AGENDA BILL
Beaverton City Council
Beaverton, Oregon

SUBJECT: Contract Award – Meridian Pump Station Replacement (CIP #4107)

FOR AGENDA OF: 10-16-18 BILL NO: 18236
MAYOR'S APPROVAL: 
DEPARTMENT OF ORIGIN: Public Works
DATE SUBMITTED: 10/10/18
CLEARANCES: City Attorney Mayor's Office Purchasing Finance Engineering

PROCEEDING: CONSENT AGENDA (CONTRACT REVIEW BOARD) EXHIBITS: 1. CIP Data Sheet 2. Project Location Map 3. Consultant Scope of Work and Fees

BUDGET IMPACT

<table>
<thead>
<tr>
<th>EXPENDITURE REQUIRED</th>
<th>AMOUNT BUDGETED</th>
<th>APPROPRIATION REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>$379,125</td>
<td>$2,950,000*</td>
<td>$0</td>
</tr>
</tbody>
</table>

*Account Number 505-75-3631 Water Construction Fund – Meridian Pump Station Replacement Program. The Adopted FY 2018-19 Budget included a $2,950,000 appropriation for this project with $2,750,000 identified for Construction and $200,000 identified for Construction Design and Engineering. Although this contract award will exceed the $200,000 appropriation for design and engineering services, the shortfall can be absorbed within the total $2,950,000 appropriation for this project.

RECOMMENDED ACTION:
City Council, acting as the Contract Review Board, authorizes the Mayor to sign a contract with Stantec Consulting Services, Inc., (Stantec) in the amount of $379,125 to perform engineering services for the Meridian Pump Station Replacement (CIP 4107) in a form approved by the City Attorney.

HISTORICAL PERSPECTIVE:
The existing Meridian Pump Station is a below-grade facility originally constructed in 1990 and located south of SW Scholls Ferry Road, between SW Teal Boulevard and SW 147th Terrace. The pump station was initially installed to provide fire flow to the Meridian Apartments located within the 550 pressure zone and later modified to include a variable frequency drive (VFD) to provide more consistent pressure for the expanding 550 pressure zone.

The existing pump station, which consists of an underground vault and associated electrical equipment, is at the end of its useful life. The station pumping capacity is four million gallons per day (mgd).

INFORMATION FOR CONSIDERATION:
The Meridian Pump Station Replacement Project was first included in the CIP budget in Fiscal Year 2013-14 (Exhibit 1). As shown on the Project Location Map (Exhibit 2), substantial planning and infrastructure installation has been ongoing since 2012 in preparation for the Meridian Pump Station.
Replacement Project. Preliminary pump station design work and City land use approval was completed in 2017. Due to a scheduled Washington County pavement overlay on Scholls Ferry Road in 2019, the City will design and construct a 16-inch diameter water line just east of SW Teal Boulevard later this fall. Stantec is currently under contract for this engineering design work.

The Meridian Pump Station Replacement Project will replace the existing pump station with a new aboveground seismically-resilient facility, increase pumping capacity to 5.75 mgd, install new telemetry and controls, and include an emergency standby generator. The larger pumping capacity will aid in maintaining adequate pressure in the 550-pressure zone and improve pumping capabilities to serve future City developments. Additionally, an aboveground facility will provide easier maintenance access and reduce costs formerly associated with the confined space entry requirements to the underground vault (where multiple staff members were required to meet regulations).

A request for proposals was advertised in the Daily Journal of Commerce on August 20, 2018. A mandatory pre-proposal conference was held on August 29, 2018, with four prime contractors and two subcontractors in attendance. Stantec was the sole proposer, and their proposal was received and opened on September 13, 2018. Staff used a Qualifications-Based Selection process to evaluate the proposal. Public Works Engineering is currently in the process of negotiating the scope of work and associated fees for the final pump station design work with Stantec. The scope of work will include the following major tasks:

Task 1 - Project Management  
Task 2 - Hydraulic Analysis  
Task 3 - Geotechnical Investigations  
Task 4 - Permitting  
Task 5 - 60% Design  
Task 6 - 90% Design  
Task 7 - 100% Design  
Task 8 - Construction Cost Estimation  
Task 9 - Bid Phase Services  
Task 10 - Construction Phase Services

The final scope of work and fees (Exhibit 3) will be provided to City Council prior to the October 16, 2018 meeting. After final design is complete, construction of the new Meridian Pump Station Replacement Project is anticipated to begin Summer 2019.
Project Data

Project Number: 4107
Project Name: Meridian Pump Station Upgrade
Project Description: Existing pump station and controls are housed in an underground vault with access limitations. Meridian pump station upgrades include installing new larger capacity pumps, telemetry, controls, and relocated pump station building.

Map:

Project Justification:
Replace an aging pump station, increase pumping efficiency to reduce energy costs and also provide additional flexibility in filling the 1 million gallon reservoir that serves the 410 pressure zone. The original pump station was constructed in 1990 and much of the associated equipment is at the end of its useful life. In addition, relocating the pump station equipment to an above ground structure will reduce maintenance costs and improve staff access to a structure that is currently rated as a confined space entry. The reconstructed pump station will serve some portion of the South Cooper Mountain expansion and may be called on to serve some portion of the Tigard expansion.

Project Status:
FY15-16: Began preliminary design. FY16-17: Completed land use and preliminary design. FY17-18: Completed final design and bidding. FY18-19: Complete construction.

Estimated Date of Completion: 10/30/2019
Estimated Project Cost: $3,000,000

Funding Data:

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Fund No.</th>
<th>Fund Name</th>
<th>Amount</th>
<th>FY</th>
</tr>
</thead>
<tbody>
<tr>
<td>4107</td>
<td>3631</td>
<td>Meridian Pump Station Replacement, Bonded</td>
<td>$2,950,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total for FY:</strong></td>
<td><strong>$2,950,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
The information supplied in this application represents the best data available at the time of publication. City of Beaverton GIS makes no claims, representations, or warranties as to its accuracy or completeness.
Background

The City of Beaverton (City) has contracted with Stantec Consulting Services Inc. (Stantec) to provide design, bid phase services, and engineering services during construction of the Meridian Pump Station Replacement, City Project No. 4107.

The existing pump station is a below grade facility located on SW Scholls Ferry Road, between SW Teal Boulevard and SW 147th Avenue adjacent to a Bonneville Power Administration (BPA) right-of-way. The existing pump station is a vaulted pump station with two Cornell horizontal, end-suction centrifugal pumps, each with a 125 horse power (hp) motor constructed in 1990. One motor is controlled by a variable frequency drive (VFD) and the other motor is a constant speed pump with on/off controls. The pump station, which is near elevation 230, boosts pressure from the 410 Service Area to the 550 Service Area. There is an 8-inch Kinder Morgan high pressure pipeline near the facility. The pump station is located beneath high voltage power lines owned by Portland General Electric (PGE).

