# AMENDMENT NO. 1

# TO

# CONTRACT FOR PROFESSIONAL ENGINEERING SERVICES

# W.O. 19-21

# WRF INFLUENT LIFT STATION

THIS AGREEMENT, made and entered into on _____, 2019, 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 April 30, 2019, for Contractor to provide engineering services to the City for Work Order 19-21 WRF Influent Lift Station, 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 3, Paragraph C. Delete paragraph and replace with the following:

C. The Contract shall terminate at midnight on December 31, 2021.

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:
  - New Lift Station south of the Siphon Headbox.
    - Design initially for total incoming flow of 40 mgd and so that the Lift Station can be expanded to 80 mgd or more in the future.
    - Design Lift Station to allow gravity flow to the WRF Headworks when the Lift Station is not operating. Since gravity flow will be an option the Lift Station does not need to be designed for full redundancy and as a critical process unit.
    - Design Lift Station to be continuously or intermittently operated. For intermittent operation, starting and stopping of the Lift Station will include the option to be done manually or automatically.
    - Lift Station to accommodate future interceptors coming in at lower elevations than the existing interceptors. Coordinate with interceptor project and Wastewater Master Plan.
    - Lift Station pumps to be screw pump type.
    - Provide new gates on south wall of Siphon Headbox to divert flow in pipes to the new Lift Station Wetwell.
    - Pump wastewater from the wetwell and route flow back to the siphons on the north side of the Siphon Headbox so that wastewater will continue by gravity to the Headworks when the gates on the north side of the Siphon Headbox are closed.
    - Design superstructure over the pump motors and electrical gear and bid as an alternate. Include provisions to remove motors by monorail. Wall construction to be brick and block or precast panels.
    - Provide NPW or potable water to the Lift Station facility.
    - Provide heat and ventilation for the superstructure.
    - If gas heaters are more cost effective provide natural gas to the facility.
  - Lift Station site work
    - Provide fence around Siphon Headbox and Lift Station
    - Provide gravel access road to Lift Station from the plant entrance road.
    - Accommodate Metro storm water drainage so that drainage still goes to existing outlet structure on Alkali Creek.
  - New pump in one cell of Headworks Inlet Box
    - Provide one new pump to pump flow from the Heights Interceptor and the In Plant Sewer. Pump and ancillary components to be bid as an alternate.
    - Pump type to be determined during design.

        - Pump flow to at least one Screen Channel when the inlet gate to the channel is closed. Provide throttling valve if needed.
        - Design to continue to allow screens to be tilted up and removed.
    - Electrical/Controls/Instrumentation
        - Provide switchgear and/or motor control center in Lift Station to meet electrical requirements of Lift Station. Electrical to be set up to feed from either side of Boxcar.
        - How power is provided to Lift Station to be determined during design.
        - Provide exterior lighting for the Lift Station.
        - Provide variable frequency drive for Headworks pump. Determine during design how to power pump.
        - Provide manual or automatic operation of both pump systems.
        - Provide level control for pump in Headworks Inlet Box.
        - Provide high level alarm in Inlet Box which would open corresponding screen channel inlet gates.
        - Provide ultrasonic sensor in Lift Station wetwell for starting second pump if needed.
        - Provide high level alarm in Siphon Headbox and Lift Station Wetwell.
        - Provide PLC or Remote I/O in the Lift Station for Lift Station Operation. Provide OIT in Control Panel.
    - Programming
        - Provide software integration, software programming, field checks and startup services for both pumping facilities.
    - Provide bidding services
        - Bidding services based on one bid package.
    - Provide construction, training and startup services.
    - Include new Lift Station in existing electronic O&M.
    - Items not included in scope of work:
        - Pre-purchasing of equipment
        - SRF assistance
        - Field investigation of existing utilities beyond record drawing review and City Staff consultation is not included. If additional field investigation (pot-holing, survey, etc.) is required services will be added by amendment.

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

**TASK SERIES 300 – FINAL DESIGN**

In this task, the Preliminary Design will be developed into more detailed engineered project elements. The Building Information Management (BIM) model will be developed to the 60% design level and then 95% level before being finalized for bid documents. The BIM model will be regularly shared with project staff and the City in digital format using Navisworks ™ reader software for model communication. Specifications will be prepared for 95% review and then finalized for bid.

**301 – Geotechnical Investigations**

A soils consultant will perform geotechnical investigations to determine the structural design requirements and limitations for new structures. One boring is planned.

- Deliverable – Geotechnical Report

**302 – Perform Design Surveys**

A topographic survey of the lift station site as well as survey of any utility locations.

- Deliverable – Survey

**303 – Prepare 60% BIM Model and Drawings**

The BIM models will be further developed for all disciplines providing structural sizing, equipment location, piping routing and major electrical components location. Site plans will be updated in 2D. P&IDs drawings and electrical one-line drawings will be updated from preliminary design.

- Deliverable – See Task 304.

**304 – Internal and External 60% Review**

BIM models and 2D drawings will be reviewed internally. Review comments will be resolved and applicable comments incorporated in City review set. BIM model will be reviewed with City as well as the improvements developed on 2D drawings. City review comments will be resolved and applicable comments will be carried forward into the 95% review.

- Deliverables – BIM model and 2D drawings (4 half sized sets and one pdf) for review. List of City review comments and how the comments were resolved.
- City responsibility – Provide one set of review comments

**305 – Prepare 95% BIM Model and Drawings**

The BIM models for all disciplines will be fully developed showing details necessary for construction. Plan and section drawings will be extracted from the Building Information Model. Notes and additional details will be added to the drawings to complete the design. 2D site drawings, P&IDs drawings and 2D electrical drawings will be detailed for construction.

