

## Appendix A

### Basic Services of Engineer

#### W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project

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##### 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. 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 Paul Swenson, PE working under the Principal-in-Charge, Wade Irion, PE.

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 Randy Straus, PE working under the City Engineer, Debi Meling, PE.

Section 3. Scope of Work.

**SCOPE OF WORK:**

The scope of work covered by this agreement is described hereafter:

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The project consists of design, bidding, and construction phase services for the *City of Billings W.O. 15-01: 2015 Water & Sanitary Sewer Replacement* project. The project includes approximately 11,000 LF of water main replacement in the area bounded by Grand Avenue to the north, Terry Avenue to the south, 30<sup>th</sup> Street West to the west, and the BBWA Canal to the east. There is no sanitary sewer main or storm drain replacement associated with this contract. Any additional segments of work requested by the City beyond the total project length indicated above shall be considered an Additional Service, which shall be added to the project by a Contract amendment.

Professional services generally include design of replacement of water mains, design surveys, geotechnical investigations and report preparation, traffic control design, preparation of contract plans and specifications, assistance with competitive bidding, administration of the construction contract, construction oversight, field staking, quality assurance testing, and closeout services. Engineer will coordinate work efforts with other related or unrelated improvement projects expected to be completed concurrently in the project areas. The scope of work covered by this Contract shall include the following tasks:

*A. Preliminary Design Phase*

1. Assist the City with finalizing water main alignments in the project area. The preliminary water main replacements (and short segment of new water main in Broadwater Avenue) identified by the City in a September 15 email attachment is the assumed basis of this scope of work. If necessary, conduct a field review of final project areas with City staff to review routes and project objectives.
2. Conduct field design surveys within the project limits. Data collection shall include establishment of permanent horizontal and vertical control, topographic features, existing utilities, measure-downs, and existing property pins. Utilize the One-Call service to locate and demarcate buried utilities for survey. Field survey data will be used by Engineer to develop preliminary project base mapping.
3. Perform research to verify existing right-of-way locations utilizing platted information, ownership records, and found property pins. Incorporate information into base mapping. Determine locations where additional right-of-way or easements must be secured by the City. All work is currently expected to be within existing City right-of-way, so this scope of work does not include any assistance with easement acquisition, such as additional legal survey, preparation of easement exhibits, or other related tasks.
4. Perform geotechnical engineering tasks, including field bore hole explorations, groundwater monitoring well installations, shallow asphalt cores, sampling, and laboratory testing to determine appropriate pavement section designs, subgrade treatment, groundwater conditions, utility foundations, and pipe material selections. This scope assumes 8-10 bore holes will be drilled, two of which will be finished with piezometers for groundwater monitoring. Perform literature review of documented environmental issues directly adjacent to project areas; no additional drilling, sampling, or testing is included in this environmental review. Prepare a geotechnical report with recommendations to be incorporated into the construction specifications.
5. Collect from City and review available utility as-builts, service line records, and other information and studies as applicable. Incorporate available information into design drawings and specifications.

