

RESOLUTION NO. 20-1393

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF BLACK DIAMOND, KING COUNTY, WASHINGTON APPROVING AMENDMENT #4 OF THE BLACK DIAMOND SPRINGS REHABILITATION PROJECT FOR SERVICES DURING CONSTRUCTION AND TELEMTRY CONTROL FOR THE NORTH BANK PUMP STATION.

WHEREAS, RH2 Engineering, Inc. has completed the design of the North Bank Pump Station reconstruction project and the project will soon be entering the construction phase; and

WHEREAS, Services during the construction phase and the incorporation of telemetry control to the City's SCADA system was not included in the original design scope of work; and

WHEREAS, The City has now requested RH2 Engineering, Inc. assist the City of Black Diamond with services during construction and telemetry and control software development; and

WHEREAS, the additional work will be privately funded through the Water Supply Facilities Funding agreement.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF BLACK DIAMOND, WASHINGTON, DOES RESOLVE AS FOLLOWS:

Section 1. To authorize The Mayor to execute the attached \$145,000 amendment #4 to the Black Diamond Springs Rehabilitation contract with RH2 for services during construction and telemetry control for the North Bank Pump Station.

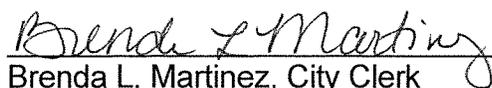
PASSED BY THE CITY COUNCIL OF THE CITY OF BLACK DIAMOND, WASHINGTON, AT A REGULAR MEETING THEREOF, THIS 19TH DAY OF NOVEMBER, 2020.

CITY OF BLACK DIAMOND:



Carol Benson, Mayor

Attest:



Brenda L. Martinez, City Clerk

City of Black Diamond
Contract Amendment No. 4
Black Diamond Springs Rehabilitation
RH2 Project No. BD 518.179

In accordance with our Professional Services Agreement for the **Black Diamond Springs Rehabilitation** dated November 2018, this is an authorization to revise the project Scope of Work as described below. The work will be performed and invoiced using the terms and conditions listed in the original agreement, plus previous amendments.

Incorporate the following items into the Scope of Work:

Reference attached **Exhibit A**.

The engineering fee authorization will increase by \$145,000 for a total authorization amount of **\$1,262,700**.

Please sign this authorization in the space provided below and return to RH2 Engineering, Inc., by mail at the address below, or by email to Contracts@RH2.com.

RH2 Engineering, Inc.

City of Black Diamond



Signature



Signature

Geoffrey G. Dillard, Director

Print Name/Title

Carol Benson, Mayor

Print Name/Title

11-04-2020

Date

11/20/2020

Date

RH2 Engineering, Inc. 22722 29th Dr. SE, Suite 210, Bothell, WA 98021

City of Black Diamond, 24301 Roberts Drive, Black Diamond, WA 98010

EXHIBIT A
Scope of Work
Amendment No. 4
City of Black Diamond
Black Diamond Springs Rehabilitation
North Bank Booster Pump Station
Services During Construction and Telemetry and Control Development
November 2020

Background

Task 1 of the Black Diamond Springs Rehabilitation project included the design of the booster pump station (BPS) and on-site improvements. The City has now requested that RH2 Engineering, Inc., (RH2) assist the City of Black Diamond (City) with services during construction and telemetry and control software development required for the North Bank Booster Pump Station (NBBPS).

This Scope of Work identifies the services and tasks the City has requested RH2 to provide during the construction phase of this project. It is intended that the City will be the main point of contact for the contractor regarding design technical issues. The City will provide day-to-day, on-site inspection, take the lead on submittal reviews and requests for information (RFI) responses, and give final approval for all costs and major decisions that deviate from the plans and specifications.

The major elements of this Scope of Work are summarized in the following tasks.

Task 1 – Services During Construction

Objective: Assist the City with the following activities.

- Pre-construction conference attendance.
- Submittal reviews.
- Requests for information (RFIs) assistance.
- Periodic on-site observation during major construction activities.
- Assistance during startup and testing.
- Provide record drawings.
- Provide arc flash study, protective device coordination, and short circuit analysis.

