability of project alternatives.
- Utilize sustainability principles, goals and strategies to enhance the sustainability of the preferred alternative.

Work includes project management services to support development of the Sustainability Plan and implementation activities. The CONSULTANT will establish Sustainability Working Group for development of the plan, made up of sponsor agency members and other relevant stakeholders.

Assumptions:

- Project activities shall occur during EIS activities over a 16-month period.
- Sustainability manager will make up to 12 presentations to project committees on the Sustainability Plan and process.
- The Sustainability Working Group will meet up to 10 times.

- Baseline assessments shall be based on the review of current and anticipated future project documentation. Additional research and evaluations may need to be performed.
- The sustainability charrette shall be attended by the Sustainability Working Group, relevant stakeholders, and outside sustainability and bridge experts as approved by the STATES. An outside sustainability expert will be included as facilitator of the charrette.

Deliverables:

The CONSULTANT will provide:

- Baseline Assessment Summary (technical memorandum) (AD6041)
- Sustainability Plan approach and schedule integrated into existing project schedule (AD6042)
- Summary of bridge and relevant infrastructure sustainability efforts (technical memorandum) (AD6043)
- Preliminary Sustainability Principles and Goals (technical memorandum) (AD6044)
- Sustainability charrette report memorializing activities and decisions (AD6045)
- Final Sustainability Principles and Goals (final technical memorandum) (AD6046)
- Sustainability Opportunities and Strategies Matrix (AD6047)
- Sustainability Strategies Implementation Report (AD6048)

6.13.1 Baseline Assessments

The purpose of this work element is to utilize system benchmarks to understand current system functions and impacts and the anticipated impacts of the three alternatives as planned. These baseline benchmarks shall help guide sustainability decision-making with the intent of exceeding baseline benchmark conditions.

- Perform Baseline Assessment for No Build Phase: Assess system flows-inputs (such as energy, water, and materials) and outputs (such as stormwater, carbon dioxide (CO₂), and waste) for current management and operations. Create benchmarks to aid project understanding and decision-making.
- Perform Baseline Assessment for Alternatives: Assess system flows-inputs (such as energy, water, and materials) and outputs (such as stormwater, CO₂, and waste) for each alternative throughout all project phases (demolition, construction, and operations). Create benchmarks to aid project understanding and decision-making.
- Regulatory Review: Review and summarize regulatory requirements with the objective of understanding baseline requirements (i.e., what must the project comply with?).

6.13.2 Establish Sustainability Principles and Goals

The purpose of this work element is to define principles and goals for the project and to focus project sustainability efforts.

- Research Bridge and Relevant Infrastructure Sustainability Efforts (Literature Review): Through web and print research, identify bridge and relevant infrastructure

sustainability plan efforts locally, nationally, and internationally and summarize sustainability efforts of these projects.

- **Develop Sustainability Principles and Goals:** Based on documented bridge and relevant infrastructure sustainability efforts, develop project sustainability principles and goals. Principles and goals are anticipated to be organized in the following system categories:
 - Community Design and Development
 - Transportation and Movement
 - Energy
 - Water
 - Ecology
 - Materials
 - Environmental Quality

Moreover, these system categories may include sections on planning and design, demolition, construction, and operations.

- **Develop Preliminary Sustainability Principles and Goals:** Develop preliminary sustainability principles and goals to help guide discussion and decision-making efforts during the sustainability charrette.
- **Sustainability Charrette:** Hold sustainability charrette with project stakeholders. The objective of this charrette shall be to provide an overview of sustainability and how it applies to bridge projects, summarize baseline assessment information, and generate sustainability goals and principles for the project.
- **Establish Sustainability Principles and Goals:** Based on the outcome of the sustainability charrette, formalize project sustainability principles and goals.

6.13.3 Identify Sustainability Opportunities and Strategies

The purpose of this work element is to develop sustainability opportunities based on the sustainability principles and goals established in Work Element 3.0. Moreover, specific strategies will be developed to achieve these opportunities. A sustainability strategies matrix will be developed to organize strategies.

- **Identify Sustainability Opportunities:** Based on the baseline assessments and sustainability principles and goals, identify opportunities to increase project sustainability. These opportunities are anticipated to apply to each of the three alternatives and shall be focused on the seven system areas and three project phases (demolition, construction, and operations).
- **Identify Sustainability Strategies:** For each of the three alternatives, identify sustainability strategies to achieve opportunities identified in Work Element 4.1. Strategies are anticipated to apply to each alternative; however, some strategies may need to be tailored specifically to an alternative.
- **Sustainability Opportunities and Strategies Matrix:** A strategies matrix will be developed to organize sustainability opportunities and strategies identified in work

elements 4.1 and 4.2. The objective of this matrix is to clearly and comprehensively document potential sustainability activities for the project.

6.13.4 Implementation of Sustainability Strategies

The purpose of this work element is to establish an effective implementation approach for incorporating sustainability strategies into the project.

- **Strategize Implementation of Sustainability Strategies:** Collaborate with project team and permitting agencies on how to effectively implement sustainability strategies.
- **Develop Sustainability Tracking Matrix:** Refine the sustainability strategies matrix developed in Work Element 4.0 to include implementation tracking elements such as responsible party, completion date, and current status.
- **Track and Communicate Progress:** Work with project team to track and communicate implementation progress. Tracking and communicating of implementation activities shall occur during project development team meetings as well as necessary working group meetings.

Deliverables:

- The CONSULTANT will provide a Sustainability Strategies Implementation Matrix including regular progress updates (AD6049)

6.13.5 Sustainability Reporting and Monitoring

The objective of this work element is to outline the potential reporting and monitoring activities that may be considered for the CRC project. Due to the significance of the CRC project, regular reporting of sustainability efforts should be considered not only to communicate sustainability activities to stakeholders but to also keep transparent sustainability decision-making efforts. A number of reporting activities are relevant to a project at the scale of the CRC project and a few are included below.

- **Sustainability Report:** The CONSULTANT will develop a sustainability report to communicate sustainability activities, efforts, and decision-making. This report could be developed at various phases throughout Phase 1 activities. Reports could be developed at various times during Phase 1 activities including:
 - Beginning of Phase 1 to describe sustainability principles and goals and opportunities and strategies
 - During alternatives development to document how sustainability strategies were considered for each alternative
 - At preferred alternative selection to document how sustainability was utilized to aid decision-making

Deliverables:

- The CONSULTANT will document and monitor sustainability activities

7.0 TRANSIT PLANNING & ENGINEERING

The purpose of this work element is to advance the Columbia River Crossing multimodal transit alternatives through Phase 2 and to develop a LPA as part of the AA/DEIS. Major elements of the work element are 1) satisfy the Alternatives Analysis requirements of the FTA, 2) develop a locally preferred alternative through the DEIS process, and 3) provide collaborative technical support to other tasks. The AA/DEIS will identify a number of environmental and engineering issues, some of which may not be fully resolved in the AA/DEIS and will require further analysis in the PE/FEIS stage. The timeframe for these services is 16 months.

To accomplish these elements, the transit planning and engineering work element is broken down into nine subtasks, which are listed below. Significant assumptions and deliverables are listed under each subtask. The work will focus on one 2030 No Build alternative, two 2030 Build alternatives, and one 2030 FTA Baseline alternative.

7.1 Transit Team Project Management and Quality Control

The CONSULTANT will manage all individual tasks related to transit planning and engineering, participate and collaborate with other task managers on related work items, and oversee progress reporting. Monthly progress reports will be developed and the CONSULTANT will attend up to 64 PDT and Mini-PDT meetings. The CONSULTANT will adhere to the CRC quality plan.