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6. Design utility alignments, profiles, and sections for water mains. Confirm appropriate utility sizing within the project limits with City staff and the Master Plan document. Assist the City with analyzing their hydraulic model if necessary to determine utility sizing or routing. No independent system modeling, field flow metering, or other sizing studies are included in this scope. It is assumed that all water mains will be 12-inch diameter or smaller.
7. Evaluate project segments for the feasibility of utilizing trenchless utility replacement methods. Design trenchless alternatives as applicable.
8. Prepare preliminary plans, specifications, and opinion of probable cost using all data gathered.
9. Coordinate with City staff, adjacent property owners, and other private and public stakeholders in the development of utility improvements.
10. Coordinate the identification and evaluation of potential private utility conflicts, including overhead and underground power, cable TV, natural gas, telephone and communications. Send preliminary construction plans to private utilities for review and comment.
11. Identify locations to perform subsurface potholing at critical utility crossings or conflicts to identify specific utility elevations or locations. Survey the elevations and locations in the field for incorporation into the design, and restore the surfacing. Due to the uncertainty of the amount of potholing that will be required, this scope and the associated professional fee includes an allowance of \$10,000 for the subcontracted costs of a vacuum truck and any traffic control required to perform the potholing. Any additional potholing costs above this allowance shall be considered an Extra Service.
12. Create preliminary traffic control plans for project areas. Coordinate with other City construction projects as applicable. Traffic control plans will generally be a combination of specific layouts for arterial and collector streets and generic layouts for residential streets and/or alleys. It is assumed that there will be full street closures at the location of every work zone, with the exception of Broadwater Avenue.
13. Identify potential construction staging areas, disruptions to private access and parking, and other site constraints and issues relating to construction. Coordinate zone construction work hours, work sequencing, and other related construction scheduling issues with City. Incorporate appropriate Special Provisions into the project specifications.
14. Attend 30% design review, 70% design review, traffic control design review, and other necessary design review and coordination meetings with City staff.
15. Provide project management and internal quality assurance throughout this phase.
16. Deliverables for this phase include:
  - a. 30% design drawings (typically base mapping and preliminary plan alignments only); 11"x17" and/or PDF format
  - b. 70% design drawings (typically preliminary plan & profile drawings without detailed labeling); 11"x17" and/or PDF format, or full size drawings upon request
  - c. Preliminary specifications; PDF format
  - d. Preliminary geotechnical report; PDF format
  - e. Preliminary traffic control plans; hard copy and/or PDF format
  - f. Preliminary opinion of probable cost; PDF format

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*B. Final Design and Bidding Phase*

1. Compile property owner and occupant information for adjacent parcels and create address database. Prepare and send one (1) information mailing to all database entries, which shall include general project information, notification of the public meeting, general construction information, business questionnaires, and notification of the construction informational website and email list. Plan and facilitate one public informational meeting.
2. Prepare final plans and specifications using all input received during preliminary design. Plans and specifications will be prepared in accordance with MPWSS and City of Billings Standard Modifications, latest editions. Stamp and sign all plans and specifications with the seal of a Professional Engineer.
3. Finalize geotechnical report and traffic control plans.
4. Tabulate project quantities and create bid schedule. Finalize the Engineer's opinion of probable cost based on final quantities.
5. Prepare design report for the City, and as required for Montana Department of Environmental Quality approval.
6. Apply for all permits, licenses, and approvals necessary to construct the project, including approvals from the Montana Department of Environmental Quality. The budget includes \$3,230.00 for MDEQ review fees, which is based on their current fee schedule ( $\$0.25/\text{LF} \times 11,000 \text{ LF} + \$280$  for minor engineering report + \$200 for one assumed deviation). All other permit and licensing fees, if required, will be paid by the City. Construction stormwater permits shall be the responsibility of the construction Contractor and are excluded from this scope; Engineer will only prepare erosion and sedimentation control plans for inclusion in the project specifications.
7. Supply all bidding documents necessary for bidding and construction. Provide bid advertisement text to the City for publication. Schedule and conduct a pre-bid conference, publish meeting minutes, answer bid questions, and prepare any necessary addenda. Conduct a pre-bid field review with bidders as necessary.
8. Attend the bid opening, analyze the bids, prepare and distribute a bid tabulation, and make a construction contract award recommendation.
9. Assist the City in procurement of the final contract agreement, review bonds and insurance provided by the contractor, assemble and distribute conforming copies of contract documents, and issue a notice to proceed for construction.
10. Provide project management and internal quality assurance throughout this phase.
11. Deliverables for this phase include:
  - a. 95% design drawings for final review; 11"x17" and/or PDF format
  - b. 100% design drawings and Project Manual for approval and bidding
  - c. Design report and other MDEQ submittal requirements
  - d. Final geotechnical report (in Project Manual)
  - e. Final opinion of probable cost
  - f. Bid advertisement
  - g. Pre-bid meeting minutes
  - h. Addenda, as required
  - i. Bid tabulation
  - j. Recommendation of Award letter; Notice of Award
  - k. Conforming copies of the construction contract; 6 sets total
  - l. Notice to Proceed

