

AMENDMENT NO. 1
TO
CONTRACT FOR PROFESSIONAL ENGINEERING SERVICES
W.O. 18-22
LEAVENS RESERVOIR EXPANSION AND ZONE 1 IMPROVEMENTS

THIS AGREEMENT, made and entered into on _____, 2018, by and between the following:

CITY OF BILLINGS, a Municipal Corporation,
Billings, Montana 59103,
Hereinafter designated the City

and

HDR Engineering, Inc.
970 South 29th Street West
Billings, Montana 59102
Hereinafter designated the Contractor

WITNESSETH:

WHEREAS, the City and Contractor have entered into a contract dated July 31, 2018, for Contractor to provide engineering services to the City for Work Order 18-22 Leavens Reservoir Expansion and Zone 1 Improvements, and;

WHEREAS, the City has need for additional engineering services, and;

WHEREAS, the City has authority to contract for consulting engineering services, and;

WHEREAS, the Contractor represents that he is qualified to perform such services, is in compliance with Montana Statutes relating to the registration of professional engineers and is willing to furnish such services to the City;

NOW, THEREFORE, in consideration of the terms, conditions, covenants and performance contained herein, or attached and incorporated herein, the Parties hereto agree as follows:

Part I, Section 4. is amended as follows:

Increase the amount of compensation by Five Hundred Ninety-Nine Thousand Seven Hundred and no/100 DOLLARS (\$599,700.00) to Seven Hundred Sixty-Nine Thousand Six Hundred and no/100 DOLLARS (\$769,600.00).

Appendix A, Section 3. Add the following to the Scope of Work under Final Design and Construction Documents

- Provide Final Design services for the following major elements of work:
 - Three million gallon round concrete pre-stressed and post-tension reservoir to be located on the Leavens site.
 - Interior reservoir baffle wall with concrete columns and membrane curtain walls or CMU walls between the columns. A non-mechanical diffuser/mixing system may be installed in the reservoir in lieu of a baffle system.
 - Valve vault with the following major components:
 - Lighting;
 - Ventilation and gas unit heaters to heat vault to 50 degrees Fahrenheit;
 - A means to remove all large valves via a hoist mounted on a truck;
 - Sump and sump pump with discharge to the sump pump discharge from the pump station;
 - Grating immediately above piping, operator nuts on valves with extension stems to allow manual operation of valves from the grating platform via a t-bar, and an opening in the grating for an operator nut on extension stems;
 - Ladder access to grating platform and to floor;
 - Hatch above the ladder;
 - Stormwater detention pond design.
 - Connection of detention pond to storm water system.
 - Post-Construction Water Quality BMP Design
 - Site Erosion Control Design
 - Stormwater management specifications
 - Stormwater Management Memorandum
 - Assist the Contractor with mitigation plan for SWPPP and BMPs at Leavens Site and at excess material dump site.
 - Survey of site where excess excavated material will be deposited and provide contours for finished grade for post construction BMPs.
 - Inlet and outlet piping from the existing reservoir to the valve vault.
 - Overflow from the new and existing reservoir to the detention pond.
 - New inlet and outlet piping for the new reservoir.
 - Perimeter drain for the new reservoir.
 - Drains for the existing and new reservoir that will be connected to the existing storm water pipe and a manhole installed at the connection point.
 - Drain valve for the existing reservoir.
 - Means to drain all new piping.
 - Pipe from the valve vault to the Zone 1 piping in Normal Ave.

