

Appendix A

Basic Services of Engineer

Section 1. Engineer's Rights and Duties.

- A. To furnish all labor, materials, equipment, supplies, and incidentals necessary to conduct and complete the Engineer's portion of the project as defined in the scope of work and to prepare and deliver to Billings all plans, specifications, bid documents, and other material as designated herein.
- B. Ascertain such information as may have a bearing on the work from local units of government, utility companies, and private organizations and shall be authorized to procure information from other authorities besides Billings, but shall keep Billings advised as to the extent of these contacts and the results thereof.
- C. Prepare and present such information as may be pertinent and necessary in order for Billings to pass critical judgment on the features of the work. The Engineer shall make changes, amendments or revisions in the detail of the work as may be required by Billings. When alternates are being considered, Billings shall have the right of selection.
- D. Engineer's work shall be in accordance with the standards of sound engineering and present City, State, and National standards and policies currently in use.
- E. Conform to the requirements of the Montana Code Annotated Title 18 "Public Contracts" and more particularly Sections 18-2-121 and 18-2-122, and all other codes of the State of Montana applicable to providing professional services including codes and standards nationally recognized.
- F. The Engineer shall certify with the submission of final plans that the plans are in conformance with applicable sections of Title 69, Chapter 4, Part 5, of the Montana Code Annotated as pertaining to existing utilities.
- G. To perform professional services in connection with the project and will serve as Billings' representative in those phases of the project to which this agreement applies.
- H. Where Federal funds are involved, the necessary provisions to meet all requirements will be complied with and documents secured and placed in the bidding documents.
- I. Submit an estimated progress schedule as to time and costs at the beginning of the work, and monthly progress reports thereafter until complete. The reports will include any problems, potential problems, and delays as foreseen by the Engineer. Reports will be submitted in a timely manner to permit prompt resolution of problems.
- J. Contract administration duties will include review of contractor certified payrolls for wage rate compliance. Discrepancies in certified payrolls will be resolved with the

Contractor. A signed Engineer's Payroll Check Sheet (included in the Standard Modifications to MPWSS) will be submitted as proof of this review with one copy of each payroll.

- K. Name a Task Director who shall be the liaison between Billings and the Engineer. For this project the Task Director designated for the Engineer is Carl Jackson.

Section 2. Billings Rights and Duties.

- A. To furnish all labor, materials, equipment, supplies, and incidentals necessary to conduct and complete Billings' portion of the project as designated in the scope of work.
- B. Name a Task Director who shall be the liaison between the Engineer and Billings. For this project, the Task Director designated is Will Robbins, working under the City Engineer, Debi Meling.

Section 3. Scope of Work.

PROJECT DESCRIPTION

- The Feasibility Study and Preliminary Design Phase will include a distribution system analysis to establish the tank elevation, storage analysis to size the tank, and alternatives analyses to determine the type and location of the tank.
- The Design and Construction phases consists of the design and construction of a water storage tank and appurtenances east of the Briarwood subdivision in Zone 4 South.

SERVICES TO BE PERFORMED

1. Feasibility Study and Preliminary Design Phase

a. Project Management, Meeting Attendance, QA/QC, Stakeholders Coordination

Conduct internal and City kick-off meetings. Create a project work plan. Coordinate with City of Billings staff and KLJ design team and subconsultants. Complete monthly invoicing per City of Billings requirements. Coordinate quality assurance and quality control activities. Attend review and progress meetings with City of Billings and outside stakeholders. Public meetings are not included.

b. Distribution System and Storage Analysis

Recommend a tank size and operating elevations. Tank sizing will be based on existing and projected populations for the area served by the tank. It is assumed this population information will be provided by the City or readily available in existing planning documents. Developing a population projection for the service area is outside this Scope of Services. Develop a technical memorandum (TM) addressing the service area, tank sizing and operating range.

c. Site and Access Evaluation

Analyze the existing site to determine whether or not it is suitable for the type

and size of tank needed by the City. This analysis will address geotechnical considerations, site constructability, and site accessibility. Two (2) access road route alternatives will be analyzed including using the existing access road exclusively or using the existing road in conjunction with a temporary road along the ridge to the northwest of the site. Recommend the temporary access road route best suited to the City's needs. Based on the needs of the City, recommend either the existing site be used for the new tank or alternative site(s) be analyzed. Develop a TM addressing the site evaluation and recommendations.

d. Alternative Site Evaluation – (Not Included)

e. Tank Alternative Analysis

Analyze up to (3) three tank types such as pre-stressed concrete, welded steel, and cast in place concrete. Recommend a type of tank best suited to the City's needs and based on a life cycle cost analysis. Develop a TM addressing the tank type.

f. Design Survey

Complete and furnish design survey of existing site and primary access road to include contours, existing surface features, and above and known below ground utilities. Design survey will include the existing site and the area encompassing the site to allow for hilltop grading to accommodate a larger tank. Construction drawings will be developed. Download the field survey data and generate AutoCAD base maps for plan drawings.

