

**AMENDMENT NUMBER 8****CONTRACT NUMBER 38016****FOR****Oakes Bottom Wildlife Refuge Phase I Design**

This Contract was made and entered by and between Tetra Tech, Inc., hereinafter called Consultant, and the City of Portland, a municipal corporation of the State of Oregon, by and through its duly authorized representatives, hereinafter called City.

1. Changes to the Scope of Work are necessary and the Detailed Statement of Work contained in Exhibit A of the contract is replaced with the attached Exhibit A to this amendment.
2. Additional compensation is necessary and shall not exceed \$263,401. The new total not to exceed contract amount is \$918,118.
3. The Task Breakdown table in the COMPENSATION section is replaced with the following:

Task	Original Task Budget	Amend. 1 Task Budget	Amend. 2 Task Budget	Amend. 4 Task Budget	Amend. 5 Task Budget	Amend. 8 Task Budget	Revised Task Budget
100 Project Management	\$21,254		\$14,290		\$22,863		\$58,407
200 Public Involvement	\$9,095						\$9,095
300 30% Design Phase Services	\$45,758	\$11,310					\$57,068
400 Design Phase Services	\$296,856		\$30,189	\$46,874	\$141,932		\$515,851
500 Final Design Services	\$22,828			(\$22,828)			
600 Engineering During Construction	\$24,046			(\$24,046)		\$263,401	263,401
General and Administrative	\$9,605				\$4,690		\$14,295
<b>TOTAL:</b>	<b>\$429,442</b>	<b>\$11,310</b>	<b>\$44,479</b>		<b>\$169,485</b>	<b>\$263,401</b>	<b>\$918,118</b>

All other terms and conditions shall remain unchanged and in full force and effect.

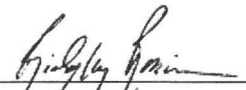
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CONSULTANT SIGNATURE

This Contract amendment may be signed in two (2) or more counterparts, each of which shall be deemed an original, and which, when taken together, shall constitute one and the same Contract amendment.

The parties agree the City and Consultant may conduct this transaction by electronic means, including the use of electronic signatures.

**TETRA TECH, INC.**

Signature:  Date: 01/02/17

Name: Ridgley K. Robinson

Title: Vice President

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Contract Number: 38016

Amendment Number: 8

Contract Title: Oakes Bottom Wildlife Refuge Phase I Design

**CITY OF PORTLAND SIGNATURES**

By: \_\_\_\_\_  
Elected Official

Date: \_\_\_\_\_

Approved:

By: \_\_\_\_\_  
Office of City Auditor

Date: \_\_\_\_\_

Approved as to Form:

By: \_\_\_\_\_  
Office of City Attorney

Date: \_\_\_\_\_

EXHIBIT A  
DETAILED STATEMENT OF WORK  
FOR CONTRACT NO. 38016  
OAKS BOTTOM WILDLIFE REFUGE PHASE 1 DESIGN  
DETAILED STATEMENT OF WORK  
TETRA TECH, INC.

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The Bureau of Environmental Services (BES) serves the Portland community by protecting public health, water quality, and the environment. BES works with other City departments to assist in the recovery of threatened and endangered species. The Oaks Bottom Wildlife Refuge Habitat Enhancement project is a key component in the restoration of habitats to benefit salmonids and wildlife species. The City has partnered with the U.S. Army Corps of Engineers (Corps) under the Section 206 Aquatic Ecosystem Restoration program to implement the Oaks Bottom Wildlife Refuge Habitat Enhancement project. The Corps will procure and manage the construction contract, thus all final deliverables under this amendment must meet Corps requirements and format. *While the Corps is managing the construction contract, they are requiring the City to manage Engineering During Construction as part of this contract.*

The Oaks Bottom Wildlife Refuge Habitat Enhancement project will restore a frequent connection between the lower Willamette River and its floodplain at Oaks Bottom to provide rearing and refuge habitat for salmonids in the Willamette basin. Additionally, wetland and riparian habitats will be improved by the removal of non-native species and plantings of native species.

### 1. PURPOSE.

a. The work to be performed under this scope of work is preliminary through a revised 90% and final design and bid documents, including preparation of specifications, permit assistance, cost estimating, conduct a Value Engineer (VE) study and conversion of technical specifications into the U.S. Army Corps of Engineers SPECSINTACT format. All drawings will conform to the Corps CAD standards and cost estimates will conform to Corps format. *Engineering During Construction will also be performed under this contract.*

b. This project includes the following primary elements: 1) replace existing culvert with an arch culvert; 2) excavate tidal slough channels; 3) remove existing water control structure and replace with riffles; 4) restore the riparian and wetland habitats adjacent to other project features and around the perimeter of the reservoir; and 5) install 2 viewing decks adjacent to the Springwater Trail.