Activities under this subtask include:

- Task implementation
- Monthly progress reports (16)
- Attend PDT meetings (64)
- Attend special meetings as needed (24)
- Quality Control plan update (as needed) and implementation
- Biweekly coordination meetings with the highway and traffic teams

Assumptions:

- The CONSULTANT will attend a bi-weekly PDT meeting through the end of the DEIS.
- Attend special meetings with federal, City, County, FHWA, FTA, and other officials or CONSULTANTS as directed by the STATE.
- The CONSULTANT will provide monthly progress reports (16)

7.2 Agency and Public Outreach Support

The CONSULTANT will support the agency and public outreach efforts undertaken by the CRC project team and facilitate Transit Working Group meetings throughout the duration of Task AD. Support efforts might include engineered drawings, transit model outputs, presentation slides, and public presentations of CRC information. In addition, public outreach support will be included for transit capital facility planning as discussed in Work Element 7.6. Activities under this subtask include:

- Public outreach for transit capital facilities

- Facilitate Transit Working Group meetings including meeting summaries (39)
- Support for CRC Task Force Meetings (16)
- Graphics and visualizations (three conceptual renderings)

Assumptions:

- The CONSULTANT will support the agency and public outreach effort on an as-needed basis.
- A communications team member will assist the transit team in transit capital facility planning.
- The CONSULTANT will provide engineered drawings, transit model outputs, presentation slides, and public presentations as needed (drawings provided will be of drawings already created or those requiring small modifications).

7.3 Alternatives Design Refinement

The purpose of this work element is to further refine the two Build alternatives to be advanced into the DEIS. Factors such as operations, right-of-way impacts, cost, environmental resource impacts, constructability, and travel speeds will be analyzed. The design refinement subtask will also focus on alignment alternatives, and will consist of 1) a small round of new modeling packages, 2) value engineering for project capital and operating costs, and 3) public, agency, and stakeholder comments on potential alignments and service. Activities under this work element include:

- Prepare up to three new modeling packages (T7 through T9).
- Evaluate differing alignment options which may include Main Street, a refined representative alignment, and a refined park-and-ride space distribution among others.
- Design documentation binder for up to two Build alternatives.
- Progress drawings and final alternative drawings at 1"=300'.

Assumptions:

- DEIS forecast year to be 2030.
- Metro to run regional model with up to three new modeling packages within the alternatives design refinement timeline.

Deliverables:

The CONSULTANT will provide:

- Three Alternative Design Refinement Modeling packages (AD7001)
- Design documentation binder for up to two Build alternatives (AD7002)
- Memorandum documenting alignment alternatives process and findings (AD7003)

7.4 FTA New Starts Products and Coordination

The purpose of this work element is to satisfy the financial, organizational, environmental and administrative regulations which must be met during the AA/DEIS phase in order to advance the

project to the Preliminary Engineering (PE)/FEIS phase of the FTA project development process. Activities will include preparing ad-hoc communicative materials that might be requested or specific FTA deliverables required by the New Starts process. Activities under this work element include:

- Monthly FTA/FHWA meeting support
- Prepare Detailed Definition of the Alternatives report
- Prepare Final Definition of the Alternatives report
- Provide support for a Revised Modeling White Paper
- Prepare FTA Baseline Alternative Memorandum
- Review Operating and Capital cost models
- Project Management Oversight (PMO) Coordination
- Monitor changes in FTA New Start and NEPA rules and procedures, assess impact on this project, and offer strategic advice to consultant team and client
- Prepare FTA New Starts Section 5309 PE Application (FTA templates and land use rating)

Assumptions:

- CONSULTANT Transit Team staff will prepare submittals for review and comment by the STATE and local sponsor agencies.

Deliverables:

The CONSULTANT will provide:

- Detailed Definition of the Alternatives report (draft and final) (AD7004)
- Final Definition of the Alternatives report (AD7005)
- Revised Modeling White Paper (AD7006)
- FTA Baseline Alternative memorandum (AD7007)
- FY 2008 FTA Section 5309 New Starts Report and Application to Enter PE (AD7008)

7.5 Transit Service Planning and Analysis

The CONSULTANT, in collaboration with the Transit Working Group, will assist TriMet and C-TRAN in developing the service plans and technical information to support the DEIS analysis. Service plans will include routes, termini, and headway assumptions. The CONSULTANT will support the travel demand forecasting process by preparing modeling packages, develop and analyze travel demand forecasts using Metro's regional travel demand model, and conducting a QA/QC check on transit patronage and station volumes for each alternative. The CONSULTANT will post-process the model results and support a round of alternative optimization model runs to fine tune the draft and final locally preferred alternative as well as the FTA Baseline Alternative. Activities conducted under this work element include:

- Data collection

- Transit service planning and transit market analysis
- Prepare the transit sections of the modeling packages for the No Build, FTA Baseline, and two Build Alternative packages (three modeling packages each for the Build alternatives and FTA Baseline for a total of 12)
- Model output QA/QC
- Analysis of SUMMIT output
- Review of transportation benefits report
- Model post-processing
- Prepare modeling packages for the LPA Optimization process, which includes the LPA (eight runs), the FTA Baseline (three runs), and the 2030 No Build alternative (one run) for a total of 12 runs
- Evaluate minimum operating segment and prepare implementation memo

Assumptions:

- DEIS forecast year to be 2030 and Metro/RTC to update the 2030 forecast with revised population, employment, and land use assumptions.
- CONSULTANT to support Metro by running Metro's regional model and preparing New Starts forecast(s) using the EMME/2 modeling platform.
- CONSULTANT to QA/QC transit model output.
- Scope of work assumes 24 total model runs including optimization runs.
- SUMMIT results to be done with current SUMMIT release version (2006).
- Differences between Metro regional forecast model outputs, Incremental Logic Model outputs and ARRF model outputs will be analyzed by the CONSULTANT.

Deliverables:

The CONSULTANT will provide:

- Modeling packages (24) (AD7009)
- Travel demand forecasts for 24 modeling packages using Metro's regional travel demand forecasting model in coordination with Work Element 5.5 (AD7010)
- Transit performance and evaluation factors for incorporation into the transit technical report for the DEIS (AD7011)
- Revised criteria measures and results for the Build alternatives (AD7012)
- SUMMIT and transportation benefits analysis (AD7013)

7.6 Transit Conceptual Engineering

The level of detail of the physical definition of the alternatives will be sufficient to support DEIS-level decisions regarding transit mode, alignment, profile, and station location.

The general alignment of the alternatives will be mapped on aerial maps at a scale of 1" = 300'. The plans will show topographical features, horizontal and profile guideway geometry, the type of structures to be built (such as Overhead Catenary System (OCS) drawings that will include traction electrification sub-stations, catenary poles, T/E duct banks, signal and communications buildings, etc.), known existing utilities, and accurate right-of-way limits, station locations and facility layouts, and modifications to adjacent streets. Typical cross sections will be prepared for alignment segments where conditions are considered to be "typical" and atypical sections within the right-of-way for "special" conditions.

The O&M costs will be estimated for each alternative. The capital costs of implementing each alternative major transportation investment in the corridor will be estimated based on the conceptual engineering analyses. The CONSULTANT will use an approach to the estimation of capital costs that follows generally accepted methods for costing alternatives during conceptual engineering.

The CONSULTANT will assemble project design criteria from the STATE and two transit districts to provide uniform design that meets appropriate standards and levels of service for the project elements throughout the various project phases. The approved criteria will be updated to include any new technology identified, and form the basis of design.

The CONSULTANT will develop a concept design for each station type (at-grade, open cut, aerial/retained fill) along with general functional elements (platforms, weather protection, pedestrian circulation) and surrounding land uses up to ¼ mile away at selected stations noted below. The appropriate station type will be identified for each station location and concept design drawings will be prepared.

The purpose of conducting a station area analysis is to maximize the opportunities for station area development in the selection and design of transit alternatives for the corridor, which will enhance the competitiveness of this project for FTA approval and funding, maximize opportunities for joint development and private sector financing for implementation of the transit improvements, and promote consistent development around stations is consistent with the local community's vision of their community.

In the vicinity of park-and-ride stations, drive-to-transit trips may result in local intersection impacts. These intersections will be analyzed and compared to the level of service standards of the local jurisdictions. Station access evaluation will evaluate ingress and egress locations along existing streets and potential circulation impacts.