The facility is adjacent to a recently constructed asphalt paved trail called the Westside Trail. An approximately six-foot high retaining wall separates the existing pump station from the trail. Within the trail along the pump station frontage of the retaining wall, there are two 24-inch DI pipe stubs with cathodic protection anodes at the ends. The other ends of the 24-inch DI pipe stop right at the back of sidewalk (right-of-way), as time did not allow for Washington County permitting to extend the stubs into SW Scholls Ferry Road with the trail project.

The existing pump station was originally installed to provide fire flow to the Meridian Apartments located northwest of the pump station site. Over time, the pump station was modified and used to supplement delivery to the 550 Service Area. The station currently pumps approximately 4 million gallons per day (mgd), or approximately 2,780 gallons per minute (gpm), and is mostly used in the summer due to the increase in demand for irrigation purposes. During the higher-demand summer months, the City notices lower pressures in the higher elevations of the 410 Service Area when the pump station operates. The South Cooper Mountain Annexation, approximately 540 acres of undeveloped land within the 550 Service Area in the vicinity of SW 175th Ave and Roy Rogers Road, is anticipated to be populated with an additional 8,000 to 10,000 people in the future planning period. For this reason, the City wishes to improve the pumping capabilities of this pump station while eliminating the maintenance and operations challenges associated with the existing underground facility.

The new above grade pump station is to be located behind (southeast of) the existing pump station, so that the existing pump station can remain operational.
EXHIBIT A

during construction of the new pump station. After the new pump station is on­line, the existing pump station will be demolished, and the site will be replaced with parking for the new facility.

Preliminary design of the facility is complete, and a land use permit has been issued for the project.

SCOPE OF SERVICES:
The scope of services described herein will be provided by Stantec to:

1. Provide detailed engineering services for the design of a new 4,000 gpm pump station (Facility).
2. Assemble Bid Documents for the City’s use for advertisement and construction contractor selection.
3. Perform Bid Phase Services (BPS) as requested.

General Assumptions

1. The City will provide all required public involvement/community outreach services.
2. Topographic surveying has been completed. Any additional topographic surveying needs for the project will be provided by the City.
3. Archaeological or cultural resources investigations are not required.
4. Wetland delineations, biological assessments, and associated environmental permitting are not required.
5. The land use permit has been issued for the construction of the Facility.

1.0 Task 1 - Project Management and Meetings

1.1 Task Specific Objectives:
The purpose of this task is to provide the administrative, quality assurance/quality control (QA/QC), and financial/schedule management activities associated with performing and completing the project. This task also includes maintaining clear communication with the City to deliver the project.

1.2 Task Specific Assumptions:

A. Only those deliverables listed herein shall be required to be provided to the City.
B. Stantec shall subcontract with the following firms to provide the following services:

1. Rhino One – Geotechnical Engineering
2. Murraysmith – Hydraulic Modeling
3. NNA Landscape Architecture (NNA) – Landscape Design

1.3 Subtasks:

A. Develop Brief Project Management Plan

Stantec will set up the project and prepare a Project Implementation Plan (PIP). The PIP describes how Stantec will manage cost, scope, and schedule; establishes lines of communication and team member roles; and helps to define how the project will be managed. Components of the PIP consist of the following:

1. Project Schedule

A project schedule will be developed and maintained with Microsoft Project scheduling software to monitor overall progress of the project.

2. QA/QC Plan

Stantec will prepare a project QA/QC plan, which defines reviews to be conducted for all Stantec’s deliverables and the roles and responsibilities of QA/QC team members.

3. Staffing Plan

Stantec will prepare a level of effort summary that assigns personnel to individual activities and monitors planned versus actual hours to complete activities and milestone completions.

B. Invoicing and Scope Management

Invoices will be submitted on a monthly basis. On each monthly invoice, Stantec will provide task and subtask breakdown of cost and hours worked per staff person. Stantec will provide percent spent/complete for each task and subtask. Stantec will include monthly project status report with each submitted invoice, including an updated project schedule.
C. Routine Communications Conference Calls, and Meetings

Stantec will participate in bi-weekly conference calls or in-person meetings with the City as needed. It assumed that these will be attended by up to two Stantec staff and that their average duration will be one hour each over the duration of the design phase.

1.4 Task Specific Deliverables:

A. Invoices

1. One invoice will be submitted for payment monthly in PDF format. Invoice shall provide breakdown of cost and hours worked per staff person and percent spent/complete for each task and subtask.

B. Schedule updates

1. Submitted monthly with invoice in PDF format.

C. Project Status Report

1. Submitted monthly with invoice in PDF format.

D. Agendas and Meeting Minutes

1. Submitted in PDF format.

2.0 Task 2 – Hydraulic Analysis

2.1 Task Specific Objectives:

The purpose of this task shall be to model and understand the effect that the increase of pumping capacity of the Facility has on the 410 Service Area.

2.2 Task Specific Assumptions:

A. This task will be performed by Murraysmith.

2.3 Subtasks:

A. Murraysmith will integrate the proposed piping changes in SW Scholls Ferry Road and proposed pump system curves into the City’s existing distribution system hydraulic model. This integration will validate pump
selection, determine the final pump station capacity (firm and total), and determine overall system performance at average day and peak hour flow demand scenarios.

B. Murraysmith will input pump station design information and evaluate the pump curves against the system curves for various development scenarios and prepare draft and final technical memorandums summarizing the evaluation and developing recommendations for pump station design criteria and other system improvements needed to maintain adequate pressure in the 410 Service Area.

2.4 Task Specific Deliverables:

The anticipated deliverables will include a technical memorandum as well as figures and data output from the various hydraulic model evaluations. A draft version of the memorandum and the accompanying model outputs will be completed and submitted to the City for review and comments. The draft will summarize the various hydraulic model analysis results, interpretation of the results, and recommend a final flow capacity and design requirements for the Facility. Following review, a project meeting will be held with the City and Stantec team to review the package contents and discuss any comments. The final version will then be completed and submitted to the City.

1. Draft Technical Memorandum in PDF format.

2. Final Technical Memorandum in PDF format.

3.0 Task 3 – Surge Analysis

3.1 Task Specific Objectives:

The purpose of this task shall be to complete a fluid transient analysis in support of the Meridian Pump Station Replacement. This analysis will quantify the magnitude of fluid transients that could occur during various operational scenarios and recommend mitigation measures, as needed, to protect the Meridian Pump Station and distribution system from the potentially harmful effects of fluid transients.