**2. CONSULTANT SERVICES.** With the exception of City-furnished property and services (see paragraph 6), the Consultant shall furnish all services, labor, materials, supplies, and equipment required to conduct the tasks necessary to accomplish the work required under this Detailed Statement of Work (SOW). In performance of this work, the Consultant shall make extensive use of existing information as provided by the City, current scientific literature, studies done under this scope of work, existing knowledge, analytical ability, professional judgment, and the involvement of Consultant and sub-consultants. The Consultant shall complete the performance of the specified tasks outlined below.

### 3. STATEMENT OF WORK.

#### **100 Project Management.**

Objective: Meet the project objectives and plan, organize, direct, control and report activities necessary to provide the respective products and deliverables on time and within budget.

The Consultant shall designate a project manager for this work, who will be the primary point of contact for the City, and will ensure that all technical work conducted as a result of this statement of work is well-coordinated and managed between the client, the prime, and any sub-consultants. Frequent communication will occur to ensure the design meets the client objectives and is conducted on-time and within budget.

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**110 Project Management Plan:**

The Consultant shall develop a draft and final project management plan (PMP) that will be maintained and updated periodically throughout the project. Obtain BES Project Manager (PM) approval of initial plan and updates. The PMP will include, but not be limited to the following:

- Introduction including project description, overall project approach and project goals
- Team organization with roles and responsibilities defined; BES organization with roles and responsibilities defined; and contact lists with names, organization, address, e-mail, and phone and fax numbers
- Scope of Work and work breakdown structure with tasks, subtasks, schedule, budget and deliverables
- Project schedule and control procedures
- Project budget and control procedures
- Project coordination, communication, and progress reporting procedures
- Decision-making protocol and documentation systems for recording decisions
- Change management procedures
- QA/QC procedures including design milestone reviews
- Invoicing and billing procedures
- File documentation procedures

**120 Project Schedule**

Develop and maintain the design schedule and preliminary construction schedule for the project in MS Project and MS Excel formats. The schedule will outline all tasks required of the Consultant to develop, program and design the project. Activities performed by BES, the Consultant, and other parties will be shown. Activity data shall, as a minimum, include a description, duration, and activity links. Contractor shall update schedule monthly.

**130 Meetings and Updates**

Participate in biweekly team meetings with City and Corps staff (one via conference call and one in-person per month). Prepare materials to facilitate meeting presentations and discussion, and written summaries for these meetings. Meeting topics will typically include project status, interagency coordination requirements, BES coordination requirements, review decision-making strategy, identify upcoming activities/issues, potential hurdles, and corrective actions.

Provide monthly e-mail status reports including updated budget, schedule, and summary of work completed during the billing period, status of deliverables, hours and costs spent to date by task. Monthly status reports shall include Earned Value Management reporting at the major task level (i.e., Task 100, 200, 300, etc.) including Budgeted Cost of Work Scheduled, Actual Cost of Work Performed and Budgeted Cost of Work Performed. Major task level evaluation and reporting will include completion status of individual subtasks within the major task levels.

Revise original budget to now assume 32 monthly 2-hour meetings over the course of design and construction, and 36 bi-weekly (a meeting every two weeks) 1-hour meetings during the design phase. This would be approximately 10 additional monthly 2-hour meetings and 10 additional 1-hour biweekly meetings during the final design phase. The PM will attend all meetings and the lead engineer will attend half of the meetings. (Tetra Tech has, as of 10/10/2016 currently attended 22 2-hour monthly team meetings and 26 1-hour biweekly meetings, plus an additional 24 hours of policy or design criteria/tech team meetings and 16 hours of agency meetings or site visits.) Also provide monthly status reports including budget, schedule, and summary of work for additional 12 months of design phase.

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This task does not include specifically identified design review meetings or meetings otherwise noted below.

**140 Design Decision and Change Log**

Prepare and maintain a Design Decision and Change Log that will be updated as decisions are made and changes proposed. Maintain in electronic format to facilitate distribution and information exchange between Consultant and the BES PM. Provide monthly updates with focus on changes that could impact design or construction costs and/or schedule.

**Project Management Deliverables:**

- Draft and final Project Management Plan
- Project schedule and monthly updates
- Project budget and monthly updates
- Monthly status report and invoices, including monthly Subcontractor Payment and Utilization Report. Status reports shall include the estimate of the % complete for each task and subtask and a list of known design issues. Invoices should show what has been spent each billing period and what has been spent to date vs. budget.
- Meeting materials and summaries to be submitted within 7 business days.
- Design Decision and Change Log and monthly updates

**200 Public Involvement**

Objective: Implement the Public Involvement Plan that provides citizens, businesses and neighborhood groups with project information, responds to requests, and offers opportunities to give input on project decisions, especially construction impact mitigation measures, and to gain public understanding and support.

**210 Public Meetings**

Assist BES in developing strategy and preparation for up to 4 public meeting presentations/briefings as needed or requested. Includes providing materials and attending meetings (PM and Senior Engineer).

