



City of Tukwila

6200 Southcenter Boulevard, Tukwila WA 98188

Contract Number: 16-027
Council Approval 2/16/16

CONSULTANT AGREEMENT FOR PRELIMINARY ENGINEERING SERVICES

THIS AGREEMENT is entered into between the City of Tukwila, Washington, hereinafter referred to as "the City", and BergerABAM, Inc., hereinafter referred to as "the Consultant", in consideration of the mutual benefits, terms, and conditions hereinafter specified.

1. **Project Designation.** The Consultant is retained by the City to perform Phase 3A Early Start Activities in connection with the project titled Strander Boulevard Extension Phase 3.
2. **Scope of Services.** The Consultant agrees to perform the services, identified on Exhibit "A" attached hereto, including the provision of all labor, materials, equipment and supplies.
3. **Duration of Agreement; Time for Performance.** This Agreement shall be in full force and effect for a period commencing upon execution and ending December 31, 2017, unless sooner terminated under the provisions hereinafter specified. Work under this Agreement shall commence upon written notice by the City to the Consultant to proceed. The Consultant shall perform all services and provide all work product required pursuant to this Agreement no later than July 1, 2017, unless an extension of such time is granted in writing by the City.
4. **Payment.** The Consultant shall be paid by the City for completed work and for services rendered under this Agreement as follows:
 - A. Payment for the work provided by the Consultant shall be made as provided on Exhibit "B" attached hereto, provided that the total amount of payment to the Consultant shall not exceed \$399,383.00 without express written modification of the Agreement signed by the City.
 - B. The Consultant may submit vouchers to the City once per month during the progress of the work for partial payment for that portion of the project completed to date. Such vouchers will be checked by the City and, upon approval thereof, payment shall be made to the Consultant in the amount approved.
 - C. Final payment of any balance due the Consultant of the total contract price earned will be made promptly upon its ascertainment and verification by the City after the completion of the work under this Agreement and its acceptance by the City.
 - D. Payment as provided in this section shall be full compensation for work performed, services rendered, and for all materials, supplies, equipment and incidentals necessary to complete the work.
 - E. The Consultant's records and accounts pertaining to this Agreement are to be kept available for inspection by representatives of the City and the state of Washington for a period of three (3) years after final payments. Copies shall be made available upon request.

1st of 2 ORIGINALS

5. **Ownership and Use of Documents.** All documents, drawings, specifications and other materials produced by the Consultant in connection with the services rendered under this Agreement shall be the property of the City whether the project for which they are made is executed or not. The Consultant shall be permitted to retain copies, including reproducible copies, of drawings and specifications for information, reference and use in connection with the Consultant's endeavors. The Consultant shall not be responsible for any use of the said documents, drawings, specifications or other materials by the City on any project other than the project specified in this Agreement.
6. **Compliance with Laws.** The Consultant shall, in performing the services contemplated by this Agreement, faithfully observe and comply with all federal, state, and local laws, ordinances and regulations, applicable to the services rendered under this Agreement.
7. **Indemnification.** The Consultant shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or resulting from the acts, errors or omissions of the Consultant in performance of this Agreement, except for injuries and damages caused by the sole negligence of the City.

Should a court of competent jurisdiction determine that this Agreement is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Consultant and the City, its officers, officials, employees, and volunteers, the Consultant's liability hereunder shall be only to the extent of the Consultant's negligence. It is further specifically and expressly understood that the indemnification provided herein constitutes the Consultant's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties. The provisions of this section shall survive the expiration or termination of this Agreement.

8. **Insurance.** The Consultant shall procure and maintain for the duration of the Agreement, insurance against claims for injuries to persons or damage to property which may arise from or in connection with the performance of the work hereunder by the Consultant, its agents, representatives, or employees. Consultant's maintenance of insurance as required by the agreement shall not be construed to limit the liability of the Consultant to the coverage provided by such insurance, or otherwise limit the City's recourse to any remedy available at law or in equity.

A. **Minimum Amounts and Scope of Insurance.** Consultant shall obtain insurance of the types and with the limits described below:

1. **Automobile Liability** insurance with a minimum combined single limit for bodily injury and property damage of \$1,000,000 per accident. Automobile Liability insurance shall cover all owned, non-owned, hired and leased vehicles. Coverage shall be written on Insurance Services Office (ISO) form CA 00 01 or a substitute form providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

2. Commercial General Liability insurance with limits no less than \$1,000,000 each occurrence, \$2,000,000 general aggregate. Commercial General Liability insurance shall be written on ISO occurrence form CG 00 01 and shall cover liability arising from premises, operations, independent contractors and personal injury and advertising injury. The City shall be named as an insured under the Consultant's Commercial General Liability insurance policy with respect to the work performed for the City.
 3. Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.
 4. Professional Liability with limits no less than \$1,000,000 per claim and \$1,000,000 policy aggregate limit. Professional Liability insurance shall be appropriate to the Consultant's profession.
- B. Other Insurance Provision.** The Consultant's Automobile Liability and Commercial General Liability insurance policies are to contain, or be endorsed to contain that they shall be primary insurance with respect to the City. Any Insurance, self-insurance, or insurance pool coverage maintained by the City shall be excess of the Consultant's insurance and shall not be contributed or combined with it.
- C. Acceptability of Insurers.** Insurance is to be placed with insurers with a current A.M. Best rating of not less than A:VII.
- D. Verification of Coverage.** Consultant shall furnish the City with original certificates and a copy of the amendatory endorsements, including but not necessarily limited to the additional insured endorsement, evidencing the insurance requirements of the Consultant before commencement of the work. Certificates of coverage and endorsements as required by this section shall be delivered to the City within fifteen (15) days of execution of this Agreement.
- E. Notice of Cancellation.** The Consultant shall provide the City with written notice of any policy cancellation, within two business days of their receipt of such notice.
- F. Failure to Maintain Insurance.** Failure on the part of the Consultant to maintain the insurance as required shall constitute a material breach of contract, upon which the City may, after giving five business days notice to the Consultant to correct the breach, immediately terminate the contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the City on demand, or at the sole discretion of the City, offset against funds due the Consultant from the City.
9. **Independent Contractor.** The Consultant and the City agree that the Consultant is an independent contractor with respect to the services provided pursuant to this Agreement. Nothing in this Agreement shall be considered to create the relationship of employer and employee between the parties hereto. Neither the Consultant nor any employee of the Consultant shall be entitled to any benefits accorded City employees by virtue of the services provided under this Agreement. The City shall not be responsible for withholding or otherwise deducting federal income tax or social security or for contributing to the state industrial insurance program, otherwise assuming the duties of an employer with respect to the Consultant, or any employee of the Consultant.