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- m. Contractor's construction plans and specifications; up to 10 sets; 11"x17" format (2 full-size plan sets upon request)

**C. Construction Administration and Services Phase**

1. This scope and the associated professional fee assume:
  - a. One (1) construction contract/Contractor for this project, with a construction contract duration of 140 days.
  - b. Engineer shall consult with the City and act as representative for the City as defined in the construction contract documents, which will incorporate the MPWSS, and specifically the General Conditions contained therein as modified by the City of Billings Standard Modifications, latest edition.
  - c. The extent and limitation of the duties, responsibilities, and authority of the Engineer will be as assigned in the construction contract documents and shall not be modified, except as Engineer may otherwise agree in writing.
2. Schedule and conduct a pre-construction conference, publish meeting minutes, and answer contractor questions. Conduct a pre-construction field review with contractors as necessary.
3. Take pre-construction photos and videos of the project areas.
4. Provide full-time construction observation utilizing a Resident Project Representative (RPR) to assist Engineer in observing progress, quality of work, and conformance to the contract documents and other applicable codes and standards. Up to two (2) full-time RPRs will be provided for the duration of the construction contract. Inspection activities shall include review of all major work items, including traffic control set-ups. RPRs will prepare daily inspection reports, daily quantity summaries, weekly progress reports, weekly workforce and equipment reports, and other reports as required. RPR responsibilities are further defined in the General Conditions contained in the City of Billings Standard Modifications, latest edition.
5. Develop and implement a quality assurance testing plan for materials testing in accordance with the City of Billings Standard Modifications, latest edition. Conduct a pre-construction testing meeting with RPRs, field testing personnel, and lab manager to coordinate testing requirements. Provide qualified personnel, equipment, and supplies for field testing of materials throughout construction. Monitor and collect results from contractor's separate quality control materials testing program.
6. Provide personnel, equipment, and supplies for field staking of principal elements of the construction layout to give the contractor measurements, lines, locations, and grade necessary for construction. The contractor will be responsible for any detailed layouts, such as laser and/or other line and grade establishment techniques for laying pipe between Engineer's staking intervals.
7. Review contractor's submittals, such as shop drawings, samples, equipment, mix designs, aggregates, and other data, for conformance to the contract documents. This review does not include acceptance review of any dewatering plans, and shall not extend to contractor's means, methods, techniques, sequences, procedures, or safety programs.
8. Attend and conduct a weekly construction meeting with the City and contractor. Allow up to 3 hours per week for the weekly construction meeting and any related follow-up activities.
9. Respond to contractor requests for information. Issue necessary clarifications and interpretations of the contract documents. Notify the City immediately of any contract problems or deviations from the approved contract documents. Issue notices as required by the construction contract. Recommend and

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- prepare Work Change Directives and Change Orders for the City as necessary. Change orders that require additional design or construction services by Engineer will be considered Additional Services and compensated in accordance with the provisions of this Contract.
10. Receive, review, and transmit to City all contractor requests for City staff involvement and approvals, such as valve and hydrant operation requests, water quality sampling requests, traffic control reviews, etc. Assure required advance notice requirements are being met by contractor for all requests to the City for reviews, inspections, operations, and testing.
  11. Prepare weekly website and email informational update content, including current project maps and work descriptions. The City will host and maintain the website, with content provided by the Engineer. The Engineer will collect email addresses from mailing and meeting responses, and disseminate the same content to the email list.
  12. Make visits to the site at intervals appropriate to various stages of construction to observe, as an experienced and qualified design professional, the progress of the contractor's work. Visits by the Engineer shall be limited to spot checking and similar methods of general observation of the work as assisted by the RPR.
  13. Review and recommend monthly contractor payment requests.
  14. Conduct substantial completion and final inspections with City and contractor. Prepare and monitor punchlist items required for completion of the work by contractor.
  15. Maintain documentation of all field installations, including the location of all underground utilities encountered during construction, for assistance with preparation of project record drawings. Prepare record drawings by incorporating all field modifications to the construction drawings. Allow review by City of record drawings prior to issuing final record drawings. Record drawings will include, at a minimum:
    - a. Offset distances measured from the right-of-way to all public water mains
    - b. Locations of water services based on measurements from property lines.
    - c. Elevations indicating the depth of bury of all water mains. These elevations shall be shown at each street or right-of-way intersection and at such intervals along these utilities as may be deemed appropriate by the City Engineer.
    - d. Permanent bench marks shown.
  16. Conduct a one-year anniversary inspection of the project. Identify deficiencies and warranty items requiring correction, and provide notification to contractor.
  17. Provide project management and internal quality assurance throughout this phase.
  18. Deliverables for this phase include:
    - a. Pre-construction meeting minutes
    - b. Pre-construction photos and videos, upon request
    - c. Contractor submittals; electronic copy to City
    - d. Weekly RPR inspection reports, upon request
    - e. Monthly quality assurance materials testing reports and charts
    - f. Miscellaneous construction forms, as required
    - g. Review set of record drawings; 11"x17" and/or PDF format
    - h. Final record drawings, consisting of two (2) sets of as-built drawings on full size paper and in digital (PDF & DWG) format, in accordance with Part I, Section 2, Article D of this Contract, and as required by Montana Department of Environmental Quality