**Public Involvement Deliverables:**

- Materials for public meetings

**300 30% Design Phase Services**

Objective: Define design and construction criteria. Evaluate construction methods alternatives and refine cost estimates to select the most cost-effective construction method. Refine preliminary designs and costs to reflect selected construction method and provide additional details.

**310 Kickoff Meeting and Site Visit**

A project kickoff meeting will be held with Consultant's key design team (hydraulic, civil, geotechnical, structural, environmental) and BES's project team to review the project approach, issues and constraints, schedule and milestones, deliverables, design decision strategy, and confirm what activities will be self-performed by BES. BES will provide all background materials to include the Public Involvement Plan, geotechnical and environmental data, and hydrologic and hydraulic models. After the in-office meeting, visit the project site and discuss issues and constraints, particularly relative to construction methods. Consultant shall prepare necessary visual aids to facilitate meeting discussions. Meeting minutes for the in-office meeting and a written summary of the site visit shall be provided within three working days.

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320 Construction Methods Analysis

Consultant team will contact at least 3 construction contractors, shoring designers, and culvert manufacturers to identify up to 5 feasible construction methods and provide approximately a 30% level cost estimate for each. At this time, potential alternatives include open cut, vertical cut with braced shoring, tunneling, and jacking/boring. Develop matrix of pros and cons for each alternative, including costs, risks, and identify additional data needs (i.e. geotechnical borings). BES will arrange a meeting with the railroad operator and consultant following the development of the matrix to discuss construction methods and closure time periods and identify his preferred construction method. The Consultant team and BES project team will identify the preferred construction method that will be used in all further designs and document the decision in a construction methods technical memorandum. A bridge alternative will be included in this evaluation.

325 Hydrogeologist Peer Review

Provide hydrogeologist peer review and opinion of the Oaks Bottom Wildlife Refuge technical memos and analyses prepared by the City and others, including the wetland, fish passage/use, hydrology and hydraulics technical memoranda and other information to be provided by the City. This peer review is to characterize the geology, groundwater, and surface water hydrology that exists on-site and to provide a best professional judgment of the changes to these variables under proposed design scenarios. This hydrogeological analysis is essential to defining the design criteria and accomplishing the design for the project.

330 30% Design Drawings and Design Report

Prepare the 30% Design drawings and Preliminary Design Report for the selected construction method and other features as documented in the Pre-Design report (culvert replacement, removal of water control structure, log step weirs, tidal channel excavation, removal of non-native species, and revegetation. The revegetation plan will be provided by the City and is to be included on the revegetation sheet. All elevations on drawings will reference the City of Portland datum. Vicinity map will be at scale of 1" = ½ mile or larger, and plan-profile sheets will be at scale of 1" = 50' horizontal and 1" = 10' vertical or larger on half-size sheets. The Preliminary Design Report will include:

- Project location and background
- Summary of the geological and geotechnical conditions as information is available from BES (BES will provide boring logs and test results from summer 2007 borings; Consultant will summarize results and identify geotechnical issues relative to selected construction method. No additional geotech borings are included in this task.)
- Summary of the environmental conditions
- Summary of the hydraulic and associated design criteria (hydrologic and hydraulic models will be provided by BES to the Consultant to conduct any additional model runs if project features change during the 30% design; i.e. culvert shape or size)
- Summary of the structural design criteria
- Selected project configuration including construction features
- Summary of evaluation of construction means and methods
- Recommended construction means and methods
- Summary of issues to be addressed in the design and/or construction
- Utility impacts
- Permitting and property acquisition (easements) requirements
- Risk identification, mitigation and management
- Preliminary design and construction schedule
- 30% level cost estimate
- Outline of special specifications

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**340 30% Review Meeting**

All relevant members of the Consultant's design team shall attend a review meeting to go over City review comments, unresolved issues, permitting needs, and details to be required for the 60% submittal. All decisions from this meeting shall be documented in the Design Decision and Change Log. Meeting minutes shall be provided to BES within three working days.

**350 Contingency Task: Bridge 30% Design**

An evaluation of a bridge design instead of a culvert replacement will be evaluated in Tasks 310-340 as described above. If the bridge alternative appears to be the most feasible alternative from a construction feasibility and cost perspective (based on existing data available) and the project team agrees to select this alternative, then the 30% designs and costs will be revised substantially to provide a 30% bridge design. If the bridge alternative is selected, then additional contingency tasks during the design phase will be required as additional geotechnical and structural engineering will be required beyond that which would be required for a culvert.

**30% Design Phase Deliverables:**

- Kickoff meeting and site visit summary memo
- Matrix of construction methods, including 30% costs
- Construction method technical memo
- 30% design drawings and preliminary design report (drawings at half-size scale)

**400 Design Phase Services**

**Objective:** To conduct activities that will develop a basis for completion of 60% and 90% plans and support documents (not including specifications), cost estimates and construction schedule.