- Demolition of the existing reservoir inlet and outlet piping from the reservoir to the connection point into Zone 1 piping on the south side of Rimrock Road. Valves on either side of the existing connection will be removed.
- Demolition of the existing chlorine building and below-grade foundation and filling of the remainder of the existing vault.
- Grout repair of the existing reservoir baffle wall.
- Repair cracks on the interior and exterior of the existing reservoir as recommended in the Liner Evaluation Report.
- Final site grading.
- Second access road and gate from Rimrock Road to the existing access around the pump station.
- Traffic plan for lane closures on Rimrock Road and Yucca Street.
- Connection from the Zone 1 discharge header in the High Service Pump Station (HSPS) to the Zone 1 waterline in Belknap Ave.
- Pressure reducing station to the new Zone 1 connection in the HSPS from the Zone 2 buried waterline south of the HSPS.
- Plug the existing 24-inch Zone 1 waterline south of the Filter Building
- Remove the abandoned 24-inch Zone 1 waterline except for the pipe south of Filter Building.
- Connect the new 8-inch Zone 1 waterline into the new Zone 1 connection in Belknap Ave. Route the new waterline east on Belknap Ave to connect into the existing 6-inch waterline. Also, route the 8-inch waterline in the location where the abandoned 24-inch line is to be removed and continue to connect into the existing piping east of the Operations Building. Connect the 6-inch waterline from Filter Building tunnel to new 8-inch waterline.
- Remove the butterfly valve and bypass on the Zone 1 waterline southwest of Clearwell No. 2 in Belknap Ave.
- Provide a tap of the Zone 2 waterline in Garden Ave to connect to the Zone 1 hydrant.
- Provide temporary water to customers that would not have water because of improvements.
- Provide sequencing plan to minimize risk of improvements.
- Electrical improvements at each site of the new facilities.
- SCADA design and programming per the following:
 - HDR will provide Applications Engineering Services (Control System Programming), and associated documentation and testing including assistance during commissioning and start up for the Leavens Site, sleeve valve in High Service Pump Station at the WTP and Mountainview Site. The control system to be programmed is built around Allen Bradley brand of PLC's, Exor UniOP OIT's, and FactoryTalk HMI. All programming will adhere to existing or agreed to standards and will meet intent of the approved design.

- HDR shall edit the existing PLC program at both the locations based on the final approved PCD. It is understood that any minor modifications to the PCD shall be mutually agreed to during the workshop. The draft PLC program will be provided to the Client for review and comment. HDR shall then develop the final PLC program after incorporating comments into the draft PLC program, and load the program into the existing PLC's. HDR shall also develop new OIT screens at both sites using current existing objects and load the new screens into the existing OIT's. Additionally HDR shall develop new FactorTalk HMI screens to monitor and/or control the new additions at the Leavens and WTP sites. OIT and HMI screens shall be provided in draft form for Client review prior to final development and implementation. HDR shall participate in the on site testing and commissioning of the edited PLC programs and OIT and HMI screens.

- The above scope is based on the following assumptions:

- ✓ Leavens PLC is a new ControlLogix, WTP PLC is existing and only new IO points as listed below are included in this scope.

Leavens Site

- New ultrasonic in new reservoir (tank)
- Sump pump alarm in valve vault
- Sump pump running
- Sump pump fault
- Pressure from Mountain View via new radios
- Temperature from Mountain View via new radios

WTP New sleeve valve in High Service Pump Station

- Valve position feed back
- Open/lose of valve
- L/R position of Valve
- Valve failure
- Pressure indication upstream of valve
- Pressure indication downstream of valve
- Flow measurement downstream of valve
- ✓ Two HMI and two OIT screens (one for each facility)
- ✓ One trend for all values related to new sleeve valve
- ✓ PLC programming is limited to new additions at the two sites and no changes to existing program is needed
- ✓ One Workshop to review screens and PLC programs
- ✓ 2 weeks on site for testing and commissioning
- ✓ All hardware and software is existing and no new licenses are needed
- ✓ All communications are existing, working and appropriate for new additions to the system with the exception of the new radios and

antenna for serving the Mountainview Site which will need to communicate with the new Leavens PLC.

Appendix A, Section 3. Add the following to the Scope of Work under Detailed Scope of Services.

TASK SERIES 100 – PROJECT INITIATION, COORDINATION AND MANAGEMENT

104 – Montana Department of Environmental Quality Coordination

Apply to MDEQ for necessary deviations including buried reservoir and overflow discharge. Meet with DEQ to review final drawings and specifications and submit all required documents to MDEQ for approval. City will pay for Construction Permit.

105 – Design and Construction Project Management

Project Manager, Programming Managers and Accountant will continue to monitor project status, maintain project schedule and prepare financial documents throughout construction.

TASK SERIES 300 – FINAL DESIGN

Recommended elements identified in the preliminary design and above will be translated into engineered project elements. The basis of the design will be finalized and drawings and specifications will be prepared. Specific tasks include the following:

301 - Prepare 60% Drawings

Utilizing concepts developed in the preliminary design, the drawings of the selected project elements will be prepared. Electrical and instrumentation drawings will also be prepared.

302 - Prepare 95% Drawings

Utilizing comments on drawings from the 60% review with the City, provide detailed drawings of all project elements.

