

## Appendix A

### Basic Services of Engineer W.O. 16-01, Schedule 2, Sanitary Sewer Replacement Projects

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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 Casey Hanson, PE working under the Principal-in-Charge, Carl Anderson, 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 Debi Meling, PE, Engineering Division Manager.

**Section 3. Scope of Work.**

The scope of work includes the following items:

1. The Engineer shall perform the work outlined within this agreement that includes the completion of design and construction phase services for W.O. 16-01 Schedule 2A and Schedule 2B Sanitary Sewer Replacement Projects. Design and construction work for the W.O. 16-01 Schedule 2A Sanitary Sewer Replacement Project is based on 1,000 linear feet of sewer main at the wastewater treatment plant. This portion of the project will include design for a special diversion manhole, special manhole linings, large connection to the existing special manhole outside of the headworks building, and a large bypass pumping plan. This project will be fast tracked and bid separately from Schedule 2B to allow a quicker replacement of the failing Transite Pipe. Design and construction work for the W.O. 16-01 Schedule 2B Sanitary Sewer Replacement Project has been based on 5,000 linear feet of sewer main in the Division Street area.
2. Potholing or other exploratory (e.g. additional video or service location methods) may be required during design and/or construction of this project. This scope includes up to \$10,000 for potholing or exploratory services as required.
3. This scope includes up to \$5,000 for DEQ review and flood plain permit fees.

Completion of said design shall include the following tasks (Tasks will be performed for both Schedule 2A and 2B):

**A. Preliminary Engineering Services (30% Design)**

1. Field surveys within the project limits and extending to appropriate match lines. Data collection shall include establishment of permanent horizontal and vertical control, topographic features and existing property pins. Engineer will provide appropriate temporary traffic control measures for all data collection completed in traffic areas. Field survey data will be utilized by the Engineer to develop preliminary project base mapping.
2. Review previous population and flow projection studies for the Schedule 2A project and make sizing recommendations for the new main.

3. Research will be performed to verify existing right-of-way locations utilizing platted information, ownership records and found property pins.
4. Apply for all permits, licenses, and approvals necessary to construct the project. All permit and licensing fees will be paid by the Engineer up to a total of \$5,000.
5. Geotechnical engineering as provided by sub consultant to consultant shall include field sampling, laboratory testing and review of subsurface soils to determine appropriate pavement section design alternatives, sub-grade treatment, groundwater conditions, and foundations for utility installations. Recommendations for specific construction materials established in this review will be included in the project plans and specifications. Design geotechnical work will include 8 soil borings at 15' of depth and 5 soil borings at 20' of depth.
6. Coordinate with City of Billings staff and other public and private stakeholders in the development of roadway and utility improvements.
7. Coordination with property owners adjacent to the project.
8. Design of utility alignments and cross-sections; sewer main; and related improvements.
9. Coordination with property owners regarding piping or abandonment alternatives within the right-of-way. This may include verification of service locations.
10. Confirm appropriate utility sizing within the project limits. Design replacement of existing utilities.
11. Coordinating the identification and potential relocation of private utilities including, but not limited to, overhead and underground power, cable TV, underground telephone and communications, petroleum oil, and natural gas.
12. One (1) 22"x34" copy and two (2) 11"x17" copies of 30% plans will be provided to the City for review.

#### **B. Preliminary Engineering Services (70% Design)**

1. The 70% design package will incorporate Billings' comments pertaining to the Preliminary Design Report and preliminary public utility plans. Updated roadway plan and profile sheets will be presented, where applicable, as well as further development of the water main, and other recommended improvements.

One (1) 22"x34" copy and two (2) 11"x17" copies of 70% plans and two (2) project specifications will be provided to the City for review.

2. Attend periodic design review meetings with Billings.
3. Send 70% construction plans to the private utilities for review and comment, and hold a subsequent coordination meeting with the private utilities to assemble and evaluate comments.