**410 Geotechnical Peer Review**

The Subconsultant (NW Geotech) shall conduct a geotechnical peer review of the 60%, 90%, revised 90%, and 100% designs, construction cost estimates, and basis for design reports and provide comments and recommendations in a technical memorandum format. At this time, no additional geotechnical borings or analysis is contained in this scope. These memoranda will be informational purposes only.

**415 Contingency Task: Design Phase Geotechnical Investigations, Testing, Evaluations, and Geotechnical Data Report**

If the bridge alternative is selected in Task 300, then additional geotechnical work is required to support the design phase. The Subconsultant (NW Geotech) shall conduct additional geotechnical explorations to provide an evaluation of conditions within and below the railroad embankment to a sufficient depth to design pilings and other supports necessary for a bridge crossing. For the purposes of budgeting, it is assumed that up to 2 auger/mud rotary borings will be drilled to a depth of 150 feet below the general site grade (~180 feet depth per boring with the embankment). The total budgeted linear footage for the borings is 400 feet. In addition, cone penetrometer testing with shear wave velocity measurements is also planned. The total budgeted footage for the CPT is also 400 feet. A liquefaction potential analysis will be made using Seed-Idriss or other procedures. Maximum credible earthquake accelerations and shear wave velocity estimates will be prepared for the proposed bridge as well as maximum ground velocities. The Subconsultant will provide a draft and final geotechnical data report to include written and graphical descriptions of the geology, hydrogeology, and geotechnical setting, including field logs, field observation notes, and geotechnical recommendations and evaluation of risks (including liquefaction risk) for the design of the bridge alternative.

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Although this study will include evaluation of risks associated with liquefaction and lateral spreading, the design of mitigation measures (if desired) will likely require additional study and is outside this scope of work.

**420 Permit Assistance**

The Consultant shall assist the City in the permitting process.

Due to time lag from receiving initial permits, the Consultant shall prepare supplemental and new packages for Oregon DSL Removal/Fill, ODFW Fish Passage Approval (update only), City of Portland Land Use/Greenway Review, and Non-Parks Use Permit based on the revised 90% designs. If required, a package will be prepared for the ODEQ Water Quality Certification.

**430 60% Design Drawings**

The Consultant and Structural Subconsultant shall prepare a 60% design drawing set to include the following estimated sheets. The 60% design shall include a statement as to how all written City comments have been addressed from the 30% plan set. The Consultant shall provide additional details necessary to complete a 60% design, using the plan developed for the 30% designs as the basis for additional analysis.

**Plan Set Index**

<b>Sheet Number(s)</b>	<b>Description</b>
1	Cover Sheet, Project Vicinity, and Location
2	Legend, Abbreviations, and Notes
3	Sheet Index and Layout
4	Construction Easements, and Survey Control
5	Staging, Access, and Traffic Control Plan, Trail Closure details including signage
6	Exclusion Zones, Erosion Control Plan
7	Erosion Control Details
8-10	Civil Site (Grading) Plan and Profiles
11-15	Cross Sections
16	Culvert Design and Grading Details
17	Coffer Dam Plan and Details
18-19	Structural/Geotechnical Details for Culvert Construction
20	Railroad Embankment Details
21	Log Weir Details
22	Habitat Element Site Plan (LWD, etc)
23	Habitat Element Details
24	Revegetation Plan Base Sheet
25	Contaminant Disposal Plan

**440 60% Construction Cost Estimate**

The Consultant shall prepare a 60% level cost estimate in spreadsheet format, using City of Portland unit costs as appropriate. The cost estimate shall be supported by estimated quantity take-offs, computations, and unit prices, and shall include an estimated contract cost, with all assumptions documented related to anticipated construction overhead, administration, and contingency factors.

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450     60% Draft Basis of Design Report

The Consultant shall prepare a Draft Basis of Design Report that will facilitate a thorough engineering review and understanding of the proposed design. Elements will include discussion of layout, hydraulic design, structural design, geotechnical recommendations, documentation and backup of quantity take-offs, computations, unit prices, and other data used, and proposed construction methods. The basis of design report will include a preliminary construction sequence, staging and access routes, and details on the culvert replacement construction method. The report shall also include a proposed construction bid schedule and estimated construction period. The Consultant will provide input to the City of Portland regarding construction processes, materials, and sequencing for preparation of the specifications by City staff. The Consultant shall provide a quality control review of these products.

460     60% Construction Schedule

Based on City review of 30% submittal, the Consultant shall prepare a 60% construction schedule. The schedule will include work task descriptions, durations, sequencing, and interim milestone requirements.

465     Preliminary Special Provisions for Specifications

The Consultant shall prepare a preliminary set of the special provisions needed to include with the specifications package for the project. Special provisions will include elements such as erosion control and pollution prevention; access routes and timing; acceptable closure times

470     60% Review Meeting

All relevant members of the Consultant's design team shall attend a review meeting to go over City and permitting agency comments, unresolved issues, additional permitting needs, and final details required for the 90% submittal. All decisions from this meeting shall be documented in the Design Decision and Change Log.

