

**City of Yakima
Cowiche Canyon Trail**

AMENDMENT NO. 2

City of Yakima, “CLIENT” desires to amend the agreement entered into with **Perteet, Inc.**, “CONSULTANT” executed on **April 19, 2017**, and first amended on **March 2, 2020**. All provisions in the basic agreement remain in effect except as expressly modified by this amendment.

The changes to the agreement are described as follows:

SECTION 2: SCOPE OF SERVICES

The original scope of services will be amended to include additional services to complete the project as described in Exhibit “A”, attached hereto and made a part of this agreement.

SECTION 5: COMPENSATION

This section shall be amended as follows:

These additional services will cause an increase in the amount of Ninety-Eight Thousand Three Hundred Fifty-One Dollars (\$98,351). These additional services will be invoiced in accordance with Exhibit “B”, fee determination.

If you concur in this amendment and agree to the changes as stated above, please sign in the appropriate spaces below and return to this office for final action.

Dated this _____ day of _____, 2020.

CITY OF YAKIMA

PERTEET, INC.

Crystal L. Donner

Crystal L. Donner
President

TITLE: _____

Exhibit “A”
Amendment No. 2
City of Yakima Cowiche Canyon Trail

INTRODUCTION

The original scope of work for this project included preparation of plans, specifications, and opinion of cost (PS&E) for a shallow bridge foundation. Upon further investigation of site conditions, the City has elected to proceed with a deep foundation design instead of a shallow foundation. This amendment provides for exploratory drilling and subsequent analysis and design associated with preparing PS&E for a deep bridge foundation.

Additionally, this amendment provides for “no-rise” hydraulic analysis required by Yakima County for bridge permitting and scour analysis to support bridge design.

NEW WORK ELEMENTS (ADDED WITH THIS AMENDMENT)**Work Element 22 – Bridge C Pile Foundation, Scour and No-Rise Analyses (Aspect)**

We understand pedestrian Bridge C (bridge) proposed to be located at the northeast portion of the alignment will cross over Cowiche Creek. The bridge is preliminarily planned to be about 200 feet long - from approximately Station 537+00 to 539+00 – and will be supported by end abutments and two interior piers.

From collaboration with the design team, we understand a pile foundation is the preferred foundation system to support the new bridge. On-Site stormwater management via infiltration trenches are also planned along the trail portion to the south of the bridge from approximately Station 514+00 to 536+00. We propose to supplement our contracted geotechnical study by completing machine drilled borings at bridge abutment/pier locations, test pits near the stormwater infiltration trenches, pile foundation analysis, in-situ soil infiltration rate correlations, creek channel/bank scour analysis, and a no-rise analysis, as detailed below.

We understand the bridge will generally be designed in accordance with AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges, with project-specific design criteria modifications/omissions as directed by the City of Yakima (if any).

Our detailed scope of supplemental work consists of:

Task A: Machine Drilled Borings at Bridge Foundations and Test Pits at Infiltration Trenches

Aspect will coordinate, complete and document up to four machine drilled borings at the proposed bridge end abutments and interior piers to explore subsurface conditions, including depth and composition of underlying basalt bedrock to serve as pile end bearing layer.

We will mark the proposed boring locations in white paint and/or stakes for planning and utility locating. We will use the public one-call utility locating service to clear the proposed areas of the borings. We should be provided with any drawings or other information available on utility locations within the limits of the Site. Our fee does not include utility repair costs. We will take reasonable precautions to reduce the potential for damage to utilities; however, Aspect does not assume responsibility for the cost of repairing utilities that are unmarked or incorrectly marked. Aspect will mobilize a drilling subcontractor to the Site to complete up to four borings over a duration of 3 to 4 days in the field. The drilling will be supervised and logged full time by an Aspect field representative. The borings will be advanced with a track mounted drill rig using methods tailored for drilling in the anticipated gravel, cobble and boulder laden soils, and down to basalt bedrock, which is estimated to be about 50 feet deep below ground surface. Standard Penetration Test sampling will be completed within the overburden soil at selected depths. Upon encountering basalt bedrock, the driller will switch over to rock coring methods, and will advance 5 to 10 feet into the basalt bedrock to collect rock cores and record Rock Quality Designation (RQD).

Samples of the encountered soils and bedrock will be collected for additional observation and laboratory testing at our discretion. The borings will be backfilled with bentonite chips per Washington State regulations. No further Site restoration is planned or included.

We assume you and/or other Project stakeholders will coordinate and provide ready access and permitting for the soil borings, along with any required earthwork and clearing for the drill rig access, coordination with individual landowners and the local jurisdictions regarding public notification of the field work. Aspect will oversee the earthwork and clearing for drill rig access as part of Task B below.

Boring logs, laboratory test results, and a site map showing the locations of the borings will be prepared and included in the geotechnical report.

Task B: Test Pits and Laboratory Testing at Infiltration Areas and Drill Rig Access Oversight

Aspect will observe and log up to four test pits near the trail and proposed stormwater infiltration trenches with excavation equipment, personnel and utility locating responsibilities provided/managed by the Project stakeholders. Aspect will record soil and groundwater conditions in the test pits and collect bulk soil samples. Aspect will complete up to two grain size analysis tests and two cation exchange capacity (CEC) tests on the bulk samples.

We assume the test pits will occur on the same day as the drill rig access clearing/grading with Aspect on Site for one full day to observe and oversee both activities.

Test pit logs, laboratory test results, and a site map showing the locations of the test pits will be prepared and included in the geotechnical report.