Existing known parcel corner locations, property boundaries and easements will be provided by City and are not included.

g. Geotechnical Report

Provide a geotechnical investigation and report for the final site selected for construction of the new tank.

h. Feasibility Study

Compile technical memorandum(s) and summarize other feasibility level work into a Feasibility Study. The Feasibility Study will address:

- Distribution System and Storage Analysis
- Site and Access Evaluation
- Salvage-ability of existing tank

i. Preliminary Engineering Report

Provide a SRF level Preliminary Engineering Report (PER) outlining the recommended site, tank size, tank elevation, tank type, and aeration system. The PER will include feasibility level design for the tank and appurtenances which will be used to develop preliminary cost estimates for the work. Evaluate the existing bolted steel tank and provide recommendations for potentially relocating the tank to a new site. The purpose of this PER will be used to secure SRF funding for the tank. The PER will only follow the Montana Uniform

Application Format to the extent needed to meet SRF requirements and is not intended to be used for applying for funding that requires a full Uniform Application PER. Preparation of such a PER is outside this Scope of Services.

j. State Revolving Fund Assistance

Provide feasibility level design information to the City needed for the SRF loan application. Provide design documents, bidding documents, record drawings, and operation and maintenance manuals to DEQ as needed per SRF requirements. Attend one-year warrantee walkthrough and provide performance certification as required by SRF. It is expected this performance certification form will be provided by the City.

2. Design Phase Services

a. Easement Preparation

Provide assistance to create and obtain temporary or permanent easements as needed for access, construction and/or staging. Boundary information including existing easements, existing legal descriptions and property corner locations will be provided by the City. This task includes exhibit preparation and legal descriptions, but does not include related field work.

b. Environmental Report & FAA Permit

This Scope of Services assumes the site will be a categorical exclusion with regard to environmental permitting. Environmental work beyond that required for a categorical exclusion is not included in this Scope of Services. If additional Environmental work is required, out of scope costs will be negotiated. Necessary FAA (Federal Aviation Administration) investigation and permit application will be completed.

c. Site Plan and Grading

Prepare draft plans and specifications for the selected alternative. Site plan will include grading and site piping to re-connect to the City of Billings water system. It will also include site restoration, seeding, and tank overflow outfall.

d. Tank Design & Aeration System

Prepare draft plans and specification for storage tank and appurtenances including coatings and mixing/aeration. Based on the limited electrical power to the site, it is assumed mixing will be accomplished with a Solar Bee or similar type mixing/aeration system, and respective draft plans and specifications will be prepared.

e. Road Design

Prepare draft plans and specifications for access road.

f. Electrical/Control System Design

Prepare draft plans and specifications for electrical and control systems

g. Contract Documents

Develop draft Bidding and General Requirements of the project specifications including sections as required for SRF funding.

h. 50% Plans and Specifications

Prepare 50% plans, specifications, and cost estimates and submit to the City for review and concurrence. Facilitate a 50% design review meeting with the City Staff to discuss review comments on these draft design services.

i. Site Plan and Grading

Prepare 95% plans and specifications for the selected alternative. Site plan will include grading and site piping to re-connect to the City of Billings water system.

j. Tank Design

Prepare 95% plans and specifications for storage tank and appurtenances.

k. Road Design

Prepare 95% plans and specifications for access road.

l. Electrical/Control System Design

Prepare 95% plans and specifications for electrical and control systems.

m. Contract Documents

Develop 95% Bidding and General Requirements of the project specifications.

n. 95% Plans and Specifications

Prepare final draft plans, specification, and cost estimate for the selected alternative as determined in 50% review meeting. The 95% plans, specifications, and cost estimates will be submitted to the City for review and concurrence. This cost estimate will be used for bidding unless changes are required as a result of the Montana Department of Environmental Quality (DEQ) review.

Facilitate a 95% design review meeting with the City Staff to discuss review comments on these final draft design services.

o. Finalize Plans and Specifications and Submit to MT-DEQ

Using input from the 95% review meeting, the plans and specifications will be finalized. Completed plans and specifications will be submitted to the Montana DEQ for review. The City of Billings will be responsible for any review fees.

p. Prepare Building Permit

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

3. Bidding Phase Services

a. Finalize Bid Documents

Finalize Bid Documents following Department of Environmental Quality review in preparation for bid advertising. Make changes required by Department of Environmental Quality (if any). Finalize dates in Bid Documents. Assist the City with advertising for bids. The City will be responsible for the costs of advertisement.

b. Print and Distribute Plans and Specifications

Prepare and furnish final plans and specifications with sufficient number of copies for bidding, and contracts. Distribute plans to perspective bidders. A planholder's list will be maintained.

c. Pre-Bid Conference

Schedule and facilitate a pre-bid conference. Answer questions that arise, and issue addenda as needed throughout the bidding process.

d. Bid Opening, Bid Tabulation and Recommendation of Award

Attend the project bid opening with the City. Analyze bids, provide a bid tabulation, and make a recommendation of construction contract award.

e. Notice of Award

Prepare notice of construction contract award.

f. Contracting

Prepare contracts and coordinate contract execution between City and Contractor.

g. Conform Documents

Assemble Conform Documents (originals) for City, Contractor and Engineer and prepare Conformed Copies for distribution to City, Contractor, DEQ and Engineer as working copies.