Activities conducted under this work element include:

- O&M cost estimates
- Capital cost estimates
- CEVP participation
- Transit alignment aesthetics
- DEIS impact identification and mitigation
- Conceptual engineering, including
 - Alignment and profile

- Typical HCT and roadway sections
- OCS plans and profiles
- Signal/Communication plans and profiles
- Vehicles
- Maintenance facilities
- Design standards
- Construction phasing
- Site selection and feasibility analysis
- Signalization, signing, striping and illumination
- Critical path diagram of construction
- Traffic analysis
- Capital facilities design
- Station area planning and land uses, including
 - Station area market assessment
 - Detailed Hayden Island Transit-Oriented Development (TOD) plan for adoption
 - Conceptual TOD plans for Mill District station
- Impact mitigation
- Transit VISSIM analysis
- Special technical studies, including transit patronage reviews, routing evaluations, and continuation of the Hayden Island Special Technical Study
- Summary of quantities

Assumptions:

- Surveying, drainage, stormwater management, erosion control, hydraulics, utilities, geotechnical, staging, traffic management plan, drainage, and structural engineering to be done under Work Element 8.0 on all alignments and station locations not already included within the I-5 right-of-way.
- Four alternatives – 1) 2030 No Build, 2) 2030 Build Alternative #1, 3) 2030 Build Alternative #2, 4) FTA Baseline Alternative.
- All work on the CRC project will be done by the Work Element 8.0 CONSULTANT Engineering Team.
- No work is programmed for a transit adaptive reuse of the existing I-5 bridges.
- Transit alignments and profiles will be designed to a level supporting an LPA decision.
- Hayden Island TOD plan will be adopted by City of Portland at the conclusion of the DEIS.
- Conceptual TOD plans will be developed for 1 station in Clark County.

- Capital facilities will be designed to a level supporting an LPA decision.
- Special technical studies will be done on an as-needed basis.
- IAMPs and Access Point Decision Reports will be supported when needed.
- Support of CEVP process.

Deliverables:

The CONSULTANT will provide:

- Capital, operating, and maintenance cost estimates (AD7014)
- Transit alignment aesthetics memorandum (AD7015)
- Alignment plan and profiles (AD7016)
- Construction phasing memorandum (AD7017)
- Three Major transit capital facility design plans and design workshops (Design Plans AD7018 Workshop Meeting AD7019)
- Hayden Island station detailed station area plan and conceptual design (AD7020)
- Mill District station conceptual station area plan and conceptual design (AD7021)
- Clark College station conceptual station area plan and conceptual design (AD7022)
- Kiggins Bowl terminal station area plan and conceptual design (AD7023)
- Locally preferred alternative VISSIM analysis (to be coordinated with transportation planning team) (AD7024)

7.7 Preliminary Engineering

The CONSULTANT will prepare to enter preliminary engineering during the timeframe of Task Order AD. Such activities will include assembling and reviewing existing management plans (for Risk, Project Management, Real Estate, Document Control), developing an integrated work breakdown structure and schedule. Activities conducted under this work element include:

- Assemble and review existing management plans
- Document work products needed
- Develop WBS and schedule

Deliverables:

- The CONSULTANT will provide a management plan packet for Entry into PE (AD7025)

7.8 Alternatives Evaluation and DEIS Preparation

The CONSULTANT will undertake an evaluation of the alternative packages for a major transit investment in the corridor. The CONSULTANT will prepare a report summarizing the alternatives evaluation and the methodology used for incorporation into the administrative and draft DEIS documents for review. The AA/DEIS process and the work under this work element would culminate in the selection of a locally preferred alternative.

The CONSULTANT will work with the STATE to prepare a position paper on a preferred alternative, based on comments received during the public review period and evaluation of alternatives conducted during preparation of the AA/DEIS document. In this work element the CONSULTANT will assess the impacts to the existing and future transit and roadway system, and identify mitigation strategies if appropriate. Activities to be done in this subtask include:

- DEIS alternatives preparation
- Transit Methods and Data Report
 - Supplemental Technical Analysis Report #1
 - Supplemental Technical Analysis Report #2
- Transit technical report following MDR procedure
- Prepare transit information for the DEIS
 - First draft DEIS
 - Administrative Review DEIS
 - Second Administrative Review DEIS
 - Final DEIS
 - Response to DEIS comments
- Document DEIS mitigation strategies
- Prepare locally preferred alternative
 - Implementation strategies memo

Assumptions:

- CONSULTANT Transit Team to support preparation of the DEIS in coordination with the environmental work element.
- DEIS comments are received in a database or other administrative tracking format.
- Four alternatives will be evaluated, similar to the assumptions in Work Element 7.6.
- Alternatives will be evaluated to a level to support an LPA decision.

Deliverables:

The CONSULTANT will provide:

- DEIS alternatives memorandum (AD7026)
- Transit MDR (AD7027)
- Transit technical report (AD7028)
- Transit information for DEIS (five drafts) (AD7029)
- Locally preferred alternative memorandum (AD7030)

7.9 Support for Other CRC Disciplines

The CONSULTANT will support other CRC disciplines with technical data and products on an as-needed basis throughout the duration of the task order.

- Environmental Team
- Engineering Team
- Communications Team
- Project management support
- Project Controls Team
- Transportation Planning Team
- Financial and Institutional Structures (transit operating and capital cost models, and FTA financial documentation including Finance Plan)
- Transit FAIR Group

Assumptions:

- Support will be conducted to a level to support an LPA decision.

8.0 HIGHWAY PLANNING AND ENGINEERING

The purpose of this work element is to complete the highway engineering tasks as needed to support the development of a DEIS, containing a LPA as described in the Project Purpose under this SOW. Highway work elements will satisfy the requirements of the FHWA, FTA, WSDOT/ODOT, and previously approved project specific design guidelines or recognize when deviations/exceptions are required.

Specific tasks for completion of the highway planning/engineering are detailed below:

8.1 Design Team Project Management and Quality Control

8.1.1 Team Management

The CONSULTANT will manage the daily activities of the Highway team and provide oversight of all activities related to Work Element 8.0. This will include all coordination with the other Task Managers and other working groups. All necessary project activity assignments, budgetary reporting and staff scheduling will be a part of this subtask.

8.1.2 Scheduling

Provide project schedule and maintain updates on a monthly basis.

8.1.3 Internal Coordination Meetings

The CONSULTANT will:

- Attend bi-weekly Highway-Bridge Design Team Coordination meetings (estimated at 35) for approximately one hour each. Meetings will be held in the CRC project office and will include up to six team members.
- Attend bi-weekly Highway-Transit-Traffic Team meetings (estimated at 35) for approximately one hour each. Meetings will be held in the CRC project office and will include up to two Highway team members. The intent of this meeting is to provide task manager coordination for the efforts of the three teams.
- Attend bi-weekly PDT meetings (estimated at 32) with the STATE for approximately two hours each. The meetings will be held in the CRC offices and will include up to three team members. A total of one hour for preparation and documentation will be required for each meeting.
- Attend bi-weekly task manager meetings (estimated at 32) for approximately two hours each. The meetings will be held in the CRC offices and will include up to three team members. A total of one hour for preparation and documentation will be required for each meeting.
- Attend weekly internal Engineering Update meetings (estimated at 75) for approximately one hour each. The meetings will be held in the CRC office and will include up to three team members.

8.1.4 External Coordination Meetings

The CONSULTANT will:

- Attend up to 30 Working Group meetings with the STATE and other partner agencies as requested for approximately two hours each. Meetings will be held in the CRC project office and will include up to three team members. A total of two hours for preparation and documentation will be required for each meeting.
- Attend up to 30 meetings with third parties as requested for approximately two hours each. 25 of the meetings will be held in the CRC project office, five meetings will be held in the Portland area. Up to four team members will attend. A total of two hours for preparation and documentation will be required for each meeting.
- Attend up to 14 Task Force meetings with up to two members. Meetings will average five hours each, including preparation time.

8.1.5 Quality Control

The CONSULTANT will provide coordination, oversight, and documentation of internal quality control.