This analysis will begin by developing a clear and confirmed vision for the proposed fluid transient analysis methodology which follows. It will strive to
mitigate the presence of any water hammer induced constraints within the system.

Although routine fluid transient investigations are rarely encountered, there is a general risk-assessing methodology that can be applied in some form to all transient analysis efforts. This methodology includes the following phases:

a. System familiarization and data collection,
b. Steady state initial condition modeling,
c. Construction and calibration of a skeletonized transient model,
d. Identification of critical transient-causing events,
e. Simulation and interpretation of critical transients, and
f. Documentation and application of the results - in design.

Stantec's hydraulic transient analysis approach will proceed through each of these phases. With the critical transient-causing events identified, the modeling staff will use their experience in mediating the harmful effects of water hammer by implementing numerous surge control devices and methodologies within the model's representation of the piping system in an effort to determine the effectiveness of each alternative. Possible surge mitigation alternatives include:

<table>
<thead>
<tr>
<th>Stronger Pipes</th>
<th>Altered Pump Operations Or Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check Valves</td>
<td>Pressure Relief / Surge Anticipating Valves</td>
</tr>
<tr>
<td>Air Release Valves</td>
<td>Vacuum Breaker / Air Relief Valves</td>
</tr>
<tr>
<td>Hydro-Pneumatic And Feed Tanks</td>
<td>Rotational Inertia Augmentations</td>
</tr>
<tr>
<td>Bursting (Rupture) Discs</td>
<td>Bypass Lines</td>
</tr>
</tbody>
</table>

3.2 Task Specific Assumptions:

A. The hydraulic model developed for Task 2 will be used as a starting point to construct the hydraulic transient model.
EXHIBIT A

B. Three teleconferences will be required for communications on this task – during start-up, at mid-task, and following the release of the technical memorandum.

C. Stantec will deliver digital copies of the input data, development files, hydraulic model, and draft and final technical memorandum detailing results of analysis.

3.3 Subtasks:

Stantec will complete the following subtasks as part of the transient analysis:

A. Data Collection, including:

1) System definition – characterization of scope
2) Safe and/or specified operating limits or envelopes – including unacceptable circumstances
3) Anticipated causes of a change in steady flows
4) System flows
5) Layout of proposed and existing infrastructure
6) Upstream and downstream boundary condition information
7) Previous reports and documentation
8) General performance and operational data – flows / pressures / timings
9) Pipe data – ID# / length / material / pressure rating / minor losses in areas of high velocity / internal diameter and wall thickness / celerity, i.e. wave speed / roughness
10) Junctions – ID# / elevation / demand
11) Reservoirs – ID# / elevation, maximum, minimum, and pump ON/OFF water levels
12) Pumps and motors – ID# / faceplate data / rated speed & inertial data for All Rotating Components / Estimated or Measured Run-Down Times / Pump Curve / Recent Pump Test Data
13) Critical Valves (Those Which Alter Normal Hydraulics (Pressure Reducing, Pressure Sustaining, Flow Control, Etc.) – ID# / Faceplate Data / Head Loss Characteristics / Settings / Closure Properties

14) Surge Control Devices (Hydro-Pneumatic Tanks, Open Surge Tanks, Bladder Tanks, Pressure Relief and Surge Anticipating Valves, Rupture Discs, Air Valves – ID# / All Pertinent Details And Operational Setpoints

Comments on these itemized data needs for this specific project follow.

In order to properly recommend protective measures for the Meridian Pump Station and distribution system, the proposed system definition for 1) includes developing a transient analysis model from the hydraulic model developed in Task 2. The model will likely be skeletonized to only include the 550 Zone the Meridian Pump Station supplies and the 410 Zone the that supplies the pump station.

Stantec would confirm 2) on the basis of current local design standards and input from City staff. For 3) Stantec will examine normal pumping station operations as well as sudden power failures, and sudden significant valve closures.

It is assumed that 4) will be provided based upon design flows, while 5) will be based upon the hydraulic model developed in Task 2, as-built drawings, and design drawings. For 6), the boundary conditions will be obtained from the hydraulic model developed for Task 2 and City-confirmed pumping conditions at the Meridian Pump Station.

It is assumed that items 7) through 12) will be collected from the information available from the City, model files, and/or hard copies of proposed equipment selection cut sheets. The location and nature of 13) - any proposed critical valves - will be determined through discussions with City staff and the design team. Proposed appurtenances covered by item 14) will be identified and characterized as the model construction proceeds.

B. Transient Model Construction and Verification: Stantec will construct and verify the water hammer model starting with the hydraulic model developed in Task 2. The model will include the
distribution system infrastructure within the 410 Zone and 550 Zones. It is anticipated Bentley Systems HAMMER transient analysis software will be used to complete the analysis. However, if desired the analysis can be completed using Innovyze InfoSurge or AFT Impulse by Applied Flow Technology.

C. Transient Analysis and Development of Control Alternatives: The proposed system will be examined for worst case transients. Stantec will identify system behaviors and outline emergent issues. These issues will be addressed by the development of suitable and optimal surge control alternatives and setpoints for the various pumping station components as necessary.

D. Prepare Technical Memorandums: Stantec’s fluid transient analysts will document the findings of the transient analysis in a technical memorandum.

3.4 Task Specific Deliverables:

The anticipated deliverables will include a technical memorandum as well as figures and data output from the simulation(s). A draft version of the memorandum and the accompanying model outputs will be completed and submitted to the City for review and comments. The draft will summarize the surge analysis results, interpretation of the results, and recommend a surge tank size for the Facility. Following review, a project meeting will be held with the City and Stantec team to review the package contents and discuss any comments. The final version will then be completed and submitted to the City.
1. Draft Technical Memorandum in PDF format.
2. Final Technical Memorandum in PDF format.

4.0 Task 4 - Geotechnical Investigations

4.1 Task Specific Objectives:

The purpose of this task is to conduct geotechnical engineering services in support of final design of the Facility.
4.2 Task Specific Assumptions:
A. This task will be performed by Rhino One.

B. Exploration locations will be accessible by track-mounted equipment drilling or excavating; access road building will not be required.

C. The explorations do not include environmental testing, and it is assumed that there are no contaminated soils, water, or other hazardous materials. The soil cuttings will be drummed and removed from the site.

D. Rights of entry to the project site will be obtained by the City. The City will provide access permission through the locked gate to the trail.

E. Traffic control is not required for drill rig access to the site.

4.3 Subtasks:
A. Rhino One will review available geologic publications, maps, and Lidar data to assess the general subsurface conditions and potential geologic hazards at the Facility location.