Approach:

1.1 **Review Submittals** – When requested by the City, perform submittal reviews. *The City will take the lead for submittal reviews. In event that additional submittal review assistance is needed, the City will provide specific authorization to RH2.* RH2 anticipates that it will review the following submittals only:

- Pipe and fittings;

- Building and envelope;
 - Major and minor mechanical components;
 - Automatic controls;
 - Concrete design and reinforcing details; and
 - Electrical components.
- 1.2 **Respond to Requests for Information** – Provide up to forty (40) hours of assistance in providing design clarification(s) on an on-call basis. *It is assumed the City will take the lead in responding to RFIs and providing design clarifications. If additional assistance is needed, the City will provide specific authorization to RH2.*
- 1.3 **Provide On-Site Observations** – Provide six (6) on-site observation visits during this project (not including the startup and testing visit included in Subtask 1.4 or the control and instrumentation observations included in Task 2). Provide construction observation reports to the City.
- 1.4 **Attend Startup and Testing Services** – Attend startup and testing and assist with the troubleshooting process. The City will coordinate with RH2 and the manufacturer’s representative for testing and startup activities. The City will review the testing protocols developed by the contractor and manufacturer’s representative. *RH2 assumes two (2) days of on-site support during startup and testing.*
- 1.5 **Attend Pre-Construction Conference** – Produce additional construction plans and specifications for the contractor and attend the pre-construction conference. The City will prepare the pre-construction meeting agenda and pre-construction meeting minutes.
- 1.6 **Prepare Record Drawings** – Revise contract drawings to prepare as-constructed records. *The City will coordinate with the contractor in obtaining field records and will review the field records.*
- 1.7 **Provide Arc Flash Study, Protective Device Coordination, and Short Circuit Analysis** – Evaluate the arc flash hazard at the facility and provide arc flash hazard labels in accordance with the National Electric Code (NEC) and Washington Administrative Code (WAC). The analysis will include a short circuit study and protective device settings. Labels will be provided and installed at the facility upon project completion.

Assumptions:

- *The City will manage the budget, change orders, monthly pay requests, etc.*
- *All submittals and submittal-related communications will be directed through the City.*
- *Submittals will be submitted electronically.*
- *RH2 will not manage (log, inventory, track, etc.) RFIs.*
- *RH2 will not have direct contact with the contractor unless authorized by the City.*

- *The City will be responsible for receiving submittals from the contractor and distributing submittals to the appropriate parties for review.*
- *The City will provide additional budget authorization to RH2 for submittal reviews not listed in this Scope of Work.*
- *RH2 will review each submittal no more than two (2) times.*
- *RH2 will not provide a representative at weekly construction progress meetings.*
- *RH2 will perform a final walkthrough.*
- *RH2 will prepare the Washington State Department of Health’s Construction Completion Report.*
- *RH2 is not responsible for site safety and will not provide direction to the contractor during the on-site observation visits.*
- *The City will procure the services of a special inspection/testing company for concrete and soil tests.*
- *RH2 will not be responsible for coordinating with the contractor and manufacturer’s representative for testing and startup activities.*

RH2 Deliverables:

- Two (2) hard copies of specifications, one (1) full size hard copy, and three (3) half size hard copies of construction plans for contractor use.
- Electronic responses to reviewed submittals, as requested by the City.
- Electronic responses to RFIs, as requested by the City.
- Construction observation reports for RH2 on-site visits.
- One (1) full size hard copy and one (1) electronic copy (PDF) of record drawings.
- Arc Flash Analysis Report in PDF form.
- Arc Flash Labels for the NBBPS facility.

Task 2 – Telemetry and Control Software Development

Objective: Assist the City with the following activities.

- Coordinate with the City’s master telemetry and human machine interface (HMI) control system integrator for modifying and incorporating the NBBPS telemetry system into the City’s existing control system.
- Provide software development of the NBBPS programmable logic controller (PLC).
- Provide software development of the NBBPS operator interface (OI).
- Attend factory and field testing of the NBBPS telemetry panel.

- Provide the City with training and operations and maintenance (O&M) documentation for the NBBPS telemetry software.

Approach:

- 2.1 **Prepare Water System Control Process Memorandum** – This subtask consists of two (2) workshops with City staff to identify the process of operating the water system when the Tacoma Water interties are added to the system. This is a necessary conversation due to the methodology used by Tacoma Water for its water system partners and wholesale water purchasers. The Tacoma Water system requires weekly fixed flows to be set every Friday that need to run continuously until the next week. This method of water system control is not currently implemented at the City and will require local water sources to act as a supply moderator for water purchased from Tacoma Water. Based on feedback received during the workshops, create a water system control process memorandum for review and approval by City staff.
- 2.2 **Develop PLC Software** – Perform PLC software development for the NBBPS telemetry panel. The PLC will be an Allen-Bradley Series CompactLogix controller. Additional development will be required at the City's Master controller to implement any communications changes required for integration of the facility into the supervisory control and data acquisition (SCADA) system. Provide control process description and data points to be used on the new system to City staff for review.
- 2.3 **Develop HMI/OI Software** – Perform HMI and OI software development for the NBBPS telemetry panel. Provide HMI and OI screen layouts to the City in the early phases of software development for review and comment by the City. The OI will be an Allen-Bradley PanelView Plus.
- 2.4 **Attend Control System Factory Testing** – Attend control system factory testing of the telemetry control panel hardware and software at the integrator's panel shop. *The motor control modifications have already been factory tested.* The City will be invited to attend a demonstration of the control system software in the panel shop. Revise the PLC and OI software based on comments provided by the City at the factory testing demonstration.
- 2.5 **Attend Control System Field Testing and Startup** – Attend control system field testing and startup/commissioning services for the PLC, OI, and HMI software.
- 2.6 **Provide Training and O&M Documents** – Provide software training and O&M material for the PLC, OI, and HMI software. PLC, OI, and HMI code and any documentation used for software development will be provided to the City on a USB drive as part of the O&M material. *This Scope of Work excludes staff training.*