Task C: Bridge Foundation and Stormwater Infiltration Rate Analysis and Recommendations

Aspect will complete geotechnical engineering analyses and develop design and construction recommendations for one preferred foundation system (i.e. shallow foundations, micropiles, etc.) to support the bridge using the results of the machine drilled borings. Aspect will complete analyses to correlate laboratory test data with hydraulic conductivity, and will report the local groundwater level in each test pit. The results/recommendations will be presented in the geotechnical report and will consist of:

- Summary of subsurface conditions (soil, bedrock and groundwater) at the bridge foundations and near the stormwater infiltration trenches.
- Preferred pile foundation type (i.e. shallow foundations, micropiles) with corresponding axial, uplift and lateral soil resistances (LPILE soil parameters and profile).
- Abutment and wingwall (concrete or mechanically stabilized earth (MSE) walls) vertical and lateral design parameters, including structural fill gradation within MSE walls (if any).
- Seismic design parameters and evaluation of seismic hazards.
- Earthwork and construction recommendations for the preferred pile type, abutment and wing walls, and approach embankments.
- Global slope stability evaluation and consideration of creek bank slopes and approaches at/around the bridge abutments that could affect foundations.
- Design infiltration rate and CEC values of on Site soils near the stormwater infiltration trenches based on laboratory testing and correlations presented in the Stormwater Management Manual for Eastern Washington.

Task D: Scour Analysis and Mitigation

Aspect will complete a scour analysis for pedestrian Bridge C with results and recommendations presented under separate cover from the geotechnical report. The scour analysis will be completed in accordance with FHWA guidelines (Hydraulic Engineering Circular No. 18 Evaluating Scour at Bridges Fifth Edition) using topographic survey provided by Perteet/City of Yakima, the results of Aspect test pit, soil borings and laboratory analysis results, and H&H modeling using HEC-RAS. The scour analysis will determine the scour depth to be used for input to pile foundation lateral stability analysis and to assess the need for creek bank scour mitigation at/near the bridge abutments.

Aspect will develop written recommendations for scour mitigation at/near the bridge abutments. We assume the project plans and specifications will be developed by others in the design team and will incorporate our written recommendations.

Task E: No-Rise Analysis

Aspect will complete a no-rise analysis with results presented under separate cover from the geotechnical report and scour analysis. The no-rise analysis will involve the following:

- Review agency comments, interact with Perteet and City, and revise Aspect's overall Amendment 2 scope and fee estimate.
- Review City/County standards, effective/preliminary Flood Insurance Rate Maps (FIRMs), and Flood Insurance Study (FIS).
- Determine no-rise criteria and base flood elevations.
- Obtain and review the FIS HEC-RAS model.
- Verify the HEC-RAS model matches the FIRMs.
- Perform additional hydraulic modeling to address agency comments. Utilize the existing model to develop a proposed condition model by modifying the topography/cross sections to reflect the proposed design. Modelling will occur in the vicinity of the areas of concern identified by agency comments: (1) the proposed bridge crossing including the proposed elevated trail surface near station 539+00 – 541+00; and (2) the proposed elevated trail surface near station 520+50 – 523+00. Two proposed condition models will be developed: (1) with skewed bridge piers; and (2) with non-skewed bridge piers.
- Run the proposed condition models and assess water surface elevations for any rise compared to the existing condition model.
- If a water surface elevation rise is shown at either location, discuss potential mitigation approaches with Perteet and City (up to two conference calls).
- Incorporate preferred mitigation approach for each of two locations of concern into the proposed condition models, assess effectiveness of mitigation approaches, discuss results with Perteet, and adjust mitigation approaches and rerun models as needed to achieve no-rise.
- Develop a brief hydraulic analysis memo summarizing the no-rise analysis results.

Assumptions:

- We assume that project survey, plans, specifications, and existing condition HEC-RAS model will be available to aid in the development of the proposed condition model.

- If additional surveyed cross sections are needed, additional survey and review cost will be required.
- It is assumed that no existing condition HEC-RAS model error corrections or other updates to reflect existing conditions is needed.
- Only one local rise mitigation approach is modeled at each location, a hydraulic analysis of multiple mitigation alternatives is not included. Any required mitigation design will be developed by others on the design team.
- Effort to complete related permitting is not included (e.g., Grading & Excavation Permit, Flood Hazard Permit, FEMA Elevation Certificate).
- Hydraulic Analysis Memo will be prepared as a final document, no review cycle.

Work Element 23 – Bridge C Pile Foundation Analysis and Design (J-U-B)

J-U-B will provide deep foundation lateral analysis, pier lateral stability analysis, and bracing detailing.

Optional Services (Excluded from this Scope of Services)

- Bridge 2a retrofit design.
- Environmental permitting (SEPA, NEPA, Shoreline, Critical Areas).

Exhibit "B"



Project Yakima Cowiche Canyon Trail
Client City of Yakima
PM Karissa Wittuhn

Task	Billing Rate	Total Hours	Labor Dollars
Task 22 - Geotechnical Analysis (Aspect)			
Total Task 22 - Geotechnical Analysis (Aspect)		0.00	\$0.00
Task 23 - Structural Analysis (J-U-B)			
Total Task 23 - Structural Analysis (J-U-B)		0.00	\$0.00
Total Hours			
Total Dollars			

Subconsultant Fees:	Cost	Markup	Bill
Aspect Consulting LLC	87,770	8,777	96,547
J-U-B Engineers Inc.	1,640	164	1,804
Totals:	89,410	8,941	98,351

SUMMARY		
Labor		\$0.00
Expenses		\$0.00
Subconsultants		\$98,351.00
CONTRACT TOTAL		\$98,351.00