480     90% Designs

The Consultant shall provide additional details necessary to complete a 90% design, construction cost estimate, 90% updated basis for design report, 90% construction schedule, draft specifications, and a draft construction pollution prevention plan suitable for submittal to Oregon Department of Environmental Quality, using the plan developed for the 60% designs and all review comments received as the basis for additional analysis. The 90% design shall include a statement as to how all written City comments have been addressed from the 60% plan set. The Consultant will provide the special provisions for the specifications that will be incorporated into the City's standard specifications. A review meeting will be held to go over final City and permitting agency comments to resolve all issues prior to preparation of the 100% designs. The Consultant shall provide a quality control review of these products.

490     Revised 90% Designs

The Consultant shall review the results of the VE Study (Task 495) and all comments received on the 90% design, specifications and cost estimate and provide a comment/response spreadsheet to document proposed changes. The Consultant will revise the 90% design, construction cost estimate, basis for design report, and specifications, to revise the staging and access route(s), materials for the viewing platforms, and conversion of the drawings and technical specifications to U.S. Army Corps of Engineers CAD standards and SPECSINTACT format and the cost estimate in MCACES format. A review meeting will be held to go over City and Corps comments to resolve all issues. All review comments will be entered into the Corps' Dr. Checks system for response and resolution by the Consultant. The Consultant shall provide a quality control review of these products prior to submittal. This task does not include design of a temporary or permanent bridge. The revised 90% design will be used to develop and submit supplemental permits as identified in Task 420.

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- The 90% plans and specifications shall include all aspects of the culvert redesign to be described in a basis of design memo included with the 90% design with the following elements:
  - Shorter length of culvert.
  - Use of segmental blocks or similar for wingwall and retaining wall design and/or use of shoring elements for permanent retaining walls.
  - Use of retained earth or similar to allow steeper side slopes on fill above culvert.
  - Barge and/or rail access routing.
- The revised culvert design and access elements will require new or substantially revised sheets, currently anticipated as follows:

Sheet	Description
1	Access and staging plan
2-3	Access details, ramps, trail closure
4	Dewatering and erosion control plan
5	Erosion control details
6-9	Culvert and wingwall structural plan and details
10	Retaining wall sections, details
11-12	Retained earth sections, details
13	Revegetation plan

Submittal will be provided in Adobe pdf, MCACES, SPECSINTACT format, with four half-size copies of the drawing sheets.

491 100% Designs/BCOES Review

The Consultant shall review all comments received from the revised 90% review by the City and Corps and prepare the 100% designs, specifications, and cost estimate incorporating agreed upon changes, including appropriate design calculations and assumptions. The Consultant shall complete an internal quality review prior to submitting the 100% designs. The City and Corps will conduct a Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) review. The Consultant will attend a one day Plan in Hand meeting to be held at Oaks Bottom with all lead design staff (including Subcontractors) attending. The Consultant will prepare a meeting summary documenting all decisions and key issues from the meeting. The City and Corps will provide all review comments in Dr. Checks for response and resolution by the Consultant. Submittal will be provided in Adobe pdf, MCACES, SPECSINTACT format, with four half-size copies of the drawing sheets.

492 BCOES Backcheck The Consultant will address all BCOES comments and agreed upon changes and submit a revised 100% design package for backcheck and approval by the BCOES team. This submittal is intended to close out all BCOES comments in Dr. Checks. Any additional comments from the backcheck will be entered into Dr. Checks by the City and Corps for final response/resolution and close out in Dr. Checks. Submittal will be provided in Adobe pdf, MCACES, SPECSINTACT format, with four half-size copies of the drawing sheets.

493 Final Bid Documents

The Consultant will review any remaining issues and conduct a final internal QC to prepare the final bid documents. The final bid documents will be stamped by the engineer of record and specialty engineering (i.e. structural). Final bid documents will be delivered in Adobe pdf, CAD, MCACES,

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Excel, and SPECSINTACT format. Three full-size signed hard copies of the drawings will be submitted.

495     **Value Engineering Study**

The Subcontractors (RHA, LLC and Ott-Sakai, LLC) shall lead and participate in a Value Engineering (VE) Study in accordance with the Corps' Engineering Regulation (ER) 11-1-321, Change 1, Army Programs Value Engineering. The goal of a VE workshop is to document and/or verify functions, goals, and objectives as defined by the project/program stakeholders. The Contractor shall assign a Facilitator/VE team leader to conduct the Value Engineering Study. The Facilitator shall lead and manage the phases of the Value Engineering Study. In addition to a Facilitator, the Contractor shall assign one (1) team member to represent railroad bridge construction experience.

The U.S. Army Corps of Engineers (USACE), Portland District (CENWP) will assign the following team members from these disciplines: Structural (Bridge); Geotechnical; Hydrology/Hydraulics; Civil; Environmental, and Cost. In addition, the owner of the railroad will participate. The City of Portland may also send team members.