Assumptions:

- Duration March 1, 2007 through June 30, 2008.
- Deliverables scheduled under Task AC for submittal after NTP will continue to be funded under Task AC.
- Task AD will include no more than one No Build and two Build alternatives for inclusion in the DEIS process.
- 16 monthly progress reports and schedule updates to be provided to the CONSULTANT.
- 135 Minutes for all design related meetings.

Deliverables:

- The CONSULTANT will provide four Quality control documentation reports (AD8001)

8.2 Agency and Public Outreach Support

8.2.1 Graphics Support

The CONSULTANT will provide engineering drawings as needed for agency and public/neighborhood informational meetings.

8.2.2 Technical Support

The CONSULTANT will provide technical support for presentations of highway features and alternatives for agency and public/neighborhood informational meetings.

8.2.3 Meeting Attendance

The CONSULTANT will attend meetings and make presentations as requested by the Communications Team and the STATE. Approximately half of the meetings will be held in the Vancouver area and the other half in the Portland area.

Assumptions:

- Duration March 1, 2007 through June 30, 2008.
- Drawings provided will be of drawings that are already created. Major modifications of the existing graphics will not be needed.
- Data will be required for up to 20 meetings.
- Technical support will be required for up to three hours per meeting.
- Engineering staff attendance as requested, up to two team members for each meeting.
- Exhibits/drawings as requested, four for each meeting.

8.3 Alternatives Design Refinement

The CONSULTANT will refine the selected alternatives to be incorporated into the DEIS. Up to two Build alternatives will be developed, with one preferred alternative emerging by the end of the work element. The alternatives will be developed to comply with interchange modifications due to traffic modeling analysis; the IAMPs and Interchange Justification Reports; access modifications due to transit revisions; and other details such as bicycle and pedestrian paths accesses. Provide additional design detail to aid the design for specific bridge and wall locations, including defining the right-of-way impacts in sufficient detail. The following information will be included: roadway centerline and stationing, proposed slope lines, existing and proposed right-of-way lines including temporary and permanent easements, conceptual stormwater management features, access control provisions at interchanges, and anticipated conceptual staging.

The CONSULTANT will refine and develop the two Build alternatives, including an evaluation of operations, right-of-way impacts, cost, environmental resource impacts, constructability, and construction staging. Results of the evaluation will be utilized under Work Element 9.3. This analysis will include input from STATE representatives and other stakeholders. As the alternatives are developed, a design documentation binder will be compiled for each of the Build alternatives. Each alternative will be developed to such a state that an analysis and decision can be made on a preferred alternative. The process of narrowing the search for the preferred alternative will likely occur in segments, so that some portions of the preferred alternative may be identified earlier than others. As elements are selected, the more detailed engineering and process of developing the approval plans will begin.

Assumptions:

- Design work under this element may continue and be concurrent with the conceptual design development under Work Element 8.5.
- This work element will be an iterative process that will evaluate and refine alternatives a number of times.

- Alternative refinement for transit details that do not share highway rights-of-way will be done by the Transit Team.
- Traffic analysis will be performed to help guide the refinements.
- Total project cost estimates will be provided under Work Element 8.9.
- Engineering work supporting the development of IAMPs and Interchange Justification Reports will be provided under Work Element 8.12.2. Plans and Reports will be developed under Work Element 5.7.

Deliverables:

The CONSULTANT will provide:

- Progress drawings and final alternative drawings – strip maps 1”=300’ (AD8002)
- Design documentation binder for up to two Build alternatives (AD8003)
- Total project cost estimates for up to two Build alternatives (AD8004)

8.4 Supplemental Surveying and Right-of-Way Services

8.4.1 Topographic Survey, Digital Terrain Model and Base Map

The terrestrial control network from Task AC will be translated by the CONSULTANT to a “real time network” (RTN) system and all data collected under this phase will use the newly established RTN system.

The CONSULTANT will utilize the existing Digital Terrain Model (DTM) and base map and infill the model where there are areas of detail that the engineering team requires such as obscured areas, areas outside the detailed aerial coverage, and areas that have been disturbed since the aerial coverage was developed in Task AC. Specifically this will include, but not be limited to, the collection of data in the City of Vancouver for alternate transit locations on approximately 15,000 feet of city streets approximately 100 feet wide.

The CONSULTANT will collect all terrestrial survey data in a format compatible with STATE’S software version. An Inroads DTM associated with a Bentley MicroStation detail (base) map will be created.

The CONSULTANT will collect confidence points in accordance with the STATE’S current practices with the intent to verify the surface modeling within triangles created during the development of the DTM surface. The confidence points will number approximately 2% to 5% of the total points collected. A report will be produced to current STATE’S standards.

The data collected by the CONSULTANT will include existing surface features such as building faces, fences, utilities, curbs, sidewalks, driveways, trees, signs and other significant items. The underground facilities will also be collected including type, size, location and invert elevations. The CONSULTANT will request underground utilities be marked in the field (known as “field locates”) within, and 200 feet beyond, the immediate project area, as identified above. The statewide “one-call” utility notification system will be used.

The CONSULTANT will gather the field data necessary to show utility locations in the base mapping for the roadway and transit design. It is assumed that there will be potholing required to locate some underground utilities. Potholing needs will be identified under Work Element 8.5.4.

8.4.2 Supplemental Rights-of-way Survey

The CONSULTANT will update the existing right-of-way plans with the modifications made to the right-of-way after the delivery of the right-of-way plan in Task AC.

8.4.3 Right-of-way Research and Cost Estimating

The CONSULTANT will analyze the two developed Build alternatives for the following right-of-way cost; purchase costs (acquisition compensation), relocation assistance benefits, and Real Estate Services staff expenses (acquisition services, relocation services, interim property management services). Provide three conceptual cost estimates for the right-of-way impacts.

Assumptions:

- STATE will provide for right-of-entry to the properties to be surveyed, identified by tax ID numbers and locations, with two months advance notice.
- Crews will consist of one to three persons per crew plus one hour of data reduction, etc. per crew hour.
- An LPA will be developed during the EIS so additional survey along the LPA route may be needed.
- The existing right-of-way survey will be completed under Task AC. The final right-of-way plan will begin in the next Task, after a preferred alternative is selected.
- Parcel ownership search acquired under Task AC is correct.
- Estimated costs of right-of-way acquisition will not include individual parcel appraisals.

Deliverables:

The CONSULTANT will provide:

- Electronic files of DTM features in InRoads (AD8005)
- Electronic MicroStation CADD Files (AD8006)
- Survey field notes (AD8007)
- DTM Confidence Report (AD8008)
- Supplemental right-of-way maps (AD8009)
- Supporting data for impacted parcels and resulting costs (AD8010)
- Potholing data for utility locations (AD8011)

8.5 Conceptual Civil Engineering

The purpose of this phase of work is to begin developing a 30% design for the preferred alternative as defined by the STATE.

8.5.1 Highway Design

The CONSULTANT will prepare the highway concept plan for the preferred alternative. The plan will be developed to such a detail that quantities can be taken off the plans and right-of-way impacts can be assessed. The tasks to complete this level of detail are listed below.

- Develop mainline alignments and profile
- Develop ramp alignments and profiles
- Develop cross street alignments and profiles
- Prepare pavement design
- Develop templates for mainline, ramps, and cross streets
- Model alignments
- Coordinate with Structures to locate walls and bridges
- Prepare cross sections

8.5.2 Staging and Traffic Management

The CONSULTANT will prepare concept construction staging plans. The plan sheets will include major traffic stage alignments, each major stage of construction showing areas under construction, areas under traffic and areas of construction under traffic. Critical roadway cross sections will be included on the sheets showing existing, permanent and temporary grades and slopes under construction and areas under traffic. The plans and sections will identify locations requiring temporary retaining walls adjacent to the roadways. Detailed Bridge Staging Plan sheets will not be included, but the roadway staging sheets must be coordinated with the Bridge Designers. This work element will also include developing a preliminary critical path diagram of construction.

In addition to developing staging and traffic management for the highway improvements, the CONSULTANT will include the transit options to provide over-all construction staging and traffic management. Input from the Transit Team will be included as integral parts of the plans.