303 - Prepare Preliminary Detailed Specifications

Front-end specifications and technical specifications will be prepared. Reservoir specifications will be written to allow AWWA D110 or D115 construction methods for the new reservoir.

304 – Cost Estimate Update

Update cost estimate completed in the Preliminary Design.

305 - Perform In-House Review

Senior technical personnel not directly involved with the project will review the drawings and specifications and the cost estimate for completeness, accuracy, and constructability.

306 – Review 95% Documents with the City

Provide the 95% drawings and specifications to the City and meet with the City to review design and receive comments.

307 - Prepare Final Drawings

Incorporate review comments including any design modifications and prepare final drawings for advertising.

308 - Prepare Final Detailed Specifications

Incorporate review comments and prepare final specifications for advertising.

309 – Prepare Building Permit

Fill out the City's standard building permit and provide all support documentation to obtain permit. The City will pay for permit.

310 – Stormwater Design and Construction Assistance

Provide design drawings and specifications for site detention and post-construction water quality BMP facilities. Provide stormwater management memorandum that meets the City criteria.

TASK SERIES 400 – BIDDING SERVICES

401 – Bidding Administrative Assistance

Prepare bid documents and distribute to prospective bidders. Answer bidder questions and prepare addendum as needed. Schedule and conduct pre-bid meeting.

402 – Post-Bid Administrative Assistance

Receive, evaluate and tabulate bids. Assess completeness of low bid. Make recommendations to the City on award of contract.

TASK SERIES 500 – CONSTRUCTION SERVICES

Construction Phase scoping is based on a 56 week active construction period after which time only minor punch list items would need to be completed.

501 – Construction Initiation Services & Conformed Drawings

After award of the construction contract, the Consultant shall prepare Contracts, Conformed Documents and conduct a preconstruction conference including preparation of meeting minutes. The consultant will provide the contractor with 6 sets of "for construction" plans and specifications plus an electronic .pdf version.

502 – Office Assistance and Administration

During the construction phase of the project, the Consultant will provide office assistance to the City on the administration of the project. This effort will include review and preparation of change orders, shop drawing review, interpretation of drawings and specifications, monitoring of compliance with procedural requirements on the project, coordinating with the contractor, preparation of pay estimates, confirmation of certified payrolls, conducting weekly construction meetings, and preparing and distributing meeting minutes.

503 – Field Services

The Consultant will provide on-site construction observation services. A resident project representative will be provided based on the following schedule:

- New reservoir and valve vault construction: 7 months at 6 hours per day, 5 days per week including travel time and daily paperwork.
- Existing interior reservoir repairs – 3 months at 4 hours per day, 3 days per week
- Zone 1 improvements and site work at Leavens – 3 months at 40 hours per week. Zone 1 improvements include near full-time inspection for the waterline and other miscellaneous work at and near the Water Treatment Plant. This is anticipated to be early spring 2020. Also at this time it is anticipated that the Contractor would be finishing up grading, irrigation system, access road and fencing at the Leavens site requiring occasional observation.
- Mob/Demob and contractor coordination – 40 hours

The resident project representative will monitor the project for compliance with project plans and specifications. Consultant will provide field staking of new structures and as-built surveying of uncovered utilities in locations not indicated on the drawings. Consultant will provide periodic trips to the site beyond construction meetings. Allowance is included for geotechnical consultation. No testing services are included as these will be provided by the contractor.

504 – Construction Wrap-Up and Acceptance

Upon completion of the construction of the improvements, the Consultant will schedule and conduct a final project walk-through and assist the City in the final wrap-up of the project, including preparing record drawings, preparation of a punch list, start-up of facilities, operations and maintenance information review, and recommending final acceptance.

505 – Post-Construction Warranty Services

Upon final acceptance, the Consultant will provide warranty item consultation, will assist in the eleven-month warranty inspection, and provide warranty follow-up.

All other terms and conditions of the contract to which this amendment applies shall remain in full effect.

TASK SERIES 600 – APPLICATION SOFTWARE PROGRAMMING

601 – Programming

Provide programming for new and existing PLCs for new data points including new data points from Mountain View Site. Modify and provide new screens for OITs.

602 – Workshops and Meetings

Conduct workshops and meetings to review programming requirements and to review programming.

603 – Testing and Commissioning

Provide on-site services for commissioning new programming and screens.

CONSULTANT

NAME: _____

BY: _____

TITLE: _____

DATE: _____

CITY OF BILLINGS, MONTANA

BY: _____

Mayor

DATE: _____