4. Construction Phase Services

a. Preconstruction Conference

Schedule and facilitate with all parties, a preconstruction conference to discuss the Contractor's proposed construction aspects, schedule and various requirements of the project specifications.

b. Notice to Proceed

Prepare notice to proceed for the City to review, execute, and issue.

c. Construction Survey

Establish horizontal and vertical control for the various project components. Provide construction staking for the project. This Scope of Services does not include resetting disturbed survey markers or monuments.

d. Submittal Review

Review of construction submittals for compliance with plans and specifications.

e. Construction Administration

Provide coordination and administration of project construction activities. Prepare project correspondence, monthly construction pay estimate forms, and funding agency reports if required. Review certified pay-rolls (from contractor and sub-contractors) for compliance. Conduct wage interviews with contractor and sub-contractor laborers as required for SRF funding. Review requests for information (RFI) and provide appropriate response. Evaluate change order requests and provide recommendations to the City. Facilitate negotiations on change orders if any from either the City or the Contractor, and prepare change orders.

f. Review Progress Schedules

Review construction progress schedule to identify conformance with project schedule.

g. Progress Meetings

Schedule and conduct meetings to discuss project with the City and Contractor. Schedule meetings and/or conference calls twice a month or as needed during construction operations.

h. Coordinate Quality Assurance Testing

Coordinate quality assurance (QA) testing with the Contractor and independent testing laboratories. Review testing results and advise Contractor of noncompliant work. The costs for geotechnical and concrete or any other QA testing are the responsibility of the City.

i. Construction Observation

Provide site observations to ensure Contractor complies with plans and specifications. Observation will take place during construction phases including visual observation for the installation of the water main piping and components, concrete foundation, and tank. It is expected three hundred forty (340) hours of resident project representative (RPR) time will be sufficient to provide necessary construction observation throughout the construction of the project. This includes one hundred sixty (160) hours for full time observation of foundation construction and underground pipe construction. It also includes one hundred eighty (180) hours of part time RPR for trips during tank erection. RPR hours beyond this estimation are outside this Scope of Services. Construction observation includes maintaining a diary of construction activities, observations, and material quantities.

j. Design Team Site Visit

Design team to conduct periodic site visits as needed in addition to progress meetings described above.

k. Welding/Coatings Quality Assurance Testing – Not Included

(This Scope of Services assumes the tank will be constructed of pre-stressed concrete and will not require welding/coating QA testing.)

5. Final Services

a. Project Startup

Be present for project startup to help ensure proper functioning of the tank and related systems.

b. Substantial Completion Walkthrough

Schedule and facilitate a walkthrough with the Contractor and City to review all project components. Prepare a punch list of incomplete or unsatisfactory items to be resolved before final project closeout. Create and issue Certificate of Substantial Completion.

c. Final Walkthrough and Project Closeout

Schedule and facilitate a final walkthrough with the Contractor and City to review the punch list developed during the substantial completion walkthrough to ensure punch list items satisfactorily completed.

d. Record Drawings

Prepare record drawings for the project. Supply the City with three (3) paper copies (1 full-size, 2 half-size) and 2 CDs with PDF files of the record drawings. Supply the Department of Environmental Quality with record drawings.

e. 1-Year Warranty Inspection

Approximately 11 months after substantial completion, schedule with all parties and be present at a 1-year warranty walkthrough of all project components. Coordinate warranty repairs with contractor.

f. Operations and Maintenance Manual

Deliver (2) draft copies of the O&M manual to the City and (1) draft copy to DEQ in Helena for review. Upon approval of the final version provide (2) hard copies and (2) CDs with PDF files to the City. Provide (1) hard copy to DEQ in Helena.

DELIVERABLES PROVIDED BY KLJ

1. Feasibility Study and Preliminary Design Phase TMs
2. SRF level Preliminary Engineering Report, including preliminary cost estimate
3. 50% draft plans and specifications
4. 95% final draft plans specifications and cost estimate
5. Final plans and specifications
6. Record Drawings – three paper copies (one 22"x34" and two 11"x17") and 2 CDs with PDF files
7. Documentation to meet SRF requirements including O&M manual