10. **Covenant Against Contingent Fees.** The Consultant warrants that he has not employed or retained any company or person, other than a bonafide employee working solely for the Consultant, to solicit or secure this contract, and that he has not paid or agreed to pay any company or person, other than a bonafide employee working solely for the Consultant, any fee, commission, percentage, brokerage fee, gifts, or any other consideration contingent upon or resulting from the award or making of this contract. For breach or violation of this warrant, the City shall have the right to annul this contract without liability, or in its discretion to deduct from the contract price or consideration, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.
11. **Discrimination Prohibited.** The Consultant, with regard to the work performed by it under this Agreement, will not discriminate on the grounds of race, religion, creed, color, national origin, age, veteran status, sex, sexual orientation, gender identity, marital status, political affiliation or the presence of any disability in the selection and retention of employees or procurement of materials or supplies.
12. **Assignment.** The Consultant shall not sublet or assign any of the services covered by this Agreement without the express written consent of the City.
13. **Non-Waiver.** Waiver by the City of any provision of this Agreement or any time limitation provided for in this Agreement shall not constitute a waiver of any other provision.
14. **Termination.**
 - A. The City reserves the right to terminate this Agreement at any time by giving ten (10) days written notice to the Consultant.
 - B. In the event of the death of a member, partner or officer of the Consultant, or any of its supervisory personnel assigned to the project, the surviving members of the Consultant hereby agree to complete the work under the terms of this Agreement, if requested to do so by the City. This section shall not be a bar to renegotiations of this Agreement between surviving members of the Consultant and the City, if the City so chooses.
15. **Applicable Law; Venue; Attorney's Fees.** This Agreement shall be subject to, and the Consultant shall at all times comply with, all applicable federal, state and local laws, regulations, and rules, including the provisions of the City of Tukwila Municipal Code and ordinances of the City of Tukwila. In the event any suit, arbitration, or other proceeding is instituted to enforce any term of this Agreement, the parties specifically understand and agree that venue shall be properly laid in King County, Washington. The prevailing party in any such action shall be entitled to its attorney's fees and costs of suit. Venue for any action arising from or related to this Agreement shall be exclusively in King County Superior Court.
16. **Severability and Survival.** If any term, condition or provision of this Agreement is declared void or unenforceable or limited in its application or effect, such event shall not affect any other provisions hereof and all other provisions shall remain fully enforceable. The provisions of this Agreement, which by their sense and context are reasonably intended to survive the completion, expiration or cancellation of this Agreement, shall survive termination of this Agreement.

17. **Notices.** Notices to the City of Tukwila shall be sent to the following address:

City Clerk
City of Tukwila
6200 Southcenter Boulevard
Tukwila, WA 98188

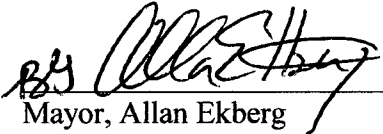
Notices to Consultant shall be sent to the following address:

Bob Fernandes
BergerABAM
1301 Fifth Avenue, Suite 1200
Seattle, WA 98101-2677

18. **Entire Agreement; Modification.** This Agreement, together with attachments or addenda, represents the entire and integrated Agreement between the City and the Consultant and supersedes all prior negotiations, representations, or agreements written or oral. No amendment or modification of this Agreement shall be of any force or effect unless it is in writing and signed by the parties.

DATED this 23rd day of February, 2016

CITY OF TUKWILA



Mayor, Allan Ekberg

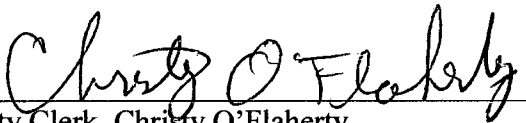
CONSULTANT

By: 

Printed Name: Robert L. Fernandes

Title: Vice President

Attest/Authenticated:



City Clerk, Christy O'Flaherty

Approved as to Form:



Office of the City Attorney

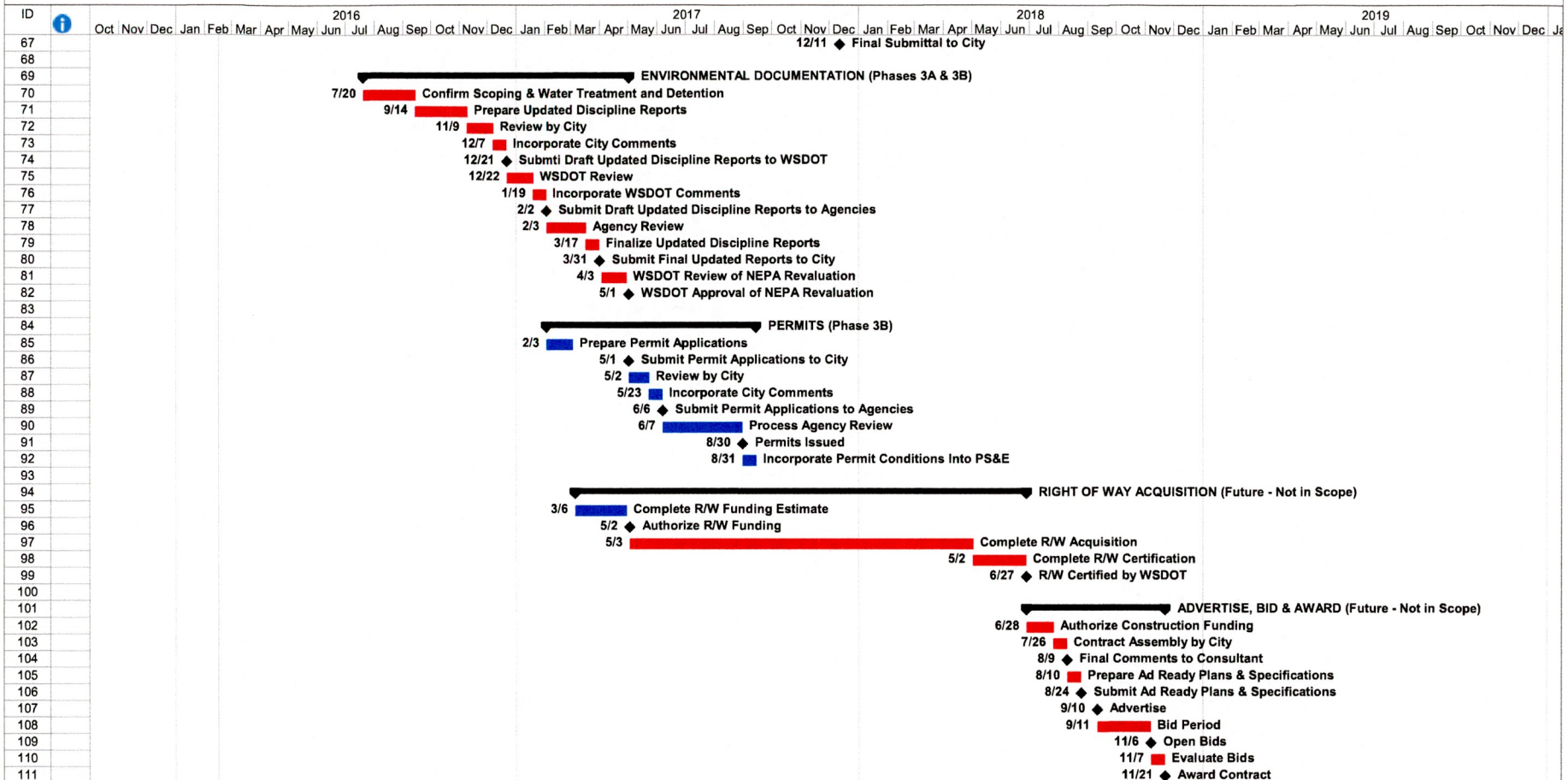
CITY OF TUKWILA - STRANDER/UPRR GRADE SEPARATION PHASE 3 - UPRR UNDERCROSSING



Tue 2/16/16

Task █ Milestone ◆ Summary ▬ Critical Task █

CITY OF TUKWILA - STRANDER/UPRR GRADE SEPARATION PHASE 3 - UPRR UNDERCROSSING



Tue 2/16/16

Task █ Milestone ◆ Summary ▬ Critical Task █

**EXHIBIT A – SCOPE OF WORK FOR PRELIMINARY DESIGN, ENVIRONMENTAL DOCUMENTATION AND RIGHT-OF-WAY PLANNING
CITY OF TUKWILA STRANDER AVENUE GRADE SEPARATION PROJECT**

PROJECT BACKGROUND

The cities of Renton and Tukwila have been working in partnership to complete a connection of Strander Boulevard in the City of Tukwila with Southwest 27th Street in the City of Renton. As lead agency for the first two phases of the project, the City of Renton completed an undercrossing of the Burlington Northern Santa Fe (BNSF) Railway in 2014, connecting Southwest 27th Street with the Tukwila Sound Transit Station. The City of Tukwila will complete Phase 3 of the project as shown in Figure 1.

In order to reduce the cost of the first two phases of the project, the BNSF undercrossing was completed by installing a pump station to pump both stormwater and groundwater entering the roadway excavation from the surrounding area. This was envisioned as an interim condition until construction of a full, four-lane arterial connection of Strander to Southwest 276th. The full build-out was anticipated to require the construction of watertight walls and a bottom seal for the underpasses.

The proposed Phase 3 would complete an undercrossing of the Union Pacific Railroad (UPRR) and, as a minimum, a two-lane arterial connection of Southwest 27th Street to Strander and to the West Valley Highway. The arterial would be widened to four lanes if funding allows as shown in Figure 1. Phase 3 of the project will continue to use the interim groundwater pumping system if possible. Therefore, a key issue for the design of development of Phase 3 is to confirm the amount of groundwater that will be encountered by completing Phase 3 and establishing a plan for managing the groundwater.

PROJECT IMPLEMENTATION

Phase 3 of the project will be implemented in five design sub phases (A, B, C, D, and E) as funding is made available. The anticipated project design phases will be as described below. This scope of work addresses only the first two phases (Phases 3A and 3B). Phases 3C, 3D, and 3E will be provided as supplemental services when and/or if funding is made available. The completion of Phases 3A and 3B is anticipated to provide a design that is, in many respects, approximately 50% complete, but may include elements that are not less than 30% complete. This level of design completion will result in a “shovel ready” project that includes all the information necessary to confirm the plan for managing groundwater, complete a reevaluation of the environmental documentation for the project, and initiate the acquisition of right-of-way (ROW) for the project.