(1) Pre-Workshop Phase. Prior to the start of the workshop phase, the VEO and/or Government Technical Lead (TL) for the project shall distribute to the Contractor the names and contact information of the CENWP staff that will be participating in the workshop, the information available regarding the project, with the known issues, and the VE report template for the report to be produced in the post-workshop phase. The Contractor shall distribute this information to the VE team for thorough review. The Facilitator shall develop the Job Plan schedule and agenda. The Facilitator shall distribute this information to the VE team and the interested parties at least one week prior to the workshop. At the same time, the Facilitator shall distribute information regarding the site meeting location.

(2) Workshop Phase. The VE Team shall conduct an in-brief meeting; site visit (if required); review all relevant project information; follow with the SAVE International 6-step study VE methodology; conduct an out-brief meeting; and, produce a Workshop Out-Brief Report at the conclusion of the Workshop Phase. VE team members shall attend the in-brief and out-brief meetings.

Developed Alternatives and Design Suggestions shall include images, sketches, and/or diagrams to explain the existing and proposed conditions, unless there is no reasonable image that can express the existing or proposed conditions. Developed Alternatives shall include LCCA or statement(s) clearly stating the reasons for its exclusion.

It is preferred that the in-brief and out-brief presentations are in PowerPoint format; however, conditions may require an alternate presentation technique. During the out-brief, the Facilitator shall present the images from the developed Alternatives, rather than just text, where reasonable.

The Workshop Out-Brief Report can be in the format of the Facilitators choosing; and, shall include at least the items in Section 2.c.(2)(a)-(k) below as well as the function analysis and fundamental project data. Using bullet format in parts of the report is acceptable. At a minimum, a handout of the summary list of the Developed Alternatives and Design Suggestions shall be passed out to the attendees of the out-brief.

The Facilitator shall work with the Workshop participants to establish and maintain the following information during the Workshop (Note: depending on the project or process, some of these factors may not be applicable. If this is the case, the Contractor shall identify as such).

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(a) Workshop Participants and Contact Information.

(b) Action Items. These items break into three parts. First, the items needing to be completed (e.g., geotechnical report, survey, purchase property, obtain funding, etc.). Second, the items to be required if a particular alternative is selected (e.g., get higher level approval, procure additional funding, retain a specialist, etc.). Third, areas of concern the PDT would like the VE team to explore during the workshop.

(c) Key Agreements. Cost sharing partners, required cooperative partners, funding agents, land purchases, etc.

(d) Critical Assumptions. Design under review is based on these unverifiable issues (e.g., buildable site, funding available, hydraulics, weather, etc.).

(e) Critical Constraints. Restrictions the PDT perceived existed at the time of the design (e.g., funding, schedule, materials, configuration, site issues, etc.).

(f) Risks (both threats and opportunities) and Risk Analysis. These are issues that are real and verifiable that can affect the project outcome.

(g) Quality Objectives. (e.g., LEED requirements, finishes requirement, durability, sustainability, maintainability, etc.).

(h) Evaluation Criteria and Methodology.

(i) Alternative and Design Suggestion Summary List. This includes identification of optimum reasonable cost avoidance recommended to accept and mutually exclusive or each type.

(j) Developed Alternatives and Design Suggestions.

(k) Deviations. From USACE Guidance and local USACE requirements

(3) Post-Workshop Phase.

(a) Out-Brief Report. At the conclusion of the Workshop Phase, the Facilitator shall submit an electronic out-brief document defined in paragraph 2c.(2).

(b) Draft Report. The Facilitator shall submit a Draft Report and submit an electronic version to the VEO or designee. The Draft Report shall follow the VE Report Template supplied with the project information, when available.

(c) Review, Acceptance, and Finalization. After receipt of the Draft Report, the VEO and PDT complete a Quality Assurance Review of the document and submit comments to the Facilitator and the VE team using DrChecks. After the comment period, the Facilitator and the VE team shall resolve the comments through the use of DrChecks.

(d) Comment Resolution. The PDT will evaluate the developed Alternatives, Suggestions and/or Comments to determine which to accept or reject. The VEO will document this Disposition in a Memorandum for the Record (MFR). The VEO will forward the MFR to the Facilitator for incorporation into the Final Report. The Facilitator shall send an electronic version of

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the Draft Final Report to the VEO, for review by the PDT. The Facilitator shall resolve the final comments received from the PDT and once resolved will issue the final report.