B. Rhino One will perform a subsurface investigation consisting of two boreholes to characterize the subsurface conditions at the location of the Facility. The boring is anticipated to extend to a depth of 25 to 50 feet in depth or to mud rotary drilling refusal below the existing ground surface, whichever is greater. One day of field work is anticipated. The borings will be used to identify top of rock surface, if encountered; no rock coring or installation of observation wells (piezometers) in the borehole are included in this scope.

C. Rhino One will collect standard penetration testing (SPT-N) values during the drilling at 2.5-feet intervals to a depth of 20 feet and at 5-feet intervals thereafter. SPT-N values are important to Construction Contractors to develop the parameters necessary for shoring design and to determine optimal excavation equipment approaches.

D. Rhino One will provide staffing during the drilling operation to log and characterize the bore and geological profile.

E. Rhino One will be responsible for utility locates, HSSE requirements and any other supporting services necessary to complete the boring and reclamation.

F. Rhino One will be responsible for backfill of the boring with bentonite chips.
G. Laboratory testing will be conducted on selected samples collected during the subsurface investigation. Probable laboratory tests include moisture content, sieve analyses, Atterberg limits, and p.H./Sulfates testing.

H. Rhino One will prepare a draft Geotechnical Data Report presenting a summary of the subsurface investigations, characteristics of the subsurface soils, soil corrosivity, and depth to rock (if encountered). The report will include the results of the borehole log, laboratory testing, and a site plan exploration figure. The draft report will be provided to the City for review and comment. Any comments from Stantec or the City will be addressed during a comment resolution period, and then the report will be finalized. Data tables and logs from this Report will be made available as part of the bidding document package for reliance by the General Contractors in preparing their proposals to the City.

I. Rhino One will develop foundation design recommendations in consultation with structural design engineer to develop geotechnical design parameters for building foundation and roadway surfacing sections. Rhino One will provide seismic spectral coefficients for the site in accordance with the current International Building Code (IBC) based on the soils encountered and USGS Uniform Hazard Response Spectral Curves.

J. Rhino One will review project plans that have geotechnical-related items at 60 percent design and provide comments on the drawings for Stantec to incorporate into the plan set.

K. Rhino One will review technical specifications for earthwork, dewatering, shoring, geotextile fabric, rock excavation, and trench excavation and backfill. Stantec will provide base specifications for review.

4.4 Task Specific Deliverables:
A. Draft Geotechnical Report in PDF format.
B. Final Geotechnical Report in PDF format.

5.0 Task 5 – Permitting

5.1 Task Specific Objectives:
The purpose of this task is to obtain applicable City, County, State, and Federal permits for construction of the Facility.

5.2 Task Specific Assumptions:
A. The following permits are required:
   1. NPDES 1200-C or 1200-CN
2. Oregon Health Authority Drinking Water Program Plan Review
3. Washington County Utility and Right-of-Way Permit, if required.
4. City of Beaverton Building Permit
5. City of Beaverton Grading Permit
6. PGE Permit, if required.

B. Construction contractor permits related to the actual construction, such as mechanical, electrical, plumbing, etc. are not part of this scope. It is assumed that the contractor will obtain these permits, as appropriate, prior to construction.

C. It is assumed that each agency will be cooperative and will not require additional supporting documentation and communication as part of their respective review processes. However, Stantec will track and organize agency communication.

D. Land use permitting is not needed.

E. Regulatory agency permitting fees will be paid by the City.

5.3 Subtasks:

Stantec will prepare the following permitting packages and submit them electronically and/or in hard copy, per each agency’s submittal requirements.

1. NPDES 1200-C or 1200-CN
2. Oregon Health Authority Drinking Water Program Plan Review
3. Washington County Utility and Right-of-Way Permit, if required.
4. City of Beaverton Building Permit
5. City of Beaverton Grading Permit
6. PGE Permit, if required.

5.4 Task Specific Deliverables:

A. NPDES 1200-C or 1200-CN application (PDF or hard copy).
B. Oregon Health Authority Drinking Water Program Plan Review (PDF or hard copy).
C. Washington County Utility and Right-of-Way Permit, if required (PDF or hard copy).
D. City of Beaverton Building Permit (PDF or hard copy).
E. City of Beaverton Grading Permit (PDF or hard copy).
F. PGE Permit, if required (PDF or hard copy).
6.0 Task 6 – 60% Design

6.1 Task Specific Objectives:

A. The purpose of this task will be to advance the current design packages to approximately 60% complete status and validate constructability and design performance and intent. Objectives of 60% Design Submittal include:

1. Confirm the constructability of the Project.
2. Determine construction permit requirements.
3. Implement acceptable value engineering requirements, if applicable.
4. Identify preferred equipment and materials.
5. Reflect comments from the community.
6. Discuss options for bid and qualifications.

B. Prepare 60% construction plans and specifications and permit submittal progress plans as required for permit applications to meet project schedule. Stantec will receive and respond to review comments from permitting agencies and the City. The 60% submittal will include draft plans and specifications in Construction Standards Institute (CSI) MasterFormat, Divisions 01-50.

6.2 Task Specific Assumptions:

A. The City’s Standard Construction Agreement and associated General Conditions will be used.

B. SCADA & Instrumentation design will be performed by others and is not part of this scope. Stantec will coordinate with the City’s SCADA and Instrumentation consultant, S&B Inc. (S&B), throughout the design of the project and will bring critical questions and issues to the City’s attention through our routine communication (See Subtask 1.3-C).

6.3 Subtasks:

A. Stantec will prepare 60% design drawings for the project, anticipated to consist of the following:

   GENERAL
   1. Cover Sheet
   2. Drawing List
   3. Abbreviations
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Civil/General Symbols and Notes</td>
</tr>
<tr>
<td>5.</td>
<td>Mechanical Symbols and Pipe Schedule</td>
</tr>
<tr>
<td>6.</td>
<td>Hydraulic Profile</td>
</tr>
</tbody>
</table>

**GENERAL CIVIL**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>City Standard Details – I</td>
</tr>
<tr>
<td>8.</td>
<td>City Standard Details – II</td>
</tr>
</tbody>
</table>

**CIVIL**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Existing Conditions Plan</td>
</tr>
<tr>
<td>10.</td>
<td>Site Plan – Phase 1</td>
</tr>
<tr>
<td>11.</td>
<td>Grading and Drainage Plan – Phase 1</td>
</tr>
<tr>
<td>12.</td>
<td>Yard Piping Plan – Phase 1</td>
</tr>
<tr>
<td>13.</td>
<td>Site Plan – Phase 2</td>
</tr>
<tr>
<td>14.</td>
<td>Grading and Drainage Plan – Phase 2</td>
</tr>
<tr>
<td>15.</td>
<td>Yard Piping Plan – Phase 2</td>
</tr>
<tr>
<td>16.</td>
<td>Erosion Control Cover Sheet</td>
</tr>
<tr>
<td>17.</td>
<td>Erosion Control Plan</td>
</tr>
<tr>
<td>18.</td>
<td>Erosion Control Details</td>
</tr>
</tbody>
</table>