Phase 3A – Preliminary Design

During Phase 3A, BergerABAM (hereinafter referred to as “CONSULTANT”) will work with the CITY and UPRR to determine the footprint of the project; establish a groundwater management strategy; identify an approach to anticipated utility relocations; identify the location of the shoofly required to construct the underpass; and update the planning level project cost estimate and budget completed previously. The key deliverables of this phase will

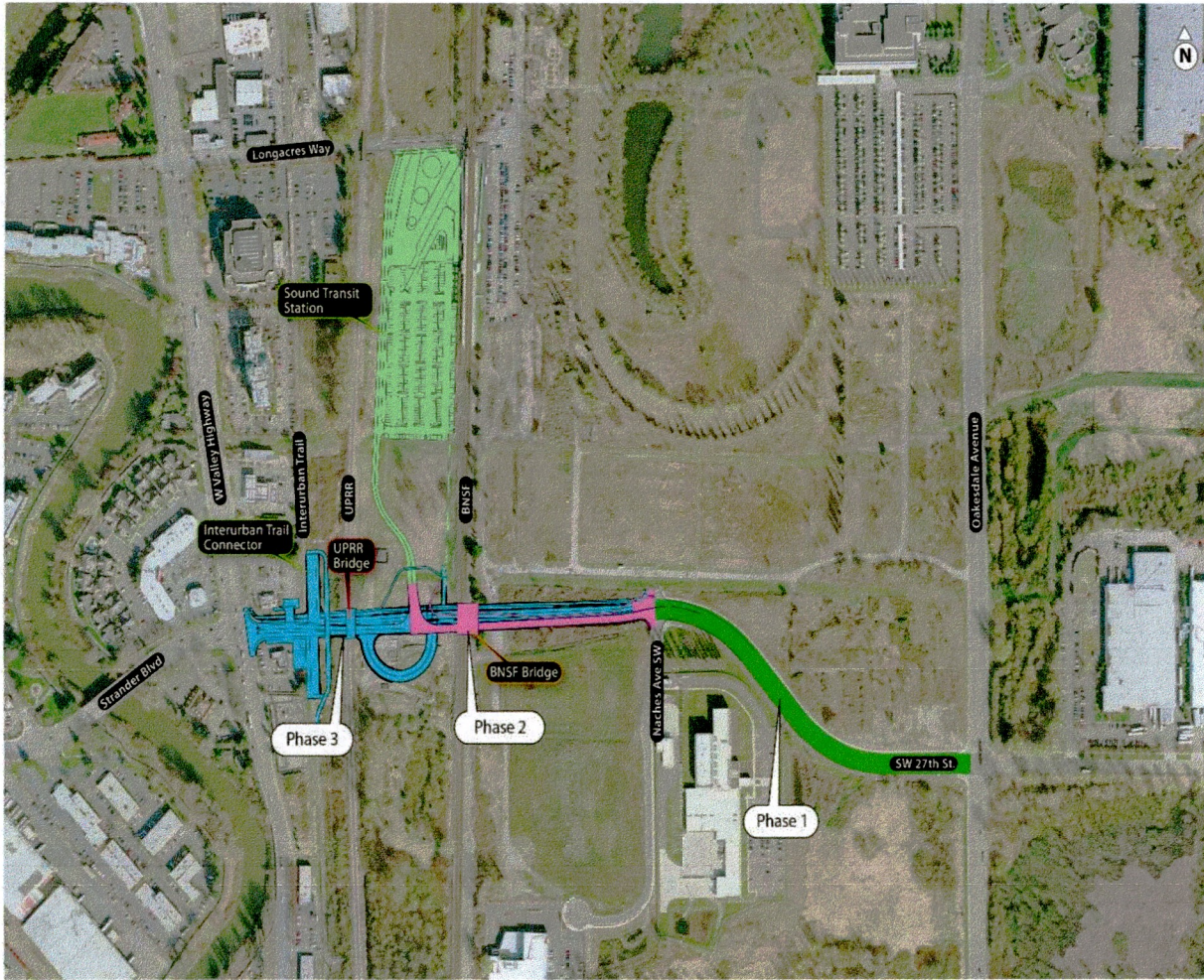


Figure 1 – Project Phasing

be a design memorandum/report confirming the groundwater management strategy for the project and a conceptual railroad bridge design submittal to UPRR for their review and approval of the proposed project. The conceptual design submittal to UPRR will fulfill the requirements of Table 3-2 of the BNSF-UPRR Guidelines for Railroad Grade Separation Projects (1/24/2007), and will be used in establishing a Preliminary Engineering Agreement with UPRR.

It is anticipated that these products would establish the location, as well as the preliminary extent and size of all project features in sufficient detail to identify ROW needs, and to estimate quantities of work required to construct the project. It is anticipated that these products would provide the necessary information required for the CITY to confirm/update its planning level cost estimate and define potential funding partnerships.

Phase 3A Early Start Activities - Tasks 11, 12, and 13 are the key tasks required for determining the groundwater management strategy. The costs for completing only these tasks have been identified in Exhibit B to allow the CITY to authorize them separately from remainder of the Phase 3A preliminary design effort.

Phase 3B – Environmental Documentation and Thirty Percent Plans, Specifications, and Estimates (PS&E)

The purpose of Phase 3B will be to begin the preparation of construction contract documents and provide the detailed information required to complete a reevaluation of the existing NEPA and SEPA environmental documentation of the proposed project.

Phase 3B will also finalize all required ROW and easements for the project, prepare ROW plans, and obtain approval of the 30 percent UPRR bridge from UPRR. This approval is the key approval required from the railroad and will allow the construction plans to be completed and a construction and maintenance agreement to be finalized with UPRR in later phases of the project.

The key deliverables of this phase will include preliminary engineering anticipated to represent an approximate 30 percent complete set of PS&E; updates to all NEPA and SEPA environmental documentation; 90 percent complete right-of-way plans and a 30 percent design submittal to UPRR for their review and approval of the underpass construction methods and details of the UPRR overpass.

Phase 3C – Right-of-Way Acquisition

Phase 3C will acquire the ROW, and obtain certification of the ROW from WSDOT Local Programs if required. This phase may also include additional work on the construction documents, as required to complete the ROW plans, culminating in 60 percent PS&E, and submittal to UPRR for review and approval. This phase is not included in this scope of work, but will be provided as supplemented services if requested.