- Develop construction staging sequence
- Develop traffic management plan in accordance with construction staging sequence
- Develop critical path diagram of construction

8.5.3 Drainage and Stormwater Management

The CONSULTANT will prepare conceptual drainage plans. This will include plans, profiles, typical sections and details for drainage facilities that are to be constructed as part of the project. A conceptual stormwater management plan will be developed which will include the design calculations for the water quality facilities and an outline of the overall drainage concept for the project including drainage patterns and outfalls. The design features will include any pipe extensions, new pipe construction, and the water quality facilities.

Input from the CONSULTANT transit team will be included to provide drainage and stormwater management for the project as a whole.

- Provide support for development of conceptual drainage design
- Provide size and location of stormwater treatment facilities
- Provide location and details of special features, such as pumping, and connections to existing facilities.

- Provide technical report addressing water quality for DEIS.

8.5.4 Utility Relocation

The CONSULTANT will prepare conceptual utility relocation plans. The impacts to the existing utilities (relocation, replacement, etc.) and the development of the utility systems on the bridges and within the road prism for the preferred alternative will be updated. A log of preliminary concerns and conflicts for each utility impacted will be prepared which will include the documentation of critical utilities (emergency phone lines and power supply to vital infrastructure), potential schedule and sequencing issues, safety issues, environmental concerns, and utilities that have long lead times, long construction periods and/or high costs associated with relocation. This work element will include coordinating with the utility companies to address potential issues related to utility relocation and modifications. Conceptual relocation alternatives will be identified for each conflict through an iterative process involving the STATE, and utility owners, as appropriate. Based on the discussions an acceptable preliminary solution will be identified and added to the drawings.

If required, potholing needs will be identified by the CONSULTANT and the work provided under Work Element 8.4.

Input from the CONSULTANT transit team will be included to provide utility relocation plans and reports for the project as a whole.

- Develop preliminary utility relocation plans.
- Prepare a log of concerns and conflicts for each utility impacted as a technical memorandum.
- Provide technical report addressing utility impacts for the DEIS.

8.5.5 Signalization, Signing, Striping, and Illumination

The CONSULTANT will identify locations for new traffic signals and signal revisions, and new and revised ramp meter locations. Plans for new and replacement project signing will be prepared depicting the location of the existing signs and indicating signs to be removed, relocated, protected, replaced and the location of the new signs to be installed. Concept striping plans will be prepared showing the type and location of the project striping. Concept illumination plans will be prepared showing the location, height and type of illumination device.

This work is to be confined to highway applications. Specific transit signalization, signing, and illumination will be provided by the Transit Team.

8.5.6 Erosion Control

The CONSULTANT will develop a conceptual erosion control plan. The plan will include the approach to protection of the major points of outfall on the project and the likely Best Management Practices to be used on the project.

8.5.7 Roadside Development and Environmental Mitigation Plans

The CONSULTANT will prepare conceptual roadside development plans which will include general layout and location of features, plant lists and colored display sections of typical roadside treatment.

This work element also includes the development of conceptual mitigation plans which will have conceptual grading plans, conceptual typical sections, and conceptual planting plans.

This work is to be confined to highway applications. Specific transit trackway and station landside development and environmental mitigation plans will be provided by the Transit Team.

8.5.8 Summary of Quantities

The CONSULTANT will develop a summary list of quantities for the construction of the preferred alternative.

8.5.9 Design Documentation Package

The CONSULTANT will begin developing the Design Acceptance Package and the Design Documentation Report. This will include the following items:

- Design narrative including an outline of the environmental mitigation measures and the utility conflicts
- Construction staging and temporary protection and direction of traffic measures
- Typical sections
- Conceptual roadway alignment and profile
- Preliminary TS & L for the proposed Columbia River crossing bridges, prepared under Work Element 8.6.3
- Right-of-way requirements
- Permit requirements
- Total project cost estimate
- List of potential design exceptions/deviations

Assumptions:

- The level of design outlined above will only be provided for the preferred alternative. The preferred alternative will be advanced to the 30% design stage under the next phase.
- Geotechnical data sufficient for pavement design will be provided by WSDOT.
- Existing stormwater memorandum prepared under Task AC is approved.
- Final stormwater concept memorandum prepared under Task AC is approved.
- Architectural and aesthetic elements developed under Task AC are approved for application.
- Primary development of right-of-way plans will be under Work Element 8.4. Plans will be developed in accordance with accepted STATE requirements.
- Utility relocation technical memorandum prepared under Task AC is approved.
- Relocation plans will only be required for the preferred alternative.

- Conceptual cross sections will be provided in typical areas, both for the mainline and ramps, and for critical areas of potential impacts to adjacent property or structures. The estimated number of cross sections is 300.

Deliverables:

The CONSULTANT will provide:

- Conceptual highway construction plan and profiles (11" x 17" plan sheets at 1"=200') (AD8012)
- Conceptual cross-sections for mainline and all ramps (AD8013)
- Conceptual construction staging sequence drawings (AD8014)
- Conceptual traffic control plans (AD8015)
- Conceptual critical path diagram of construction (AD8016)
- Drawings of stormwater treatment facilities (AD8017)
- Drawings of special drainage/stormwater features (AD8018)
- Conceptual erosion control plans (AD8019)
- Conceptual utility relocation plans (AD8020)
- Conflict log for each affected utility (AD8021)
- Conceptual summary of quantities (AD8022)
- Draft design documentation package (AD8023)

8.6 Conceptual Structural Engineering

8.6.1 Conceptual Structural Design and Analysis

The CONSULTANT will perform conceptual structural design and analysis on structures and walls, associated with Highway and Transit facilities, for up to two Build alternatives.

The conceptual structure design and analysis will consider and evaluate key issues including:

- Structure type
- Bent locations
- Span lengths and configurations
- Constructability issues (including whether falsework or temporary towers will be necessary for construction)
- Traffic management issues (including whether stage construction or detours will be necessary)
- Vertical and horizontal clearance requirements
- Right-of-way and easement issues
- Pedestrian and bicycle requirements
- Aesthetic guidelines

- Hydraulic requirements and recommendations
- Navigation requirements and recommendations
- Foundation requirements and recommendations
- Airspace requirements and recommendations
- Protective fencing requirements

Areas that contain structure geometry that presents unusual or unique structural problems may require design calculations to verify the feasibility of the concept being considered. These areas may include:

- Locations that may not meet horizontal or vertical clearance requirements
- Locations where extreme skew dimensions and long span lengths are anticipated
- Locations where multiple structure levels are anticipated

The conceptual wall design and analysis will consider and evaluate key issues including:

- Wall type
- Constructability issues
- Right-of-way and easement issues
- Aesthetic guidelines
- Foundation requirements and recommendations

Assumptions:

- Conceptual design will be performed for up to two alternatives. Development of preliminary TS & Ls for the LPA will be developed under Work Element 8.6.3.
- The term “structure” is defined as either a bridge or a rigid frame.
- The term “wall” is defined as a “stand alone” retaining wall. Stand alone retaining walls require a foundation and retain earth on one or both faces. Bridge wing walls are considered part of the bridge and not a “wall,” since they do not require a foundation.
- The conceptual structural design and analysis for the following are not included in this work element:
 - Parking garages and associated structures
 - Structures associated with electrification systems or track systems
 - Structures in the vicinity of Columbia Slough and Columbia Boulevard
 - The “Land Bridge” pedestrian crossing is considered a hard constraint in which the roadway geometric design will avoid conflict
 - The ramp structures and bridge for a potential bicycle / pedestrian undercrossing of I-5 by others, in the vicinity of 7th Street

- Conceptual structure design and analysis findings for the structures and walls will be summarized in the Type, Size and Location (TS & L) Narrative under Work Element 8.6.3.

8.6.2 Conceptual Project Cost Estimates

The CONSULTANT will provide conceptual project cost estimates for the structures and walls, associated with Highway and Transit facilities, for up to two Build alternatives.