**LANDSCAPE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19.</td>
<td>Landscape &amp; Irrigation Notes and Legend</td>
</tr>
<tr>
<td>20.</td>
<td>Landscape Planting Plan</td>
</tr>
<tr>
<td>21.</td>
<td>Landscape Irrigation Plan</td>
</tr>
<tr>
<td>22.</td>
<td>Landscape Details – I</td>
</tr>
<tr>
<td>23.</td>
<td>Landscape Details – II</td>
</tr>
</tbody>
</table>

**ARCHITECTURE**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25.</td>
<td>Architectural Floor Plan</td>
</tr>
<tr>
<td>26.</td>
<td>Architectural Roof Plan</td>
</tr>
<tr>
<td>27.</td>
<td>Architectural Building Sections</td>
</tr>
<tr>
<td>28.</td>
<td>Architectural Building Elevations</td>
</tr>
<tr>
<td>29.</td>
<td>Architectural Reflective Ceiling Plan</td>
</tr>
</tbody>
</table>
30. Enlarged Plans and Interior Elevations
31. Architectural Schedules
32. Architectural Details - Doors
33. Architectural Details – Windows and Louvers
34. Architectural Details – Roof

STRUCTURAL
35. Structural General Notes, Special Inspection and Testing Schedule – I
36. Structural General Notes, Special Inspection and Testing Schedule – II
37. Typical Concrete Details – I
38. Typical Concrete Details - II
39. Typical Concrete Details - III
40. Typical Concrete Details - IV
41. Typical Masonry Details - I
42. Typical Misc. Metals and Roof Joist Details - I
43. Typical Misc. Metals and Roof Joist Details - II
44. Lower Plan
45. Intermediate Plan
46. Roof Plan
47. Sections and Details – I
48. Sections and Details – II
49. Sections and Details – III

MECHANICAL
50. Mechanical Standard Details – I
51. Mechanical Standard Details – II
52. Mechanical Standard Details – III
53. Mechanical Standard Details – IV
54. Mechanical Plan
55. Mechanical Sections – I
56. Mechanical Sections - II
ELECTRICAL
57. Electrical Symbols – I
58. Electrical Symbols – II
59. Electrical Single Line Diagram
60. Panelboard Schedules
61. Electrical Site Plan
62. Power and Signal Plan
63. Lighting Plan
64. Electrical Schematic – I
65. Electrical Schematic - II
66. Motor Control Center Elevation
67. PLC Panel Layout (By S&B)
68. PLC Panel Power Diagram (By S&B)
69. PLC Panel Discrete Inputs – I (By S&B)
70. PLC Panel Discrete Inputs – II (By S&B)
71. PLC Panel Discrete Outputs (By S&B)
72. PLC Panel Analog Inputs/Outputs (By S&B)
73. Various other SCADA / Instrumentation Plans provided by S&B and inserted into the Stantec drawing set.

B. Prepare 60% drafts of the technical specifications.

C. Prepare for and participate in a 60% Design Review Workshop with the City to step through the design documents and respond to questions and comments regarding the 60% design drawings and specifications. Up to two (2) Stantec team staff will attend the workshop which is estimated to take up to four (4) hours.

6.4 Task Specific Deliverables:

A. 60% drawings and technical specifications will be provided in electronic PDF format along with one (1) original reproducible hard copy at ½ scale (11” x 17”).

B. Permit documentation will be provided in electronic PDF format.

C. 60% Design OPCC (Class 4).

D. 60% Design Review Comment Registry listing comments, responsible party and adjudicated response.
7.0 Task 7 – 90% Design

7.1 Task Specific Objectives:

The purpose of the 90% design is to confirm that the project plans and specifications are sufficiently complete for the preparation of bidding documents and a contract construction schedule. During this phase, Stantec will respond to review comments from permitting agencies and the City.

7.2 Task Specific Assumptions:

A. Comments and modifications resulting from the 60% Design Review Workshop will be incorporated into the 90% Package. These comments and Stantec responses will be included in the 60% Design Review Comment Registry (see Section 6.4-D above).

B. Drawings included in the 90% design submittal will be as listed in the 60% Drawing List unless otherwise approved.

C. Draft Specifications for the 90% design submittal will be as listed in the 60% Specifications List unless otherwise approved.

D. The City’s Standard Construction Agreement and associated General Conditions will be used.

E. Division 00 specifications will be prepared by Stantec.

F. Final 90% bid drawings and specifications will be provided in electronic PDF format along with one (1) original reproducible hard copy at ½ scale.

7.3 Subtasks:

A. Stantec will prepare 90% design drawings and technical specifications.

B. Stantec will review the City’s General Conditions and draft Division 00 specification documents for coordination with the technical specifications. Provide recommendations to the City for any proposed revisions to the General Conditions.

C. Prepare for and participate in a 90% Design Review Workshop with the City to step through the design documents and respond to questions and comments regarding the 90% design drawings and specifications. Up to two (2) Stantec team staff will attend the workshop which is estimated to take up to four (4) hours.

7.4 Task Specific Deliverables:

A. 90% drawings and specifications will be provided in electronic PDF format along with one (1) original reproducible hard copy at ½ scale (11” x 17”).

B. Update to Design Review Comment Registry to incorporate and adjudicate 90% design review comments.

C. 90% Design OPCC (Class 3).
8.0 Task 8 – 100% Final Design

8.1 Task Specific Objectives:
A. The purpose of the 100% final design is to prepare 100% “bid-ready” construction plans and specifications and permit submittal plans as required for permit applications to meet the project schedule. During final design, Stantec will receive and respond to review comments from permitting agencies and the City. The 100% submittal will incorporate all applicable review comments and permit conditions and will be ready for bidding.

B. Stantec will prepare and submit the construction contract drawings required for construction of the improvements. The construction contract drawings shall be stamped and signed by professional engineers licensed in the State of Oregon.

8.2 Task Specific Assumptions:
A. Drawings included in the 100% design submittal will be as listed in the 60% Drawing List unless otherwise approved.

B. Draft Specifications for the 100% design submittal will be as listed in the 60% Specifications List unless otherwise approved.

C. The City’s Standard Construction Agreement and associated General Conditions will be used.

D. Final 100% bid drawings and specifications will be provided in electronic PDF format along with one (1) original reproducible hard copy full-size (22”x34”) stamped set.

8.3 Subtasks:
Stantec will:
A. Prepare 100% “bid-ready” Drawings and Specifications.

B. Revise plans and specifications as required per the City’s 90% submittal review comments. These comments and Stantec responses will be included in the 90% Design Review Comment Registry (see Section 7.4-B above).