Phase 3D – Construction Documents

Phase 3D will complete the construction documents, culminating in 90 percent PS&E, 100 percent PS&E, and Ad Ready submittals to the CITY, WSDOT, and UPRR for review and

approval. This phase would culminate with a signed construction agreement from UPRR and a construction contract complete and ready for bidding. This phase is not included in this scope of work, but will be provided as supplemented services if requested.

Phase 3E - Construction

Phase 3E will construct the project. This phase would include Ad, Bid, and Award services; construction contract administration; inspection and engineer of record (EOR) services required to respond to contractors questions (RFIs); and review design-related submittals. This phase is not included in this scope of work, but will be provided as supplemented services if requested.

PROPOSED BASIS OF DESIGN FOR PHASES 3A AND 3B

Phase 3 of the Strander Grade Separation Project will place Strander Boulevard beneath the UPRR tracks by extending the excavation for the BNSF underpass to the west and under the UPRR. Since the water table is only about 10 feet below the existing track grade, the undercrossing will utilize the pumping system constructed as part of the first two phases of the project to pump stormwater for the proposed Phase 3 extension to the existing pond, which may need to be enlarged. Other modifications to the existing drainage system, including modifications to the pump station and water collection system constructed by the CITY, may be required.

Groundwater will be separated from the stormwater and an additional, new groundwater pumping system will be used to pump groundwater to an outfall in the Green River. The discharge location has yet to be determined. The roadway section will be established in consultation with the CITY and is anticipated to be similar to the two-lane roadway section constructed by the City of Renton. Other features of the project include modifications to access several businesses located to the west of the UPRR, and utility relocations, permanent or interim, and/or protection.

SCHEDULE (see attached schedules)

The target dates for completing Phases 3A and 3B are shown on the attached schedule. These target dates assume that the notice to proceed (NTP) for Phase 3A is provided on 18 January 2016. These dates are the basis for the scope and fee estimates for Phases 3A and 3B. However, issuance of the NTP for Phase 3B is contingent on the results of Phase 3A and the confirmation of the groundwater management strategy based on pumping, as opposed to the construction of watertight underpass structures. It is recognized by both parties that scope of work and level of effort for Phase 3B may change as a result of work completed in Phase 3A. The attached schedule also shows a preliminary schedule for Phases 3, 4, and 5. The schedule for these phases will be finalized in future supplements.

SUBCONSULTANTS

The following subconsultants will participate in the delivery of this scope of work as follows.

- Fehr & Peers - Traffic Engineering
- Hanson Professional Services - Railroad Track and Bridge Design
- Shannon & Wilson - Geotechnical Engineering

- Sitts & Hill - Surveying
- Abeyta & Associates – Right-of-Way Services
- Widener & Associates - Environmental Documentation and Permitting

PROJECT ASSUMPTIONS

The following list is included to confirm the understanding between the CITY and the CONSULTANT and will be used to guide the work.

1. Throughout this scope of work, it is understood that the CITY will provide the CONSULTANT with one set of consolidated review comments for each draft review round. The CONSULTANT will respond to the comments and incorporate the agreed-upon resolution into the final document(s).
2. All design, including 30 percent Plans, Specifications and Estimates (PS&E) will be based on an interim project configuration consisting of two lanes in an open cut. All design will be forward compatible, as much as practical, with a four lane, water-tight facility consisting of a bottom seal and retained cuts.
3. The roadway section will be a two-lane roadway, with a center turn lane if appropriate, and will be determined in consultation with the CITY. The project underpass configuration will be in accordance with the CONSULTANT's concept design described previously in the Project Implementation Section, but will include a UPRR bridge that would accommodate full build out of the roadway section without significant structural modifications to the UPRR bridge.
4. The underpass will not be watertight and it is assumed that the groundwater from the underpass can be discharged in an environmental-acceptable fashion that involves discharging into the Green River through a new outfall.
5. UPRR may require a separate utility agreement for the new discharge line described above. The cost for obtaining this are not included in the scope of work.
6. It is assumed the City of Renton and WSDOT will allow the CITY to use the Springbrook Creek wetland mitigation bank constructed by the City of Renton and WSDOT.
7. Stormwater treatment will be consistent with the Washington State Department of Ecology's (WDOE) Stormwater Management Manual for Western Washington, February 2005, and the Flow Control Guidance for Highly Urbanized Areas, May 2006.
8. The City will need to establish a Preliminary Engineering Agreement with UPRR and reimburse UPRR for their review time.
9. It is assumed that CONSULTANT will design the new UPRR overpass, as well as the proposed shoofly. It is assumed that UPRR will provide comments to the CONSULTANT in a timely manner to facilitate the CONSULTANT's design of project.

10. Utility relocation and reconstruction plans for power, gas, and communication purveyors will be prepared by the respective utility. The CONSULTANT will coordinate directly with the utility companies and the CITY.
11. Primary survey control will be based upon found monuments with published values. Monuments of any kind will not be set as part of this effort. If additional work is required, this work will be billed as an extra to the contract as a directed service.
12. It is assumed that enough monumentation still exists to determine the necessary boundaries for this project's efforts. If additional work, such as exhaustive title research and complete section breakdown work is required, a portion of that work may be billed as an extra to the contract as directed services.
13. Public utility locating services provided by callbeforeyoudig.org will be utilized to do an initial location of utilities in the public ROW. A private utility locating company is included in this proposal, to provide complete information to verify the location of publicly and privately owned buried utilities (sanitary, storm, water, power, gas, telecommunications, etc.) with painted locate marks.
14. Underground utility potholing is not included in this proposal. If potholing is required, it will be performed in subsequent phases of the design work.
15. The CITY will provide complete title report guarantees, with supporting documents, for those parcels affected by this project that require the conveyance of real property rights.
16. Additional support for vacations of existing ROW or boundary line adjustments (BLA) of resulting parcels is not included in this proposal as it is not quantifiable without knowing the design. If these services are required, those services will be billed as an extra to the contract as directed services.
17. The CITY will provide right-of-entry onto private lands prior to field survey crew visitation, environmental explorations, and geotechnical investigations, including drilling.
18. Coordinate mapping values will be based upon a "project datum" being a ground realization of state plane grid coordinates.
19. Preparing and recording a Record of Survey (ROS) is not included in this proposal. If additional work is required, this work will be billed as an extra to the contract as a directed service.