The conceptual construction cost estimates will be further refined from the conceptual square foot unit cost estimates and will be based on “Rough” bridge quantities. Rough bridge quantities include items such as concrete volume calculations, rebar weights calculated on a lbs/ cy of concrete basis, pounds of structural steel, an estimate of the quantity of foundation components (numbers of piling or drilled shafts), bridge rail length, end panel square footage and bridge and wall removal cost estimates.

Rough wall quantities include square foot of wall face estimates.

Assumptions:

Conceptual construction cost estimates of the following are not included in this work element:

- Traffic impact attenuator devices.
- Culverts that are six feet in diameter or less.
- A summary of the preliminary construction cost estimates for the structures and walls in the LPA will be provided in the TS & L Narrative under Work Element 8.6.3.

8.6.3 TS & L Development

The CONSULTANT will provide a TS & L Narrative for the LPA. The narrative will summarize the key findings from the preliminary structural design and analysis and will describe each of the proposed structures and walls. For walls in the LPA, if considered of key interest by stakeholders, one typical section for up to five walls may be included in the wall discussion section to illustrate key findings.

Additionally, the TS & L Narrative will provide key information such as:

- References to pertinent documents, including the draft geotechnical report, the draft hydraulics report, the CRC Draft Architectural Guidelines and Aesthetic Framework document, and the Final Design Criteria Memorandum.
- Structure and Wall Design Criteria. This includes the American Association of State Highway and Transportation Officials (AASHTO) Load & Resistance Factor Design Bridge Design Specifications, AASHTO guide specifications and any specific design criteria that have been developed for this project, such as the Final Design Criteria Memorandum.
- A summary of the conceptual construction cost estimates for structures and walls (based on rough quantities) in the LPA.

The CONSULTANT will provide one Draft TS & L Plan, Elevation, and Cross-section drawing(s) for up to two Columbia River crossing Build alternatives. Provide one preliminary TS

& L drawing for the Columbia River crossing and approach structures identified as the LPA. Details to be shown include, but are not limited to the Plan view, Elevation view, Typical Section, Stage Construction diagram as necessary, roadway control line alignment and vertical profile, Super-elevation diagram, Structure type, span lengths, bent conditions, design live loading, draft hydraulic information, foundation type, bridge railing type, and any special aesthetic treatment.

Assumptions:

- Drawings are to be in accordance with current WSDOT standards with CRC project borders.

8.6.4 Technical Reports for the EIS

The CONSULTANT will provide a Navigation Technical Report and an Aviation Technical Report that summarizes the respective issues and discusses the analysis and evaluation that lead to the structure type, size and locations. The draft reports are to address up to two alternatives. The final reports are to be updated if necessary to address any specific differences in the LPA alternative.

Assumptions:

- The Navigation Technical Report will discuss all proposed structures that cross both the Columbia River and the Oregon Slough.

8.6.5 Preliminary Design Acceptance Meetings

The CONSULTANT will conduct one meeting with Agency personnel to review and accept the Draft TS & L Narrative and drawings.

Assumptions:

None.

Deliverables:

The CONSULTANT will provide:

- Conceptual construction cost estimates for the structures and walls in (up to) two Build alternatives (AD8024)
- One Draft TS & L Narrative for the LPA (AD8025)
- One Draft TS & L Plan, Elevation, and Cross-section drawing(s), minimum scale of 1":100', for each Columbia River crossing alternative (AD8026)
- One Preliminary TS & L Plan, Elevation, and Cross-section drawing(s), minimum scale of 1":100', for the LPA (AD8027)
- One Preliminary TS & L Plan, Elevation, and Cross-section drawing(s), minimum scale of 1":100', for each structure in the LPA (AD8028)
- 75 sets of 11" x 17" CAD paper prints (AD8029)
- One set of electronic files in MicroStation V8 format (AD8006)

- One Draft Navigation Technical Report (AD8030)
- One Draft Aviation Technical Report (AD8031)
- One Final Navigation Technical Report (AD8030)
- One Final Aviation Technical Report (AD8031)
- Summary of meeting notes from the meeting with Agency personnel to review and receive comments on the Draft TS & L Narrative and TS & L drawings (no deliverable number)

All Geotechnical work outlined under Work Element 8.7 will be the responsibility of the STATES

8.7 Preliminary Geotechnical Engineering

8.7.1 Subsurface Exploration and Laboratory Analysis

Provide a geotechnical field investigation for the subsurface information necessary to determine foundation requirements for the LPA for proposed structures located in the State of Oregon. Investigation for proposed structures located in the State of Washington and for any borings required within the Columbia River will be provided by WSDOT.

Structural layouts for up to two alternatives will utilize the foundations of existing structures, as-constructed plans, and data from the CRC Existing Geotechnical Data Report (EGDR) to minimize the exploration effort.

After the LPA is determined, the boring sites will be identified and the testing requirements confirmed under Work Element 8.6.3.

Investigations will consider mud-rotary drilling, rotosonic drilling, cone penetrometer testing, and geophysical exploration, as appropriate and determined by the STATES. The proposed exploration program assumes that 78 borings will be required, which includes bridges, walls, and two proposed transit facilities. The average depth is assumed to vary between 125 feet and 190 feet below ground surface. Installation of piezometers is assumed to be required in six borings. Laboratory testing will be performed on soil samples from the borings.

Assumptions:

- STATE will obtain permits and right-of-entry agreements to access exploration sites.
- STATE will require six months to obtain permits.
- Surveying of exploration sites will be provided by Work Element 8.4.
- Samples will not be collected for Haz Mat characterization.
- CONSULTANT to provide archeologist monitoring under Work Element 6.0.
- STATE to provide Native American tribal monitoring.
- STATE to provide traffic control and flagging required as part of this work element.
- STATE will provide one review cycle of the Subsurface Exploration Plan.

- STATE will provide one review cycle of the Geotechnical Data Report (GDR).

8.7.2 Geotechnical Analysis and Design

The STATES will provide geotechnical analysis and design consultation required to support Work Element 8.6 for development of the two Build alternatives. Subsurface profiles, foundation designs, and retaining wall design will be developed for the LPA structures and walls using data collected in Work Element 8.7.1, in accordance with standards maintained by the respective STATE DOTs.

Assumptions:

- Seismic hazard will be assessed using current (2002) USGS mapping.
- Geotechnical design will be based on current WSDOT and ODOT practice.
- STATE will provide one review cycle of the Geotechnical Design Summary Report (GDSR).

Deliverables:

The STATES will provide:

- Draft Subsurface Exploration Plan (AD8032)
- Final Subsurface Exploration Plan (AD8032)
- Traffic Control Plan (AD8033)
- Exhibits for permits and Right of Entry agreements for STATE (AD8034)
- Draft GDR (AD8035)
- Final GDR (AD8035)
- Draft GDSR (AD8036)
- Final GDSR (AD8036)

8.8 Hydraulic Analysis

8.8.1 Data Collection

If impacts to Burnt Bridge Creek are identified in the LPA, the CONSULTANT will obtain cross section data on Burnt Bridge Creek in proposed crossing locations. The data will be used for the HECRAS modeling analysis described under Work Element 8.8.2. Cross section data will include at a minimum bank station and elevation, toe of underwater slope, thalweg of stream, and intermediate points to adequately describe stream bottom, banks, and overbanks.

Assumptions:

- Survey will tie into existing topographic surveys of the site and in conformance with the project datum.

8.8.2 Hydraulic Modeling and Analysis

If necessary, the U.S. Corps of Engineers Hydrologic Engineering Center one-dimensional river analysis system HEC-RAS Version 3.1.3 (May 2005) will be used by the CONSULTANT to

develop a model of Burnt Bridge Creek in the vicinity of the preferred crossings. A copy of the currently effective Federal Emergency Management Agency (FEMA) Flood Insurance Study floodway model will be obtained from FEMA archives. This model will be run and compared to published results in order to verify the data. Survey data obtained under Work Element 8.8.1 will then be incorporated into the model to reflect the existing/natural conditions. This model will be used as the basis of comparison for the proposed condition.

The model will use the FEMA adopted discharges for the 10-, 50-, 100-, and 500-year flood events.