C. Revise plans and specifications as required per permitting agencies’ 90% submittal review comments.

8.4 Task Specific Deliverables:
A. Complete bid set of the Construction Documents; including the drawings and Divisions 01-50 of the technical specifications. One (1) reproducible stamped copy set will be provided to the City.
B. Final Design Comment Registry with all comments adjudicated.

C. 100% Design OPCC (Class 2).

9.0 Task 9 – Opinion of Probable Construction Cost

9.1 Task Specific Objectives:

A. This Task includes all work needed to complete an update at the 60%, 90%, and 100% design submittals for the Opinion of Probable Construction Cost (OPCC).

9.2 Task Specific Assumptions:

A. The OPCCs to be developed under this Task will be prepared in accordance with the guidelines of AACE International, the Association for the Advancement of Cost Engineering. The expected accuracy for the design milestones proposed for this project are presented in the table below:

<table>
<thead>
<tr>
<th>Design Milestone</th>
<th>Expected Accuracy (typical variation in low and high ranges)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Design (Class 5)</td>
<td>L: -15% to -30%</td>
</tr>
<tr>
<td></td>
<td>H: +20% to +50%</td>
</tr>
<tr>
<td>60% Design (Class 4)</td>
<td>L: -10% to -20%</td>
</tr>
<tr>
<td></td>
<td>H: +10% to +30%</td>
</tr>
<tr>
<td>90% Design (Class 3)</td>
<td>L: -5% to -15%</td>
</tr>
<tr>
<td></td>
<td>H: +5% to +20%</td>
</tr>
<tr>
<td>100% Design (Class 2)</td>
<td>L: -3% to -10%</td>
</tr>
<tr>
<td></td>
<td>H: +3% to +15%</td>
</tr>
</tbody>
</table>

B. The City acknowledges that Stantec has no control over cost of labor, materials, competitive bidding environment and procedures, unidentified field conditions, financial and/or market conditions, or any other factors likely to affect the OPCC of this project, all of which are and will unavoidably remain in a state of change, especially in light of the high volatility of the market attributable to Acts of God and other market events beyond the control of the parties. The City further acknowledges that this OPCC is a 'snapshot in time' and that the reliability of the OPCC will degrade over time. The City agrees that Stantec cannot and does not make any warranty, promise, guarantee or representation, either express or implied that proposal, bids, project costs, or cost of O&M functions will not vary significantly from Stantec's good faith OPCCs. This estimate will be completed in 2019 US Dollars.
9.3 Subtasks:

Stantec will:

A. Complete OPCC at the 60%, 90%, and 100% submittals. Include documentation of the assumptions used in preparing the updated OPCC.

B. Provide OPCC memoranda at the 90% milestones describing the reasons for changes from the 60% design OPCC. If necessary, Stantec will provide preliminary proposal for reducing OPCC should costs increase substantially beyond what was presented during the preliminary design.

C. Provide OPCC memoranda at the 100% milestones describing the reasons for changes from the 90% design OPCC. If necessary, Stantec will provide preliminary proposal for reducing OPCC should costs increase substantially beyond what was presented during the 90% design.

9.4 Task Specific Deliverables:

A. OPCC estimates at the 60%, 90%, and 100% design milestones, in electronic PDF format.

10.0 Task 10 – Bid Phase Services (BPS)

10.1 Task Specific Objectives:

A. This Task includes work necessary in supporting the City during the construction contract bidding period.

10.2 Task Specific Assumptions:

A. The City will be responsible for all assembly, advertising and copying of bid packages. If requested and approved through additional authorization, Stantec will provide bid support services.

10.3 Subtasks:

Upon authorization from the City, subtasks could include:

A. Answer questions during bidding
B. Prepare for and attend one 2-hour pre-bid conference
C. Attend one 2-hour site tour
D. Prepare up to 3 addenda
E. Evaluate apparent low-bidder qualifications
10.4 **Task Specific Deliverables:**

Upon authorization from the City, deliverables could include:

A. Pre-Bid Meeting Notes

B. Addenda (up to 3)

C. Draft and final bid evaluation memorandum

11.0 **Task 11 – Engineering Services during Construction (ESDC)**

11.1 **Task Specific Objectives:**

A. This Task includes work necessary in supporting the City during the construction of the Project.

11.2 **Task Specific Assumptions:**

A. The City will take the lead on construction services. The City will be the main contact for Contractor RFIs, pay requests, submittals, change orders, and construction observation or inspection.

B. Stantec will be in a supporting role, providing assistance as requested.

C. Stantec will use Virtual Project Manager for construction management.

11.3 **Subtasks:**

Upon authorization from the City, subtasks could include:

A. Attend a pre-construction conference.
B. Provide submittal review and response.
C. Provide RFI review and response.
D. Provide construction inspection services.
E. Record Drawings.

11.4 **Task Specific Deliverables:**

Upon authorization from the City, deliverables could include:

A. Pre-Construction Conference Meeting Notes
B. Responses to submittal reviews
C. Responses to RFI reviews
D. Observation Reports
E. Contractor Change Orders
F. Record Drawings for the constructed facility
12.0 Task 12 – Extra Work as Authorized

12.1 Task Specific Objectives:

A. This Task includes additional work necessary in supporting the City during the design and construction of the Project.

12.2 Task Specific Assumptions:

A. None.

12.3 Subtasks:

A. Subtasks will be defined by the City as the need arises.

12.4 Task Specific Deliverables:

A. Deliverables will be defined by the City as the need arises.

SCHEDULE OF SERVICES

We anticipate the following schedule, based on an assumed Notice to Proceed of October 29, 2018.

<table>
<thead>
<tr>
<th>Task Name</th>
<th>Estimated Duration</th>
<th>Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 – Project Management and Meetings</td>
<td>26 weeks</td>
<td>29Oct18 – 26Apr19</td>
</tr>
<tr>
<td>Task 2 – Hydraulic Analysis</td>
<td>5 weeks</td>
<td>29Oct18 – 30Nov18</td>
</tr>
<tr>
<td>Task 3 – Surge Analysis</td>
<td>5 weeks</td>
<td>29Oct18 – 30Nov18</td>
</tr>
<tr>
<td>Task 4 – Geotechnical Investigations</td>
<td>7 weeks</td>
<td>29Oct18 – 14Dec18</td>
</tr>
<tr>
<td>Task 5 – Permitting</td>
<td>26 weeks</td>
<td>29Oct18 – 26Apr19</td>
</tr>
<tr>
<td>Task 6 – 60% Design</td>
<td>9 weeks</td>
<td>29Oct18 – 28Dec19</td>
</tr>
<tr>
<td>Task 7 – 90% Design</td>
<td>13 weeks</td>
<td>02Jan19 – 29Mar19</td>
</tr>
<tr>
<td>Task 8 – 100% Final Design</td>
<td>4 weeks</td>
<td>01Apr19 – 26Apr19</td>
</tr>
<tr>
<td>Task 9 – Opinion of Probable Construction Cost</td>
<td>26 weeks</td>
<td>29Oct18 – 26Apr19</td>
</tr>
<tr>
<td>Task 10 – Bid Phase Services</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Task 11 – Engineering Services during Construction</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Task 12 – Additional Work as Authorized</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>
COMPENSATION
Compensation for this Scope of Work will be in accordance with the Agreement for Engineering Services on a time and materials basis utilizing the labor rate schedule shown in Table 2. The compensation shall be subjected to a not-to-exceed total fee of $379,124.90. However, services under Task 12 will be developed in the future if requested by the City and will not be performed without authorization. See Table 1 for a breakdown of budgeted engineering fees by task.