SCOPE OF WORK

Phase 3 work will be accomplished as follows with the tasks listed below. Detailed task descriptions, and a level-of-effort estimate, are provided for both Phase 3A and 3B. Separating the scope and level of estimate by phase allows the work to be authorized separately and Phase 3B adjusted, if necessary, based on the outcome of Phase 3A.

Task 1.0	Project Management
Task 2.0	Public Involvement
Task 3.0	Business Access Design and Coordination
Task 4.0	Survey and Base Mapping
Task 5.0	Utilities
Task 6.0	Traffic Engineering, Illumination, and Signal Design
Task 7.0	Right-of-Way
Task 8.0	Environmental Documentation and Permitting
Task 9.0	Railroad Engineering and Design
Task 10.0	Structural Engineering
Task 11.0	Geotechnical Engineering
Task 12.0	Drainage Design
Task 13.0	Pump Station Design
Task 14.0	Roadway Design
Task 15.0	Design Report
Task 16.0	Waterline Monitoring Plan
Task 17.0	Sanitary Sewer Relocation
Task 18.0	Directed Services

PHASE 3A – TASK DESCRIPTIONS

The following detailed task descriptions define the Phase 3A scope of work (and associated engineering fee estimate) for these tasks.

TASK 11.0 GEOTECHNICAL ENGINEERING SUPPORT (Shannon & Wilson)

Shannon & Wilson will evaluate the subsurface conditions at the project site based on available existing subsurface data and data from a new exploration program. Based on the subsurface conditions and updated groundwater modeling, the CONSULTANT will provide geotechnical engineering recommendations for design of the project. Recommendations would include foundations, walls, temporary shoring, settlement, stability, seismic considerations, and groundwater flow/seepage.

Subtask 11.1 Subsurface Explorations and Testing

Shannon & Wilson (S&W) will prepare a subsurface exploration plan for obtaining additional subsurface information for Phase 3 of the project. The plan will include proposed exploration type, location, depth, and any proposed field testing. The subsurface exploration plan would likely include drilling three soil borings, installing groundwater monitoring wells in each boring, and performing seven cone penetration test (CPT) soundings. One boring would extend to a depth of 200 feet, and two borings would extend to depths of about 100 feet. The CPT soundings would extend to depths of about 75 feet.

Soil borings would be used to obtain soil samples for geotechnical and environmental laboratory testing. Samples from the borings would be obtained in accordance with the Standard Penetration Test (SPT), generally at 2.5-foot intervals in the upper 20 feet and 5-foot intervals thereafter. Where near-surface soft, compressible soil (e.g., soft clay) is encountered, it would be sampled using a relatively undisturbed sampler (e.g., Shelby tube) so that advanced geotechnical laboratory testing (e.g., consolidation or triaxial tests) could be performed. Drilling spoils would be placed in drums and disposed of based on the results of subsequent environmental testing.

CPT soundings would be used to obtain continuous data about soil strength and stiffness. At two locations during each sounding, a dissipation test would be performed to evaluate soil compressibility. Soil shear wave velocity measurements would be taken in two of the soundings to evaluate soil stiffness. At least one CPT sounding would be performed adjacent to a soil boring so that the soil units in each exploration could be correlated.

S&W would install groundwater monitoring wells in each boreholes. The monitoring wells will be completed as 2-inch-diameter PVC casing (from ground surface to 20 feet) and screen (from 30 to 40 feet). In one borehole, S&W will also install a vibrating wire piezometer at a depth of 15 feet to record groundwater levels in near-surface soft, compressible soil. The wells will be capped with a monument that will contain a datalogger, which will continuously monitor groundwater levels.

S&W would slug test the three monitoring wells to evaluate soil groundwater flow characteristics (e.g., permeability). S&W would perform a pumping test in the test well to more thoroughly evaluate groundwater and aquifer hydrogeologic characteristics and recharge influence of the Green River and stormwater pond. A groundwater sample would be taken from each well and sent to a subconsultant laboratory for environmental testing.

An S&W representative will collect soil samples and prepare a log of each boring (the pumping test borehole would not be logged). Samples will be brought to the S&W laboratory for geotechnical testing, and sent to a subconsultant laboratory for environmental testing. Geotechnical laboratory testing will include visual classification, moisture content determinations, grain size analyses, Atterberg limit tests, consolidation tests, and triaxial strength tests. The S&W Seattle laboratory will perform the tests according to ASTM International standard test procedures.

Assumption(s)

- All field explorations will be located on public property, or properties that the CONSULTANT or the CITY has received permission for entry. S&W is not responsible for obtaining right-of-entry.
- If street-use permits, traffic control, or UPRR flaggers will be required to perform the subsurface explorations, the CONSULTANT or CITY will plan, coordinate, and procure the required items. S&W is not responsible for obtaining permits, traffic control, or flaggers.

- To locate utilities on public property, S&W will call the One-Call Utility Locate number; any private utility location would be done by the CONSULTANT.
- The CONSULTANT or CITY will survey the exploration locations.

Deliverable(s)

- Phase 3 field exploration plan
- Boring logs, CPT logs, and other results from the explorations will be incorporated into the geotechnical report for Phase 3 of the project.