A proposed condition model will then be developed by the CONSULTANT based on the proposed piers and/or abutments. The model will be run and compared to the natural condition model. Output of the model will include predicted water surface elevation and cross section velocity. If piers and/or abutments are located within the active waterway, a scour analysis will be conducted to predict scour depths. The scour analysis will utilize Hydraulic Engineering Circular No. 18 (U.S. Department of Transportation, Federal Highways Administration) methodology.

Assumptions:

- Physical properties of the bed material for use in computing predicted scour will be available. For example grain size distribution and description.
- Methodology and results will be included in draft Hydraulics Report described under Work Element 8.8.3.

8.8.3 Draft Hydraulics Report

Based on the selected alternative and results from modeling under Work Element 8.8.2, the CONSULTANT will prepare a draft Hydraulics report summarizing methodology and results. The report will include comparisons of water surface elevations for natural versus proposed condition in addition to description of methodology and results for scour calculations.

Assumptions:

- Format of the draft Hydraulics report will be provided by the STATE.

Deliverables:

The CONSULTANT will provide:

- One plan drawing indicating cross section locations with proposed bridge location, at a minimum scale of 1":100'; four sets of 11"x17" CAD paper prints (AD8037)
- One elevation drawing of cross sections, at a minimum scale of 1":100'; four sets of 11"x17" CAD paper prints (AD8038)
- One set of electronic files in MicroStation V8 format (AD8006)
- HECRAS input and output files in ASCII format (AD8039)
- One hard copy and one digital in Word format of draft Hydraulics Report (AD8040)

8.9 Alternative Cost Estimating

8.9.1 Obtain Historical or Other Data for Total Project Capital Costs

Cost data required for the prior estimates will be expanded and updated as required by the CONSULTANT. The data will be based on the Standard Item Table, Bid Tabulations, R.S. Means cost and production rate standards, STATE bridge and highway costs and construction cost trends, TriMet LRT and other transit-related costs, and other representative data as appropriate.

8.9.2 Obtain Historical or Other Data for Operations and Maintenance Costs

Operations and maintenance costs will be developed by the CONSULTANT in consultation with WSDOT, ODOT, TriMet and C-TRAN.

8.9.3 Refine Cost Estimate Templates and Undertake Preliminary Quantity Take-offs

The cost estimate templates prepared as part of Task AC will be refined by the CONSULTANT to reflect changes in the project including any increased level of detail. The estimate summaries will be broken down to show individual overall costs for highway and transit elements for each state.

8.9.4 Prepare Cost Estimates

Single point base cost estimates will be developed by the CONSULTANT in Microsoft Excel for each of the two Build alternatives, and for the refined design of the preferred option. The opinions of cost will include construction, operation and maintenance, and long-term preservation costs. They will not include any contingencies or other allowances for bias, risk and uncertainty. For budgeting purposes, the level of effort presented for each of the two Build alternatives will be considered conceptual and sufficient to support the CEVP and DEIS.

Costs will be escalated to the quarter in which the estimate is prepared using historic trends and other relevant information available from STATE and other local agencies for key cost elements such as earthwork, surfacing, rail track, structures and real estate.

The STATES, TriMet and C-TRAN will be requested to provide feedback on the base cost estimates before they are finalized.

Assumptions:

- Cost estimates will be prepared for each of the two Build alternatives (Work Element 8.3).
- Escalation beyond the quarter in which the estimates are prepared will be included as part of the CEVP process (Work Element 8.11).
- Base capital costs developed during the Task AC CEVP process will be used as a basis.
- Highway, transit, bicycle, and pedestrian costs will be included.
- Costs developed during this work element will be utilized in Work Element 8.11.

Deliverables:

- The CONSULTANT will provide a Base Cost Estimate technical memorandum for the Build alternatives (up to 15 copies) (AD8041)

8.10 Aesthetics for Structures and Landsides

8.10.1 Structural Aesthetics for Public Presentation

Architectural and aesthetic elements will be provided by the CONSULTANT for up to two of the Columbia River Crossings as developed. These elements will be depicted on photo-realistic visualization views of the structures as developed in the TS & Ls. Views of the under-side of the bridges will include views from the Oregon shore, the Washington shore, and from the Columbia River. In addition to the shore views, which are to provide a view from ground level, there are to be two views from above, one looking north and the other looking south. These views will include renderings of architectural features including the piers, other substructure details, and the deck and parapet features where visible. The five views described above will be modified as needed to reflect the preferred alternative once that determination is made.

In addition to the Columbia River crossings, up to four photo-realistic visualization views will be provided by the CONSULTANT for typical overcrossings and/or ramps that are planned for the preferred alternative. These views are to be from both the freeway level and from the individual structure level. The four views are to be representative of the planned structures and provide the architectural and aesthetic renderings similar to those described for the Columbia River crossing bridges.

In a like manner, up to four photo-realistic visualization views will be provided by the CONSULTANT for walls that are planned for the preferred alternative. The views are to show the proposed details of the exposed wall and be based on the TS & L dimensions. The views are to be from both the freeway perspective and from the adjoining landside.

8.10.2 Landside Aesthetics for Public Presentation

Architectural and aesthetic elements will be provided by the CONSULTANT for up to two views for each of the preferred alternative interchanges at Marine Drive, Hayden Island, SR-14, Mill Plain, Fourth Plain, and SR-500/39th Street. The views are to be both from the freeway and landside perspective and show the proposed landscaping features and other architectural and aesthetic details planned for the interchanges. The views are to be such that the elevation relationship between different ramps and/or crossings are clearly shown.

In addition to the twelve views described above, two similar photo-realistic visualization views are to be provided by the CONSULTANT to the section between SR-14 and Mill Plain that clearly shows the relationship of the preferred alternative to the theater in downtown Vancouver on the west and the historical military hospital on the east.

Four animated “fly-overs” are to be provided by the CONSULTANT for each of the two alternatives. Two southbound and two northbound will be provided, one from an aerial position and one from approximately 10 feet above the I-5 grade.

8.10.3 River Crossing and Landside Aesthetics Assessment

The CONSULTANT will further develop the aesthetic design criteria and aesthetic alternative evaluation criteria that were previously established in the *Draft Architectural Guidelines and Aesthetic Assessment Framework* document under Task AC.

It is anticipated that the contents of this document will change over time, as each Scope of Work task further develops alternatives.

The CONSULTANT will coordinate with and participate in design workshops for roadway, bridge, and transit for items relating to architectural elements.

Design Charettes may be conducted by the CONSULTANT for the CRC team and the public. Participation in public meetings will be held to present the architectural concepts and incorporate public comment to the Architectural Guidelines and Aesthetic Assessment Framework document.

Further Development of Baseline Design Information

Structural Feasibility

Having previously established critical aesthetic design criteria, basic structural concepts will be further developed by the CONSULTANT. Structure shapes, pier shapes and configurations will be developed in consideration of the Architectural Guidelines and Aesthetic Assessment Framework document.

Visual Elements

The CONSULTANT will further refine the probable footprints and areas of impact during construction of each bridge alternative under consideration; and identify how many sets of overlay plans are needed to address the universe of bridge and approach options under consideration.

Landscape Elements

Using the previously identified list of conspicuous views toward and from the river crossing and approaches, the CONSULTANT will validate the sites, approximate sizes, and range of specific landscape improvement project opportunities applicable to each.

Annotated Corridor Plans

The CONSULTANT will prepare overlays to the annotated plans for each of the two Build alternatives, showing improvements anticipated by the City of Portland, the City of Vancouver, and others in published plans and approved project proposals. Review the base plans and overlays with City of Portland and City of Vancouver staff.

The CONSULTANT will identify apparent points of conflict (such as restricted access, site encroachment, obstructed visibility, etc.) for each set of bridge and approach options and suggest a means of addressing them.

Further Development of the Architectural Guidelines and Aesthetic Assessment Framework Document

The Draft Architectural Guidelines and Aesthetic Assessment Framework Document will be further developed by the CONSULTANT, with the aesthetic design criteria and aesthetic evaluation criteria updated.