Table 1: Budgeted Engineering Fees by Task

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Stantec Hours</th>
<th>Stantec Labor</th>
<th>ODCs</th>
<th>Sub Consultant Fees</th>
<th>Total Engineering Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1 – Project Management and Meetings</td>
<td>194</td>
<td>$30,460.90</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$30,460.90</td>
</tr>
<tr>
<td>Task 2 – Hydraulic Analysis</td>
<td>4</td>
<td>$935.96</td>
<td>$0.00</td>
<td>$28,125.44</td>
<td>$29,061.40</td>
</tr>
<tr>
<td>Task 3 – Surge Analysis</td>
<td>52</td>
<td>$9,104.60</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$9,104.60</td>
</tr>
<tr>
<td>Task 4 – Geotechnical Investigations</td>
<td>4</td>
<td>$935.96</td>
<td>$0.00</td>
<td>$25,457.60</td>
<td>$26,393.56</td>
</tr>
<tr>
<td>Task 5 – Permitting</td>
<td>40</td>
<td>$9,359.60</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$9,359.60</td>
</tr>
<tr>
<td>Task 6 – 60% Design</td>
<td>284</td>
<td>$51,222.64</td>
<td>$0.00</td>
<td>$8,758.40</td>
<td>$59,981.04</td>
</tr>
<tr>
<td>Task 7 – 90% Design</td>
<td>548</td>
<td>$101,339.60</td>
<td>$0.00</td>
<td>$4,704.00</td>
<td>$106,043.60</td>
</tr>
<tr>
<td>Task 8 – 100% Design</td>
<td>188</td>
<td>$34,992.12</td>
<td>$0.00</td>
<td>$2,027.20</td>
<td>$37,019.32</td>
</tr>
<tr>
<td>Task 9 – Opinion of Probable Construction Costs</td>
<td>4</td>
<td>$935.93</td>
<td>$0.00</td>
<td>$11,200.00</td>
<td>$12,135.96</td>
</tr>
<tr>
<td>Task 10 – Bid Phase Services</td>
<td>52</td>
<td>$10,295.60</td>
<td>$0.00</td>
<td>$492.80</td>
<td>$10,788.40</td>
</tr>
<tr>
<td>Task 11 – Engineering Services during Construction</td>
<td>148</td>
<td>$28,844.84</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$28,844.84</td>
</tr>
<tr>
<td>Task 12 – Additional Work as Authorized</td>
<td>110</td>
<td>$19,931.68</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$19,931.68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,628</strong></td>
<td><strong>$298,359.46</strong></td>
<td><strong>$0.00</strong></td>
<td><strong>$80,765.44</strong></td>
<td><strong>$379,124.90</strong></td>
</tr>
</tbody>
</table>

See Table 2 for Hourly Rates and Charges
**Table 2: Professional Services Hourly Fee Schedule**

<table>
<thead>
<tr>
<th>Labor Classification</th>
<th>Project Billing Hourly Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Controls/Accounting/Admin</td>
<td>$ 95.72</td>
</tr>
<tr>
<td>Designer</td>
<td>$ 132.96</td>
</tr>
<tr>
<td>Associate Engineer</td>
<td>$ 148.90</td>
</tr>
<tr>
<td>Professional Engineer</td>
<td>$ 170.18</td>
</tr>
<tr>
<td>Project Technical Lead</td>
<td>$ 233.89</td>
</tr>
<tr>
<td>Project Manager</td>
<td>$ 233.89</td>
</tr>
<tr>
<td>Technical Advisor</td>
<td>$ 265.89</td>
</tr>
</tbody>
</table>

The above hourly rates are effective through December 31, 2019. Rates will be adjusted annually based on indices recognized by the City. See Table 3 for Other Direct Project Costs.

**Table 3: Other Direct Project Costs Schedule**

<table>
<thead>
<tr>
<th>ODC</th>
<th>Project Billing Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subconsultants</td>
<td>At Cost plus 12%</td>
</tr>
<tr>
<td>Travel (Lodging, rental cars only)</td>
<td>At Cost plus 12%</td>
</tr>
<tr>
<td>Computer Aided Design (CAD)</td>
<td>Included in the Project Hourly Billing Rates</td>
</tr>
<tr>
<td>Vehicle Mileage</td>
<td>Included in the Project Hourly Billing Rates</td>
</tr>
<tr>
<td>Employee Expenses (meals, associated project costs, etc.)</td>
<td>Included in the Project Hourly Billing Rates</td>
</tr>
<tr>
<td>Health, Safety, and Equipment</td>
<td>Included in the Project Hourly Billing Rates</td>
</tr>
</tbody>
</table>
## Attachment A - Project Staffing Plan

**WORK BREAKDOWN STRUCTURE**

<table>
<thead>
<tr>
<th>WBS Levels</th>
<th>Task Name/Act.ID</th>
<th>Task Subtask</th>
<th>Subtotal Labor Hours for Task</th>
<th>Subtotal Labor Dollars for Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Project Management and Meetings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200</td>
<td>Invoicing and Scope Management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>Routine Communications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Hydraulic Analysis</td>
<td>A2100 Hydraulic Analysis</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>3000</td>
<td>Surge Analysis</td>
<td>A3100 Surge Analysis</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>4000</td>
<td>Geotechnical Investigations</td>
<td>A4100 Geotechnical Investigations</td>
<td>4.0</td>
<td>4.0</td>
</tr>
<tr>
<td>5000</td>
<td>Permitting</td>
<td>A5100 Permitting</td>
<td>48.0</td>
<td>48.0</td>
</tr>
<tr>
<td>6000</td>
<td>60% Design</td>
<td>A6100 Drawings &amp; Specifications</td>
<td>284.3</td>
<td>284.3</td>
</tr>
<tr>
<td>7000</td>
<td>90% Design</td>
<td>A7100 Drawings &amp; Specifications</td>
<td>648.0</td>
<td>648.0</td>
</tr>
</tbody>
</table>