Subtask 11.2 Update Existing Groundwater Flow Model Structure

During previous project phases, a groundwater flow model (“the model”) of the project area was developed to provide input to the design of temporary (construction) and permanent groundwater control systems. S&W will update the model as described below:

- Incorporate the pond and wetland as explicit source/sink features that enable the model to represent the interchange of shallow surfacewater and groundwater
- Incorporate findings from the subsurface explorations (Subtask 11.1), including additional soil structure (hydrostratigraphy) and aquifer properties (hydraulic conductivity, storage coefficients)
- Add transient boundary conditions to the model so that model inputs (e.g., Green River stages and precipitation-derived recharge) can be allowed to dynamically vary
- Revise the computational mesh to include model cells with dimensions no more than 10 feet by 10 feet in the railroad crossing area, to provide a finer resolution of groundwater data at the railroad crossing

The model will simulate the potential for the pond and wetlands to recharge water, and to quantify the flow returning directly to the grade separation. The model domain will also be adjusted to include the river that is approximately 900 feet west of the railroad crossing as a recharge (constant head) boundary.

Deliverable(s)

- None

Subtask 11.3 Update Groundwater Flow Model Calibration

For this subtask, S&W will update the groundwater model calibration. The purpose of the calibration is to establish a model that has an acceptable level of confidence for use as a design-predicting tool. This will involve adjusting the key model hydraulic parameters and transiently (time-varying) simulating a specific time period and hydrologic conditions to match (a) observed groundwater levels in monitoring wells and (b) discharge rates from the extension underpass structure. We anticipate that the time period will cover the period for which groundwater collection and stormwater data are available (at least 12 months).

The primary cases to be modeled are

- **Base Scenario 1:** This scenario represents the surface and groundwater conditions during late fall and winter seasons. S&W will include Green River stages and precipitation inputs for two storm events that are followed by dry periods. Pond and wetland will be assumed full.
- **Base Scenario 2:** This scenario represents the surface and groundwater conditions during spring season. S&W will include Green River stages and precipitation inputs for one storm event followed by a dry period. Pond will be assumed full and wetland water stage will be reduced.
- **Base Scenario 3:** This scenario represents the surface and groundwater conditions during summer and early fall seasons. S&W will include Green River stages and precipitation inputs for the dry season. Pond will be assumed full and wetland will be assumed dry.

The outcome will be an updated model calibration that more accurately represents the permanent dewatering and pond infiltration/discharge systems. The updated model would be used to facilitate the design of Phase 3.

Assumption(s)

- CONSULTANT would support S&W's groundwater flow model calibration by providing stormwater runoff estimates and pump station interpretation.

Deliverable(s)

- Brief letter presenting a summary of the model update and calibration results (Subtasks 11.2 and 11.3).

Subtask 11.4 Groundwater Flow Model Simulations to Incorporate Phase 3A Explorations and Proposed Phase 3 Design

For this subtask, S&W will use the updated, calibrated model to simulate the proposed Phase 3 design features. This groundwater flow analyses will be used to prepare the preliminary drainage and stormwater design for the project.

Inputs for this effort, to be developed as part of Task 12, include the following.

- Underpass permanent dewatering system pumping rates
- Groundwater levels (if available)
- Stormwater runoff from impervious surfaces during rainfall events
- Depth and extent of wetland inundation

Up to six scenarios will be run by varying hydraulic conditions of the aquifer, infiltration rate, river stage, pond/wetland elevations, and geometry (changes in dimension and shape). The details of these analyses will be determined after reviewing the above base scenarios. Using the groundwater model, coupled with the results of the hazardous materials memorandum (Subtask 8.5, by others), S&W would evaluate the potential for contaminate transport during or after construction.

Deliverable(s)

- A technical memorandum that presents the approach, assumptions, results, and limitations of the analyses will be provided

Subtask 11.5 Geotechnical Engineering

S&W will perform geotechnical analyses in support of the conceptual engineering design. These analyses will be based on the subsurface information available from Subtasks 11.1 through 11.3. S&W will prepare a draft report summarizing services provided in Phase 3A and providing recommendations for the design of the project. Because these analyses will be based on the limited design information, they will be considered preliminary and subject to revision following the completion of a more detailed design in Phase 3B. The final report would be completed in Phase 3B as part of the detailed design effort.

S&W will provide preliminary, conceptual design recommendations in accordance with applicable standards, including CITY, WSDOT, and UPRR. Phase 3A engineering services will include

- **Evaluate seismic geologic hazards.** S&W would provide seismic design spectra in accordance with applicable standards, and evaluate potential for liquefaction and associated hazards (e.g., settlement, instability, downdrag loads).
- **Evaluate groundwater flow rates.** S&W would log the results of the groundwater modeling to evaluate groundwater inflow rates into the underpass.
- **Evaluate construction considerations.** S&W would evaluate construction considerations related to site preparation, earthwork, excavations, and temporary shoring.
- **Evaluate settlement induced by groundwater drawdown.** S&W would evaluate settlement caused by changes in the groundwater regime, both during and after construction.
- **Evaluate proposed stormwater facility locations.** S&W would evaluate soil types and infiltration rates for new stormwater facilities.
- **Evaluate new outfall foundations.** S&W would evaluate foundation types and settlement of the new outfall.
- **Evaluate impacts on existing utilities.** S&W would evaluate the impacts (e.g., settlement, vibration) of new construction on existing utilities.

Deliverable(s)

- Draft geotechnical report documenting results of the Phase 3 exploration program and updated groundwater flow modeling, and other geotechnical engineering analyses required to complete the design of the project.

TASK 12.0 DRAINAGE DESIGN

This task involves engineering and design work to determine the stormwater treatment and detention requirements for the project; investigate low-impact development (LID) alternatives; and provide preliminary sizing and a preferred site location for an additional stormwater pond and outfall to the Green River. The following work will need to be completed for this task.