**Design Phase Deliverables:**

- Geotechnical Technical Memoranda (4)
- Responses to City and Corps 60%, 90%, revised 90%, 100%, BCOES review comments
- Permit applications
- 60%, 90%, revised 90%, 100%, BCOES, and Final Design Drawings (drawings will be provided at half-size scale for all submittals prior to final bid documents)
- 60%, 90%, revised 90%, 100%, BCOES, Final Construction Cost Estimates
- 60%, 90%, revised 90%, 100%, BCOES, Final Basis for Design Reports
- Preliminary, Draft, revised 90%, 100%, BCOES, and Final Specifications Special Provisions
- Draft construction pollution prevention plan

**600 Engineering During Construction**

**610 Pre-Construction Kickoff Meeting**

*This on-site meeting will be attended by principal staff from the USACE, the City, Tetra Tech, Akana, and NW Geotech. Principal staff from Tetra Tech that will attend include the PM and lead engineer. The purpose of this task is to provide a complete overview of the project, answer initial questions from the construction contractor, and identify sensitive resources. This task will include a site walk, field review of design sheets, and permit obligations and contractor schedule look ahead for mobilization and erosion and sediment control.*

**620 Weekly Construction Progress Meetings**

*Per direction from the City PM, Tetra Tech staff will meet with the City, USACE staff and the construction contractor up to 30 times at the site to review the previous week's construction elements, discuss the next construction steps, and address issues that may have arisen. It is anticipated that the lead engineer will attend the meetings, and that the PM or other appropriate staff will attend meetings less frequently and as determined by the Tetra Tech PM. Our QA/QC engineer may attend a maximum of two meetings as determined by the BES PM. Staff from subcontractors Akana and NW Geotech will attend up to half of the weekly meetings, as needed and as determined by the Tetra Tech PM and during periods of construction of the culvert or viewing platforms.*

**630 Review of Contractor Requests for Information**

*Tetra Tech's PM, and Tetra Tech and subcontracted engineering staff, will be available, as determined by the City PM and Tetra Tech's PM, to respond to up to 20 requests for clarification of elements of the design plans or the specifications. It is assumed that up to 50% of these requests will require a visit to the construction site. It is further assumed that these requests will not result in changes to the construction drawings or specifications.*

**640 Review of Submittals, Including Weekly As-Built and Look-Ahead Schedules**

*Per direction from the City PM, submittals listed in the project specifications will be reviewed and approved by Tetra Tech engineering staff or engineering staff from structural and/or geotechnical subcontractors, in coordination with USACE staff. Tetra Tech's lead engineer will review prepared as-built drawings (per specifications). Approximately 90 government submittals are required in the project specifications. Upon direction by the City PM, Tetra Tech's lead engineer, PM, or subcontracted structural or geotechnical engineers, will provide review. Review of contractor submittals will require a minimum of one (1) week review period. It is assumed that the contractor*

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*prepared as-built drawings will be provided to the City and USACE staff and distributed to the Tetra Tech lead engineer for review prior to or during the meetings specified in Task 2 and Task 6.*

**650    *Review of Construction Schedule***

*Upon direction from the City PM, the lead engineer will review the contractor-submitted and maintained project construction schedule with the construction contractor, City, and USACE staff on a weekly basis or as needed to make sure that the work is progressing according to specific milestone dates, in-water work window periods, and permit conditions.*

**660    *Coordination Meetings and Teleconferences with USACE and City of Portland***

*Per direction from the City's PM, Tetra Tech engineering staff and Tetra Tech's PM, as well as subcontractors if needed, will attend a weekly one-hour coordination meeting at City of Portland offices during the period of construction and up to one month prior to and two weeks after the construction period. During the period of construction, it is assumed that these coordination meetings will occur on the same day as and either immediately before or after the Task 2 Weekly Construction Progress Meetings. It is assumed that the PM will attend in person, and engineering staff will typically attend by conference call. At least one additional teleconference meeting is assumed per week, and will include up to three staff from the engineering team.*

**670    *Project Construction Reporting***

*The project engineer will prepare a brief weekly construction memo summarizing the previous weeks' construction progress, changes from the design, and photos of critical items. Upon completion of construction, the project engineer will prepare a final construction memo describing the work that was accomplished, any items that were constructed differently than the design, and a statement of completion. This memo will be submitted with the final as-built drawings prepared by the construction contractor.*

**680    *Contingency***

*In addition to EDC, we have included budget for a 10% contingency. This budget will only be utilized upon written approval of the City PM with specified scope, rationale, and deliverable.*

*The task 600 cost estimate is based on the following assumptions:*

- 1. Topographic survey and geotechnical field testing are not included.*
- 2. Weekly progress meeting minutes assumed to be prepared by the contractor and submitted to the City and subsequently reviewed by Tetra Tech each week for completeness. As identified in Task 7, Tetra Tech will provide weekly documentation to the City, including scanned copies of construction observation field notes and a brief photographic log of photographs from key construction elements.*
- 3. Management of the construction contract, including negotiation of changes, will be performed by USACE staff.*

**700    City-Provided Services**

**Objective:** To make best use of existing City resources and existing information.

**710    *Review of Consultant Work Products***

*Provide written review comments on Consultant deliverables in a format that will expedite Consultant's written responses to the comments (spreadsheet format). As required, attend meetings to review deliverables and Consultant's responses, and review project status and schedules.*

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**720 Surveying and Base Mapping**

Provide surveying information as required to support design and final design including:

- Horizontal and vertical control points to be used for construction
- All existing most recent topographic surveying data for the project site (in DXF or DWG file and ASCII file including northing, easting and elevations in project coordinate system)
- Boring and sediment sampling locations and vertical elevations to City of Portland datum
- Establish property lines from located monuments, maps and legal descriptions
- Provide all wetland boundaries and e-zones as layers that can be imported into the CAD files

**730 Easement and Rights-of-Way Services**

City will provide all easement and right-of-way acquisition services required to construct the project.