Aesthetic Design Criteria

The CONSULTANT will meet with WSDOT and ODOT representatives to discuss compatibility of established architectural guidelines and standards, additional items to be addressed, and other changes and updates to be made.

Aesthetic Alternative Evaluation Criteria

The CONSULTANT will review and update the evaluation criteria for implementation by the CRC team during the further screening of alternatives. A comprehensive set of issues relating to architectural treatments will be addressed in evaluating design criteria.

The CONSULTANT will develop up to five prototypical designs that may include site specific treatments that address functions, performance expectations, typical dimensions, preferred orientation and access if applicable.

Public Design Charette

The CONSULTANT will conduct a design charette for the public. The function of the design team in this setting is to work with and facilitate the public involvement in the process. This could be done at the Public Advisory Committee level instead of the General Public.

Assumptions:

- Architectural and aesthetic elements will be included as developed under Task AC.
- Up to four meetings will be held with both coordinating agencies and the public (see Work Element 8.2.3).
- Base maps between Columbia Boulevard in Portland and Main Street in Vancouver will be provided for developing the annotated plans.
- Work products will be developed to a level that can be used for public outreach events. Up to eight presentation boards will be prepared for use at public events.
- Level of effort will be constrained to the budgeted hours for work under this work element.

Deliverables:

The CONSULTANT will provide:

- 10 Photo-realistic design visualization views, for crossing Build alternatives (AD8042)
- Five Photo-realistic design visualization views for crossing preferred alternative (AD8043)
- Four Photo-realistic design visualization views for bridges for the preferred alternative (AD8044)
- Four Photo-realistic design visualization views for walls for the preferred alternative (AD8045)

- Two Photo-realistic design visualization views for the section between SR-14 and Mill Plain for the preferred alternative (AD8046)
- Four animated fly-overs for each of the two alternatives. (AD8047)
- Update of the Draft Architectural Guidelines and Aesthetic Assessment Framework Document (15 copies) each (AD8048)

8.11 CEVP/Value Engineering

8.11.1 CEVP Preparation

Upon direction of the STATE, the CONSULTANT will participate in two CEVP sessions to be held at the CRC project office. The first session will follow a Value Engineering (VE) study of the two alternatives. The second session will follow a second VE study of the preferred alternative.

Provide up to eight staff for three weeks to coordinate and prepare for each CEVP workshop. The CONSULTANT will work with the CEVP team assembled by the STATE.

Summary Base Cost Estimates and a list of potential Risks and Uncertainties will be prepared by the CONSULTANT and submitted to the STATE two weeks prior to the workshop. Flow Charts will be prepared by the CONSULTANT with input from the STATE. The material is intended for use by participants at the workshop.

8.11.2 CEVP Participation

The CONSULTANT will provide up to 10 staff (six from CRC and four outside experts) to attend the CEVP workshop. The CONSULTANT will work with the STATE to determine participants.

Final CEVP reports will be prepared by the STATE. The reports will be reviewed by the CONSULTANT prior to issuance.

8.11.3 Value Engineering Participation

The CONSULTANT will coordinate, participate, and provide documentation for two formal VE processes to evaluate both the two alternatives and the LPA. The VE study will be conducted by the STATE before each of the CEVPs are completed.

Assumptions:

- The VEs and CEVPs will be led by the STATE.
- The first VE will be held in conjunction with Work Element 8.3 and prior to the first CEVP.
- The second VE will be held in conjunction with Work Elements 8.5 through 8.8 and prior to the second CEVP.
- Each VE study will have a maximum duration of five days.
- Each CEVP workshop will have a maximum duration of five days.
- Results from the CEVP process under Task AC will serve as a guide.

- The results of the workshop will be used in the DEIS.

Deliverables:

- The CONSULTANT will provide Summary Base Cost Estimates and Risk Registers (up to 15 copies each) will be prepared for participants at the workshop (AD8049 CEVP #1) and (AD8050 CEVP #2)
- The STATE will provide final CEVP review reports (up to 15 copies for the workshop). (AD8049 CEVP #1) and (AD8050 CEVP #2)
- The CONSULTANT will provide a VE report (up to 15 copies) (AD8049 CEVP #1) and (AD8050 CEVP #2)

8.12 Design Support for Other Disciplines

The Highway Planning and Engineering team will provide support to other teams as requested. Such support will include preparation of engineering drawings, providing calculations, providing data bases, providing other documentation, providing technical reviews of documents prepared by others, providing technical advice and consultation, and providing staff attendance at public or other agency presentations. It is expected the primary need for support will be for the development of the DEIS.

The above described support is in addition to that support specifically addressed under Work Element 8.2, Agency and Public Outreach Support.

8.12.1 Communications Team Support

8.12.2 Transportation Planning Team Support

8.12.3 Environmental Team Support

8.12.4 Transit Planning and Engineering Team Support

Assumptions:

- Requests by other teams will provide reasonable response time.
- The level of support is estimated at 0.5 FTE for the duration of the task (780 hours).

Deliverables:

- None

9.0 IMPLEMENTATION PLAN

The purpose of this work element is to prepare implementation strategies that consider alternative delivery systems and related work required to advance the project to construction. Emphasis will be placed on developing a draft decision report on the project procurement process for agency review by mid 2008. Refinement and adoption of the implementation plan will occur in a subsequent Phases of work.

9.1 Implementation Project Management and Quality Control

This work includes the coordination and management of the CONSULTANT team in the delivery of the implementation plan. Other work includes forming and managing an Implementation Work Group, conducting design charettes, and managing meetings.

Assumptions:

- The Implementation Work Group will consist of approximately 15 members and will meet no more than monthly.

9.2 Research Alternative Delivery Systems

In coordination with the Financial Structures work, the CONSULTANT will review delivery systems applicable to the CRC project. Emphasis will be placed on evaluating traditional accelerated design-bid-build and design-build delivery systems, and public-private partnerships. The CONSULTANT will conduct up to 10 interviews with appropriate STATES staff and private sector contractors to develop an understanding of potential systems for further evaluation.

The CONSULTANT will research construction delivery systems accomplished on five relevant projects located throughout the United States, and provide documentation on the delivery system used, successes and failures, issues, lessons learned, and recommendations.

Assumptions:

- The STATES will provide available information and assure its key staff is available for interviews. The CONSULTANT will recommend relevant projects for research and gain approval from the STATES prior to starting any work. Research on relevant projects located within the United States may warrant site visits by STATE and CONSULTANT staff as approved by the STATES.

Deliverables:

- The CONSULTANT will provide a Draft and Final Technical memorandum on Alternative Delivery Systems applicable to the CRC project (9001)

9.3 Conduct Integrated Design/Constructability Workshop

The CONSULTANT will conduct a design/constructability workshop to review the DEIS alternatives. The emphasis for the workshop will be on constructability and potential for phasing.

Participants will include staff from the STATES, technical experts from the CONSULTANT team, and up to five outside experts with extensive large project experience in general engineering oversight, design, design-build, and construction. For budgeting purposes, the

workshop will be conducted over a five day timeframe following the Value Analysis format. Findings and recommendations will be presented in a technical report.

Assumptions:

- The CONSULTANT will provide a facilitator and facilities for the workshop.
- The STATES will provide up to five experts.
- The CONSULTANT will provide up to five experts.
- The CONSULTANT will recommend outside experts that will be approved by the STATES.
- The CONSULTANT will evaluate recommendations as a response to the Technical Report.

Deliverables:

- The CONSULTANT will provide a Draft and Final Technical Report on findings and recommendations for further action (9002)

9.4 Draft Implementation Plan

The CONSULTANT will prepare a draft Implementation Plan that recommends procurement methods and related design, right-of-way, utilities activities and construction staging/phasing required for construction of the project. The draft plan is considered a dynamic document that will be revised as needed during subsequent Phases of work as the preferred alternatives for highway and transit are confirmed in the FEIS process.

Assumptions:

- The Implementation Work Group will participate in the development of the Draft Implementation Plan.
- The CONSULTANT will prepare up to three iterations of a Draft Implementation Plan for review and comment.

Deliverables:

- The CONSULTANT will provide a Draft Implementation Plan (9003)