Assumptions:

- *RH2 will be responsible for software modifications at the City's master telemetry panel and HMI computer system for integrating the NBBPS into the City's existing SCADA system.*

- *Control description and facility data point definitions will be provided by RH2 to the City for review as part of software development process in Subtask 2.2.*

Provided by the City:

- Access to City staff and facilities as identified in the subtasks above.

RH2 Deliverables:

- One (1) hard copy and one (1) electronic copy of water system control process memorandum.
- HMI and OI graphical user interface designs for approval by City staff.
- One (1) electronic copy (PDF) of O&M material.
- PLC, OI, HMI, and O&M files on USB flash drive.

EXHIBIT B - INTERNAL ONLY

Fee Estimate

Amendment No. 4

City of Black Diamond

Black Diamond Springs Rehabilitation

North bank Booster Pump Station

Services During Construction and Telemetry and Control Development

Nov-20

Task #	Description Classification	Staff Engineer (Structural) Professional I		Staff Engineer (Electrical) Professional III		Project Engineer (Electrical) Professional V		Project Engineer (Structural) Professional V		Project Manager Professional V		Control Specialist Professional VI		Geo Tech Professional VII		Controls Programmer Professional VII		Principal Professional VIII		Administrative Support Administrative III		Total Hours	Total Labor	Total Expense	Total Cost	
		Staff Engineer (Structural) Professional I	Staff Engineer (Electrical) Professional III	Project Engineer (Electrical) Professional V	Project Engineer (Structural) Professional V	Project Manager Professional V	Control Specialist Professional VI	Geo Tech Professional VII	Controls Programmer Professional VII	Principal Professional VIII	Administrative Support Administrative III															
GROUP & HIDE THIS ROW FOR PRINTING																										
Gavin Daniel Casper Cooper Kevin Schalk Mark Braakma Jon Conner Harley Sandoval Tim Eatherton Stew Nelson Jim Swanson Geoff Dilard Virginia Larsen																										
Task 1	Services During Construction																									
1.1	Review Submittals	84	148	92	20	96	20	8	8	20	20	8	4	4	27	517	4,413	92,946	4,413	92,946	517	92,946	4,413	92,946	92,946	
1.2	Respond to Requests for Information	20	18	32	8	20	8	4	4	20	20	8	4	4	27	114	633	20,610	633	20,610	114	20,610	633	20,610	21,243	
1.3	Attend On-Site Openings	8	8	8	4	8	4	8	8	8	8	8	8	8	8	8	8	16,256	464	16,256	8	16,256	464	16,256	16,720	
1.4	Attend Site Construction Services	16	16	16	8	16	8	16	16	16	16	16	16	16	16	16	16	11,140	670	11,140	16	11,140	670	11,140	14,810	
1.5	Attend Pre-Construction Conference	40	24	16	4	4	4	4	4	4	4	4	4	4	4	4	4	11,856	674	11,856	4	11,856	674	11,856	12,530	
1.6	Prepare Record Drawings		18		2	8	2			8	8					8		1,752	578	1,752	8	1,752	578	1,752	2,330	
1.7	Provide Arc Flash Study		64		24										1	91		16,182	908	16,182	2	16,182	908	16,182	17,090	
Task 2	Telemetry and Control Software Development																									
2.1	Prepare Water System Control Process Memorandum		12									144					49		4		8		46,174	1,467	46,174	47,641
2.2	Develop PLC Software										36						49		4		8		13,022	399	13,022	13,421
2.3	Develop HMI/OI Software										36						49		4		8		7,652	191	7,652	7,843
2.4	Attend Control System Factory Testing		12									36					49		4		8		7,652	191	7,652	7,843
2.5	Attend Control System Field Testing and Startup											36					49		4		8		7,652	191	7,652	7,843
2.6	Provide Training and O&M Documents											36					49		4		8		7,652	191	7,652	7,843
PROJECT TOTAL		84	160	92	20	96	20	144	144	96	20	49	31	36	738	5,880	139,120	5,880	139,120	738	5,880	139,120	5,880	139,120	145,000	