**Task Name / Act. ID**

- A1100: Project Implementation Plan
- A1200: Invoicing and Scope Management
- A1300: Routine Communications
- A2100: Hydraulic Analysis
- A3100: Surge Analysis
- A4100: Geotechnical Investigations
- A5100: Permitting
- A6100: Drawings & Specifications
- A7100: Drawings & Specifications

**Project Manager**
- Dick Talley

**Project Technical Lead**
- Aaron Eder

**Stated Labor Hours**

**Title:**

**Name:**

- Harris, Young, Wilcox
  - Rate: $265.89
  - Total: $14,507.38
- Talley Eder, Pascua, Palmer
  - Rate: $233.99
  - Total: $5,615.76
- Deerkop
  - Rate: $191.44
  - Total: $248.00
- Stantec
  - Georgalas, Perkins, Navarro, Reagan
    - Rate: $148.90
    - Total: $3,445.92
  - Xia, Quinte
    - Rate: $95.72
    - Total: $248.00

**Municipal**

- Rankin - Admin
  - Total: $8,168.64
- Empey - Accounting
  - Total: $3,445.92

**Architect**

- NNA Landscape Architecture
  - Total: $26,393.56

**Engineer**

- Dick Talley
  - Total: $95,720.00
  - Total: $30,460.90
  - Total: $9,104.60
  - Total: $9,359.60

**WBS Levels**

- Task Name / Act. ID
- Subtask

**Rate:**

- $265.89
- $233.99
- $191.44
- $148.90
- $95.72

**Total Labor Hours:**

- $14,507.38
- $5,615.76
- $248.00
- $3,445.92
- $248.00
- $3,445.92
- $248.00
- $248.00
- $248.00
- $248.00
- $248.00
- $248.00
- $248.00
- $30,460.90
- $9,104.60
- $9,359.60
- $59,981.04
WORK BREAKDOWN STRUCTURE

<table>
<thead>
<tr>
<th>WBS Levels</th>
<th>Name: Harris, Young, Wilcox</th>
<th>Talley</th>
<th>Eder, Pasco, Palmer</th>
<th>Davis</th>
<th>Geoghegan, Polk, Navarro, Rongan</th>
<th>Xie, Quints</th>
<th>Udel</th>
<th>Shibley - Controls</th>
<th>Empey - Accounting</th>
<th>Rankin - Admin</th>
<th>Murray, Smith</th>
<th>Rhino One</th>
<th>MWH Landscape Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate</td>
<td>$ 355.89</td>
<td>$ 233.59</td>
<td>$ 233.59</td>
<td>$ 191.44</td>
<td>$ 170.18</td>
<td>$ 170.18</td>
<td>$ 148.00</td>
<td>$ 170.10</td>
<td>$ 57.52</td>
<td>$ 57.52</td>
<td>$ 57.52</td>
<td>$ 156,243.60</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 12,762.72</td>
<td>$ 20,991.12</td>
<td>$ 8,911.64</td>
<td>$ 27,220.99</td>
<td>$ 11,912.00</td>
<td>$ 20,421.60</td>
<td>$ 1,001.00</td>
<td>$ 101,339.88</td>
<td>$ 794.68</td>
<td>$ 196,243.60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% Final Design / Bid Documents</td>
<td>A8100</td>
<td>Drawings</td>
<td>$ 19.0</td>
<td>$ 48.0</td>
<td>$ 150.0</td>
<td>$ 48.0</td>
<td>$ 150.0</td>
<td>$ 24.0</td>
<td>$ 24.0</td>
<td>$ 24.0</td>
<td>$ 24.0</td>
<td>$ 108.0</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 4,786.02</td>
<td>$ 10,765.34</td>
<td>$ 3,663.84</td>
<td>$ 6,207.29</td>
<td>$ 3,573.28</td>
<td>$ 4,604.32</td>
<td>$ 1,014.00</td>
<td>$ 34,992.12</td>
<td>$ 2,227.20</td>
<td>$ 37,019.22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opinion of Probable Construction Costs</td>
<td>A9100</td>
<td>Opinion of Probable Construction Costs</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 4.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 12,128.00</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 935.98</td>
<td>$ 11,200.00</td>
<td>$ 12,128.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bid Phase Services</td>
<td>A10100</td>
<td>Bid Phase Services</td>
<td>$ 24.0</td>
<td>$ 4.0</td>
<td>$ 12.0</td>
<td>$ 4.0</td>
<td>$ 12.0</td>
<td>$ 4.0</td>
<td>$ 12.0</td>
<td>$ 12.0</td>
<td>$ 12.0</td>
<td>$ 52.0</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 935.98</td>
<td>$ 12,205.88</td>
<td>$ 15,788.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Services during Construction</td>
<td>A11100</td>
<td>Engineering Services during Construction</td>
<td>$ 0.0</td>
<td>$ 55.0</td>
<td>$ 0.0</td>
<td>$ 24.0</td>
<td>$ 150.0</td>
<td>$ 148.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 0.0</td>
<td>$ 148.0</td>
<td>$ 19,931.68</td>
<td>$ 19,931.68</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra Work as Authorized</td>
<td>A12100</td>
<td>Extra Work as Authorized</td>
<td>$ 4.0</td>
<td>$ 4.0</td>
<td>$ 24.0</td>
<td>$ 5.0</td>
<td>$ 15.0</td>
<td>$ 15.0</td>
<td>$ 15.0</td>
<td>$ 116.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>$ 1,583.56</td>
<td>$ 935.06</td>
<td>$ 5,813.76</td>
<td>$ 1,531.02</td>
<td>$ 3,732.88</td>
<td>$ 4,754.89</td>
<td>$ 2,723.84</td>
<td>$ 2,382.64</td>
<td>$ 2,884.54</td>
<td>$ 28,644.54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Labor Hours for Project</td>
<td>94.0</td>
<td>$ 70.0</td>
<td>$ 390.0</td>
<td>$ 94.0</td>
<td>$ 390.0</td>
<td>$ 220.0</td>
<td>$ 264.0</td>
<td>$ 38.0</td>
<td>$ 90.0</td>
<td>$ 1,030.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Labor Dollars for Project</td>
<td>$ 24,883.68</td>
<td>$ 15,575.39</td>
<td>$ 83,768.42</td>
<td>$ 15,179.34</td>
<td>$ 81,764.00</td>
<td>$ 22,758.82</td>
<td>$ 3,445.02</td>
<td>$ 3,445.02</td>
<td>$ 8,997.68</td>
<td>$ 379,124.90</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>