**740 Verify Utilities**

City will field verify the location of all utilities and facilities within the project alignment both above and below ground and coordinate with other utilities and facility owners in the project area to ensure that the construction area is free of encumbrances. The City will provide the Consultant with utility location data to incorporate into the design drawings.

**750 Permits**

The City will lead the permit process, provide any necessary fees for permits, prepare follow-up information as required and track the applications, insuring that all permits and approvals are secured in advance of advertising for bids. The Consultant shall prepare documentation and assist the City in this process as detailed in Item 420.

**760 Contaminated Materials Management**

City will provide all sampling and analysis and agency coordination and resolution on contaminated soils within the project alignment prior to preparation of the 90% designs. The City will prepare, if necessary, a Contaminated Media Management Plan.

**770 Geotechnical Testing and Analysis**

At this time, no additional geotechnical borings, testing or analyses are proposed. If any additional geotechnical work is identified as necessary, the City shall provide additional services.

**780 Public Involvement**

The City shall prepare a Public Involvement Plan and coordinate and set up all public involvement events. The Consultant shall assist the City as detailed in Item 200.

**790 Standard Specifications**

The City shall provide standard specifications to include with the Contract Documents. The City will provide the Contaminated Media Management Plan, if required based on site conditions.

City provided reports and data:

- BES CADD Standards Manual and CADD files (including title block).
- Aerial photo and topographic survey data.
- Unit costs for construction bid items, as available.
- Hydrologic and hydraulic data, models, and recommendations
- All Lands, Easements, Rights-of-way, Relocations and Disposal Information will be provided by the City.
- Geotechnical and contaminant sampling data and reports.
- Permit applications and received permits

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**4. SUBMITTAL FORMAT.** All submittals of the tasks performed under this task order shall be submitted in both printed and electronic medium. The Consultant shall furnish one print ready copy and one electronic version for each submittal, except as described for the final construction documents. Electronic files shall be Microsoft Office compatible (i.e. Word, Excel, Access, etc.) and AutoCAD most recent version. Design drawing submittals for all submittals prior to the final designs shall be half size.

**5. SCHEDULE.** The Consultant shall complete all work in accordance with the following schedule:

<b>Milestone</b>	<b>Date Completed</b>
Notice To Proceed	May 29, 2008
Project Management Plan and Schedule	June 13, 2008
Kickoff Meeting and Site Visit	June 10, 2008
Construction Methods Analysis	June 2009
30% Designs and Report	January 2010
30% Review Meeting	February 2010
Contingency: Design Phase Geotechnical Investigation	February 2010
60% Designs/Cost/Design Report/Schedule	April 2010
60% Review Meeting	May 2010
90% Designs/Cost/Design Report/Schedule	July 2010
90% Review Meeting	August 2010
VE Workshop	April 4-8, 2016
VE Final Report	October 31, 2016
Revised 90% Designs/Cost/Specs/Design Report	January 16, 2017
Revised 90% Review Meeting	February 9, 2017
100% Designs/Cost/Specs/Design Report	March 30, 2017
Plan in Hand Meeting	April 21, 2017
BCOES Backcheck Submittal	May 4, 2017
Final Bid Documents	May 25, 2017
Advertisement for Bid	July 28, 2017
Award Contract	September 25, 2017
Construction Fish Window	July 1 – October 31, 2018
Engineering During Construction	January 31, 2017 – October 31, 2018

**6. ADDITIONAL WORK.** The Consultant shall not perform any services under this contract which are considered by the Consultant to be a change in the work or services required by this agreement.

**7. CONTRACTOR KEY PERSONNEL.** Tetra Tech, Inc., the Consultant, shall assign Akana as the Subconsultant to perform structural engineering *during construction*, Northwest Geotech, Inc. as the Subconsultant to perform geotechnical engineering *during construction*, RHA, LLC as the Subconsultant to perform the VE Study, and Ott-Sakai & Associates, LLC as the Subconsultant to provide a construction representative team member for the VE Study and provide construction input to the revised 90% and 100% designs *and construction*. The Consultant shall not change assignment of these Subconsultants without prior written consent of the City.

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The City will enforce all diversity in workforce and Minority, Women and Emerging Small Business (M/W/ESB) subcontracting commitments submitted by the Contractor in its Proposal. The Contractor shall submit a Monthly Subconsultant Payment and Utilization Report (Exhibit A1 attached hereto) reporting ALL subcontractors employed in the performance of this agreement.

Italics, REV 1, December 28, 2017