## Appendix B

### Methods and Times of Payment W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project

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#### Section 1. Payments for Basic Services.

Billings shall authorize payment to the Engineer for services performed under Appendix A of this Agreement. Partial payment shall be due the Engineer upon receipt of the Engineer's pay estimate, said estimate being proportioned to the work completed by the Engineer.

Billings shall deduct five percent (5%) from each monthly pay estimate to be held until the completion of the final scope of work. The final payment shall be made only after acceptance of final documents by Billings, and determination that the scope of work has been satisfactorily completed.

A. For services rendered prior to construction, Appendix A, the Engineer shall be paid based upon actual time accrued, but not to exceed \$742,630.00 (Seven Hundred Thirty Two Thousand Six Hundred Thirty and 00/100 dollars) based on the following tasks:

Task 1	Preliminary Design Phase	<u>\$201,400.00</u>
Task 2	Final Design and Bidding Phase	<u>\$115,430.00</u>
Task 3	Construction Phase	<u>\$425,800.00</u>

B. Final payment shall be the above stated basic fee less all previous payments.

#### Section 2. Payments for Extra Services when Authorized by Billings.

Work requests made or conditions identified by interested groups at the agency or public meetings which are beyond the scope and intent of this project shall be paid for on an hourly basis at the applicable fees in Appendix D or by an addendum to the agreement.

#### Section 3. Corrections.

Costs of Billings' work that is required for the purpose of correcting the Engineer's work shall be deducted from any payments due the Engineer if the Engineer fails to make the required corrections.

#### Section 4. Fee Increases

For contracts and services that are expected to require more than one (1) year to complete, the above stated basic services payments may be reviewed and adjusted annually by mutual agreement of the parties, based upon documented evidence that the Engineer's costs and hourly rates as shown in Appendix D have increased for all comparable clients.

## Appendix C

### Additional Services of Engineer W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project

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Extra Services of the Engineer will be paid only with written prior authorization by Billings.

- A. Requests made or conditions identified which are beyond the scope and intent of the services identified under Appendix A.

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## Appendix D

### Schedule of Professional Fees

#### W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project

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Current agreements for engineering services stipulate that the standard hourly rates are subject to review and adjustments. Hourly rates for services effective on the date of this Agreement are included below.

The itemized schedule provided below includes direct labor costs, normal payroll and overhead costs, transportation, furnishing equipment and materials normally required for performance of the work and reasonable profit. Direct project costs not itemized herein shall be paid for at actual cost.

Rate changes may be made to the fee schedule by the Engineer to reflect increased salaries and other business costs. Engineer shall submit a revised rate schedule at the time of the change if requested by the Owner. Rate schedule changes made by the Engineer during the term of this Contract shall not alter the maximum project professional fee set forth in the Contract. Changes that alter the maximum project professional fee are covered in Appendix B.

The cost of Professional Liability Insurance coverage is included in the hourly rates of personnel.