4. Planning and facilitating one (1) public informational meeting during the design phase (For Schedule 2B only).

### **C. Preliminary Engineering Services (90% & Final 100% Design)**

1. The 90% design package will incorporate comments received from Billings, after the 70% design package submittal and periodic design review meetings are complete. The plan package will include design of the plan and profile utilities drawings, related traffic control measures, sewer main, and other recommended improvements.
2. Attend periodic design review meetings with Billings.
3. Engineer will provide final design services, upon receiving Billings' approval of the 90% plan package submittal. Plans and specifications will be prepared in accordance with the Montana Public Works Standard Specifications, Sixth Edition, April 2010 and the most current edition of the City of Billings Standard Modifications.
4. Stamp and sign all plans and specifications with seal of Professional Engineer in charge.
5. Computation of project construction quantities and preparation of an engineer's opinion of probable construction cost.
6. Prepare and supply of all project specifications and bidding documents necessary for bidding and construction. Bid advertisement text will be provided to Billings for publication. Schedule and hold a pre-bid conference, publish meeting minutes, and prepare any necessary addenda. Conduct a pre-bid field review with contractors as necessary. Attend the bid opening, analyze bids, submit a bid tabulation, and make a construction contract award recommendation.
7. Preparation of a complete construction traffic control plan. The plan will show required detours, required signing, applicable construction phasing.
8. Furnish contract plans and specifications in sufficient number for bidding and contracting the project. It is anticipated that forty (40) 11"x17" copies will be required. Proceeds from plan sales will be credited against the project.
9. Submittal of two (2) copies of construction contract documents.
10. Prepare and submit Preliminary Design Reports for both Schedule 2A and Schedule 2B, reports shall summarize project related design parameters; public utility improvements; right-of-way impacts; stakeholder impacts; traffic operations and traffic control measures; pedestrian improvements; corridor landscaping; and preliminary construction costs. Up to one (1) conceptual alternative may also be considered for certain utility improvements. The report will also include a preliminary environmental evaluation, which reviews historical data related to the project area, including hazardous waste research and other know environmental issues.

11. Submittal of three (3) copies of the project specifications, three (3) half-size plan sets, contract-bidding documents, design report and certified sewer checklist to Montana department of Environmental Quality for approval.

#### **D. Construction Services**

##### 1. Construction Layout and Control.

- i. Provide personnel, equipment, and supplies for construction layout and control. Construction layout shall include, but not be limited to, measurements, lines, locations, and grades necessary for construction.
- ii. Reference and preserve all existing survey monuments and benchmarks. All monuments required within the project shall be punched and elevations shown on as-built drawings.

##### 2. Inspection and Testing.

- i. Coordinate appropriate testing of materials intended for incorporation into the project and require documentation of testing results.
- ii. Provide review of construction to check the Contractor's work for compliance with the drawings, specifications, and other applicable documents, codes or standards. Review of work shall be made on a full-time basis while any major item of work is in progress. Major items of work shall be water; sanitary sewer; storm drain, and irrigation utilities; subgrade preparation; gravel base course preparation; concrete pouring and finishing; paving; signalization, lighting, and striping. The Engineer shall provide a minimum of **48** hours notice for Billings personnel when specific inspections or testing require their presence on the project. Each daily review shall be documented in permanent reproducible form and kept in consecutive order with the project file. Copies of the daily review reports shall be furnished to Billings as requested during construction. Engineer will notify Billings immediately of contract problems or deviation from approved plans. Schedule 2A of this project is planned for one (1) full time resident project representative at eight (8) hours per working day for 33 working days and at four (4) hours per working day for 10 working days of the 60 calendar day project. Schedule 2B of this project is planned for one (1) full time resident project representative at eight (8) hours per working day for the duration of a 90 calendar day project.
- iii. Provide the services of a qualified materials engineering technician who will observe construction and provide representative tests. Provide direct coordination of laboratory and field quality assurance testing and geotechnical engineering between the project engineer, field inspector, and a project construction materials engineer. Geotechnical and materials engineering shall include interpretation and recommendations for the Engineer and Billings based upon field observation.

- iv. The Engineer shall record the location of all underground utilities (including, but not limited to, conduit for all street lighting, signalization, or flasher assemblies) installed under and on the surface within the public right-of-way and show these facilities, together with a representation of the general corridors in which other underground utilities are located, on the record drawings.