- Deliverables – BIM model and 2D drawings (4 half sized sets and one pdf) for review.

**306 – Prepare Detailed Specifications**

Final detailed specifications suitable for bidding and construction will be developed. These detailed specifications will be incorporated with the City's front-end documents.

- Deliverable – 4 Sets of Specifications including one pdf.

**307 – Internal and External 95% Review**

BIM model, 2D drawings and specifications will be reviewed internally. Review comments will be resolved and applicable comments incorporated in City review set. BIM model will be reviewed with City as well as the 2D drawing set. Key

components of the specifications will be reviewed with the City. City review comments will be resolved and applicable comments will be carried forward into the final bid set.

- Deliverables – BIM model, 2D drawing set and specifications for review. List of City review comments and how the comments were resolved.
- City responsibility – Provide one set of review comments

**308 – Finalize Design**

Based on review comments, update BIM model and finalize 2D drawings and specifications.

- Deliverable – Bid Documents for advertisement. 4 sets (half-sized drawings) for the City and one set for each plan room.

**309 – Building Permit**

Prepare information for building permit and complete application for submission to State Building Department. Fees associated with building permit to be paid for by the City.

- Deliverables – Building permit application and backup information.

**310 – Construction Cost Estimate**

The estimated capital costs for the project will be updated from the preliminary design.

- Deliverable – Summary of Cost Estimate.

**311 – Montana Department of Environmental Quality Coordination**

As part of this task, Consultant will coordinate the project and project deliverables with MDEQ. Any variances required will be requested. Design will be reviewed with DEQ prior to the 95% submittal and completion of the design.

- Deliverables – Variance paperwork and two hard-copy review contract document sets to DEQ.

**312 – Joint Application and 404 Permit**

The Lift Station location is in the flood plain. The Joint Application and supporting information will be developed and submitted to the proper agencies. A 404 Permit will be prepared and submitted if required. Wetlands delineation will be used from the Nutrient Project.

**TASK SERIES 400 – BID PHASE**

**401 – Bidding Administrative Assistance**

Produce and distribute bid documents to owner, prospective bidders and plan rooms. Answer bidder questions and prepare addendums as needed. Conduct pre-bid meeting. Attend Bid opening.

- Deliverable – Bid Documents, Advertisement, Pre-Bid Meeting Minutes and Addendums.

**402 – Post-Bid Administrative Assistance**

Receive, evaluate and tabulate bids. Assess completeness of bids. Review qualifications of bidders. Make recommendations to the City on award of contract.

- Deliverable – Summary of Bidder Qualifications and Recommendation of Award.

## TASK SERIES 500 – CONSTRUCTION AND STARTUP SERVICES

Construction Phase scoping is based on a 30 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 half-sized "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 a 30 hour week (three quarter) average time basis. The resident project representative will monitor the project for compliance with project plans and specifications. Consultant will provide laser scanning of uncovered utilities in locations not indicated on the drawings. Allowance is included for geotechnical consultation. No testing services are included as these will be provided by the contractor.

### 504 – Training and Startup

Coordinate training of new equipment with manufacturers and the City. Work with staff to develop protocol for operation of equipment including normal operation and backup or alternative operations. Work with manufacturers and contractor to verify proper installation of new equipment. Coordinate startup of equipment with Contractor, manufacturer representative and the City. Verify new systems are functioning properly.

### 505 – eOM

Consultant will develop an Electronic Operations Manual (eOM) for the Lift Station to add to the eOM developed for the UV and WRF Nutrient Improvements projects.

**506 – Construction Wrap-Up and Acceptance**
Upon completion of the construction of the improvements, the Consultant will schedule and hold 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, preparation of Certificate of Substantial Completion, information review and recommendation of final acceptance.

**507 – 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.

**TASK SERIES 600 – APPLICATION SOFTWARE PROGRAMMING**

**601 – Programming**
Provide programming for new lift station and existing gates. Programming will be completed for PLC new data points. Modify and provide new screens for OIT and SCADA. Scope excludes any software or hardware. These items will be provided by the Hardware Integrator subcontractor to the General Contractor.

**602 – Workshops and Meetings**
Conduct workshops and meetings to review programming requirements and to review programming. Two workshops are planned for. Workshop No. 1 – Preprogramming and Standards meeting. Discuss design intent and initial system overview. Workshop No. 2 – PLC programming progress review with tagging, HMI and OIT screens review, trending, alarming and reporting.

**603 – Testing and Commissioning**
Provide on-site services for commissioning new programming and screens.

Appendix B, Section 1, Paragraph A. replace Paragraphs 1-6 and the Total with the following:

| | | |
|---|---|---|
| 1. | Project Management | $11,600 |
| 2. | Lift Station Evaluation/Preliminary Design | $104,100 |
| | SUBTOTAL (original Contract) | $115,700 |
| **3.** | **Final Design** | **$305,100** |
| **4.** | **Bidding Services** | **$12,100** |
| **5.** | **Construction and Startup Services** | **$250,100** |
| **6.** | **Application Software Programming** | **$82,100** |
| | **SUBTOTAL (Amendment No. 1)** | **$649,400** |
| | TOTAL Contract Amount | $765,100 |

Appendix E. Delete Paragraphs B-E and Replace with the following:

B. Documents completed for Advertisement – May 2020

C. Construction Start – August 2020

D. SCADA Programming – September 2020

E. Startup Services – March 2021

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

CONSULTANT

NAME: _____

BY: _____

TITLE: _____

DATE: _____

CITY OF BILLINGS, MONTANA

BY: _____
Mayor

DATE: _____