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## MONTANA FEE SCHEDULE

### Personnel Billing Rates

Senior Manager I	\$195.00
Project Manager II	\$110.00
Engineer VII	\$175.00
Engineer VI	\$155.00
Engineer V	\$145.00
Engineer IV	\$120.00
Engineer III	\$105.00
Engineer II	\$90.00
Engineer I	\$80.00
Engineering Technician IV*	\$105.00
Engineering Technician III *	\$85.00
Engineering Technician II *	\$75.00
Engineering Technician I *	\$55.00
Planner V	\$135.00
Planner II	\$85.00
Environmental Specialist III	\$100.00
Geologist II	\$110.00
Laboratory Supervisor	\$95.00
Laboratory Manager *	\$95.00
Laboratory Technician *	\$60.00
Lead Laboratory Technician *	\$65.00
Inspector *	\$90.00
Survey Manager	\$130.00
Professional Land Surveyor *	\$105.00
Project Surveyor*	\$95.00
Crew Chief *	\$75.00
Survey Technician *	\$60.00
Accounting Technician *	\$75.00
Marketing Coordinator	\$75.00
Marketing Assistant *	\$75.00
Administrative Assistant *	\$55.00

*\*Subject to overtime at 1.5 times above rates.*

**Equipment, Materials, & Supplies**

ATVs/Trailer	=	\$150.00/day		
Boat/Trailer	=	\$150.00/day		
		<u>DAY</u>	<u>WEEK</u>	<u>MONTH</u>
2 GPS Receivers (Survey Quality)		\$425.00	\$1,600.00	\$4,320.00
Single/Each Additional Receiver		\$250.00	\$900.00	\$2,700.00

**Travel, Mileage, & Miscellaneous**

Per diem will be billed after 6 hours in the field and when more than 50 miles from the office at ¼ rate for every 6 hours or portion of a quarter day greater than 3 hours. For the day of departure, the day begins at time of departure. For the day of return, the day ends when employee arrives at authorized point of destination (office, home, etc.).

Per diem (per person, per day Montana)	=	\$51.00/day
Lodging	=	cost per night
Airfare	=	cost
Vehicle Usage – Automobiles	=	0.75/mile
Vehicle Usage – Pickups, Suburban	=	1.00/mile
Printing/Supplies/Phone/Fax/Postage	=	Note 2
Specialized Software/Hardware	=	Note 3
Subcontractors	=	Cost + 10%
Laboratory Analysis	=	Cost + 10%
Other/Miscellaneous	=	Cost + 10%

**Notes**

1. DOWL HKM's Professional Fee Services Fee Schedule is subject to adjustment each year (May 1<sup>st</sup>) or at the end of a contract period, whichever is appropriate. Should adjustments be anticipated or required, such adjustments will not affect existing contracts without prior agreement between Customer and DOWL HKM.
2. Costs included in overhead rates for reasonable requests. Requests beyond those considered reasonable by the project manager billed at Cost + Agreed Upon Mark-up.
3. Specialized computer software or hardware necessary for a unique application for will be billed at a negotiated rate or unit cost.

## Appendix E

### Project Schedule W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project

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Based on a notice to proceed by Billings date no later than October 14, 2014, the completion date for the Engineer's work through final design shall be:

1. Preliminary Engineering Services (30% Design): December 19, 2014
2. Preliminary Engineering Services (70% Design): January 30, 2015
3. Final Engineering Services (100% Design): March 20, 2015
4. Construction Services to be based on Contractor Schedule.

Delays affecting the completion of the work within the time specified of more than ninety (90) days, not attributable to or caused by the Parties hereto, may be considered as cause for the renegotiation or termination of this Contract.

If the Engineer is behind on this Contract due to no fault of Billings, then the Engineer hereby acknowledges the right of Billings to withhold future Contracts to the Engineer in addition to any other remedy until this Contract is brought back on schedule or otherwise resolved.

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**Appendix F**

**Certificate(s) of Insurance**

**W.O. 15-01, Schedule 1, Will James Area Water Main Replacement Project**

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Attach Certificate(s) of Insurance

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