Subtask 12.1 Calibration of Phase 2 Groundwater Model

Shannon & Wilson shall provide groundwater modeling and infiltration analyses as described in Task 11. The CONSULTANT will work with Shannon & Wilson to update the Phase 2 groundwater model as described in Task 11. This will include the following.

- Existing dewatering pumping rates (to be provided by the City of Renton)
- Groundwater levels if available (not likely to be available)
- Estimates of stormwater runoff from impervious surfaces during rainfall events
- Estimates of wetland inundation (extent and depth) at various periods of time throughout the year
- Estimates of the size of the basin draining to the site. Because detailed topo is not available, basin size will be estimated using judgement to establish boundary conditions for Shannon & Wilson's groundwater model

The CONSULTANT will estimate the volume of runoff from impervious surfaces feeding the Strander Grade Separation drainage system. Hourly runoff volumes will be estimated for up to six different storm events for which corresponding pump station pump rates are available. These volumes will be subtracted from the pump station volumes to provide an estimate of total groundwater flowing into the excavation of the grade separation.

Deliverable(s)

- Inputs to groundwater modeling and infiltration analysis as described above and in Task 11.

Subtask 12.2 Phase 3 Stormwater and Groundwater Management/Design Strategy

The CONSULTANT shall use the information from the updated groundwater model developed in Task 11 to develop the proposed stormwater design for the project. It is assumed that the outcome of this effort will involve no changes to the existing pond, the possible addition of a second pond (assuming a suitable location is available), and a new outfall to the Green River. It is assumed that modifications to the existing stormwater/groundwater system may be required in order to separate the groundwater from the stormwater.

As part of this effort, the CONSULTANT will develop a Stage-Storage-Discharge Rating table for the wetland adjacent to the pond. The extent of wetland inundation is not precisely known. It will be assumed the wetland is discharging to the existing pipe under the BNSF railroad embankment. Water levels in the pond will be assumed based on visual observations of the wetland during the winter of 2014/2015 and again in the winter of 2015/2016.

The CONSULTANT will provide the CITY with the layout of the preliminary conceptual drainage design for discussion and review. CITY comments will be incorporated into the conceptual drainage design. The drainage research, requirements, calculations, and assumptions will be documented in a draft drainage memo. The drainage design report will summarize the estimated flows from all sources, identify treatment and detention methods, and provide preliminary conveyance design for all flows. CITY will provide one round of review comments that will be incorporated into the final drainage memo.

Deliverable(s)

- Preliminary conceptual drainage design
- Draft drainage memo
- Final drainage memo

TASK 13.0 PUMP STATION

It is assumed that the existing pump station has sufficient capacity to pump the anticipated groundwater and stormwater flows from the completed Phase 3 project. This will be confirmed by comparing pump run-time and flow metering records with rainfall data. The CITY will provide the CONSULTANT with pump run-time and flow metering records for existing pump station. However, it is assumed that a separate pumping system will be required for the groundwater. This task will use the results of Tasks 11 and 12 to verify this assumption and identify any changes that may be required to the existing system in order to accommodate and/or separate the groundwater flows from the stormwater for both the existing and proposed construction.

This task would also select a route for the proposed groundwater discharge to the Green River and size the discharge pipe. It is assumed that up to two alternative routes may be evaluated in consultation with the CONSULTANT's environmental subconsultant and CITY. The location, approximate size, and necessary controls for the new groundwater pumping system would be determined. The new groundwater pumping system will share components of the existing drainage system and pump station to the extent possible. This task will also identify any modifications to the existing drainage system and pump station that may be required to accommodate the new groundwater pumping system. The CONSULTANT will provide the CITY with a memorandum outlining the pump station design criteria, proposed changes to the existing configuration, if necessary, and preliminary construction cost estimate.

Deliverable(s)

- Draft pump station memo
- Final station memo

EXHIBIT B: Consultant Fee Determination
City of Tukwila - Strander Boulevard Extension Phase 3
DIRECT SALARY COSTS (DSC)

Phase 3A Early Start
2/16/2016

<u>Personnel</u>	<u>Hours</u>		<u>Rate</u>		<u>Cost</u>
1 Principal/Project Manager	88	X	\$ 87.50	= \$	7,700
2 Project Engineer	432	X	\$ 54.09	= \$	23,368
3 Structural Engineer	16	X	\$ 54.95	= \$	879
4 Civil Engineer	534	X	\$ 38.20	= \$	20,397
5 Construction Specialist	28	X	\$ 57.60	= \$	1,613
6 Designer/ CAD Oper	182	X	\$ 39.92	= \$	7,266
7 Graphics	30	X	\$ 36.68	= \$	1,100
8 Project Coord. / Admin	84	X	\$ 33.15	= \$	2,784
Total Hours			1,394	Subtotal Direct Salary Costs (DSC) = \$	65,107
			Salary Escalation (SE) =	0% of DSC = \$	-
				Subtotal (DSC + SE) = \$	65,107
Overhead (OH)	166.65%			of (DSC + SE) = \$	108,501
Fixed Fee (FF)	30.35%			of (DSC + SE) = \$	19,760
TOTAL SALARY COSTS (DSC + SE + OH + FF) = \$					193,369

DIRECT NONSALARY COSTS (DNCS)

Mileage Design Team	200	miles @	\$ 0.560	\$	112
Expendables (photographs, equip rental, etc)	1	Estimate @	200	\$	200
TOTAL REIMBURSABLE EXPENSES (DNCS) = \$					312

SUBTOTAL BergerABAM = \$ 193,681

SUBCONSULTANTS

Fehr and Peers - Traffic					
Hanson - Rail					
Shannon & Wilson - Geotechnical				\$	186,226
Sitts & Hill - Survey					
Abeyta & Associates - ROW Services (Not Used in Phase 3A)				\$	-
Widener & Associates - Environmental				\$	19,476

SUBTOTAL SUBCONSULTANTS = \$ 205,702

EARLY START (Tasks 11, 12 & 13) = \$ 399,383