### 3. Submittal Review and Document Preparation.

- i. Review the construction operations and the traffic controls for construction, prior to the start of work. Engineer shall ascertain that the Contractor has all needed permits to accomplish his work during construction.
- ii. Review shop drawings, samples, equipment, asphaltic concrete mix design, concrete mix design, aggregate, and other data submitted by the Contractor for compliance with drawings and specifications.
- iii. Review Contractor submitted monthly pay estimates and final pay estimates for construction and prepare contract administration forms on a monthly basis. These will be submitted in Billings' approved format.
- iv. Issue notice to the Contractor to suspend work in whole or part when, in the opinion of the Engineer, and when directed by the Owner, work is not being, or cannot be performed in accordance with the contract documents and specifications.
- v. Contact Billings for any proposed plan or specification changes when required due to initial design and engineering deficiencies in order to complete the project in its original concept. Plan and specification changes shall be prepared by the design engineer.
- vi. Prepare and recommend work change directives and change orders when necessary due to conditions encountered during construction. The Engineer is not authorized to order additional work without the approval of Billings' Task Director. Any work resulting in contract overage will be processed by approved change orders using Billings standard format.

### 4. Public Involvement Services (Schedule 2B Only).

- i. Develop an overall public involvement plan to be used during construction. At a minimum, plan will include provisions for providing information to Billings to be included in monthly newsletters; press releases and road closure notifications; weekly updates (figures and narratives) showing updated construction areas and traffic control layouts for Billings to post online (and to email to affected property owners at their request); weekly construction meetings; and Contractor handouts. Plan to be approved by Billings prior to implementation. Additional approvals by Billings may be required for release of public involvement plan materials to the public.

### 5. Final Services.

- i. Prepare record drawings (As-Built) and furnish Billings with one (1) paper set for review and comments.
- ii. Following receipt of review comments from Billings, make necessary changes and furnish Billings with two (2) sets of 22"x34" paper, one (1) Portable Document Format (PDF) of 22"x34" size, and one (1) electronic set in AutoCAD (\*.dwg) format, of record drawings.
  - a. Locations of sewer services based on alignment stationing.
  - b. Invert elevations marked for each manhole, structure, and each connection thereto, as well as at the end of each stubbed sanitary sewer line, and stubbed sanitary service line.
  - c. All above elevations shall be referenced to a permanent benchmark elevation – clearly shown on the plans.
  - d. Record drawings are due within 60 days of Contractor's final payment and before final payment to the Engineer.
- iii. Provide one (1) CD of Contractor submittals.
- iv. Schedule and make final inspection with Billings and certify to Billings all construction items were constructed according to plans and specifications and are acceptable to the Engineer.
- v. Schedule and make an inspection with Billings prior to the expiration of construction warranty period and provide a certification of final acceptance. If any problems are found, send a list of deficiencies to Billings and Contractor and continue until acceptable.

## Appendix B

### Methods and Times of Payment W.O. 16-01, Schedule 2, Sanitary Sewer Replacement Projects

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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 \$591,277.00 (Five Hundred Ninety-One Thousand Two Hundred Seventy-Seven and 00/100 dollars) based on the following tasks:

#### Schedule 2A

Phase 10	Project Management	<u>\$2,940.00</u>
Phase 20	Study	<u>\$10,015.00</u>
Phase 30	Survey	<u>\$17,100.00</u>
Phase 39	Geotechnical	<u>\$12,100.00</u>
Phase 40	Design	<u>\$91,115.00</u>
Phase 50	Construction Administration	<u>\$85,058.00</u>
Phase 60	Project Closeout	<u>\$15,259.00</u>
Phase 88	Quality Assurance	<u>\$2,992.00</u>

#### Schedule 2B

Phase 10	Project Management	<u>\$4,668.00</u>
Phase 30	Survey	<u>\$38,024.00</u>
Phase 39	Geotechnical	<u>\$34,650.00</u>
Phase 40	Design	<u>\$128,483.00</u>
Phase 50	Construction Administration	<u>\$130,622.00</u>
Phase 60	Project Closeout	<u>\$15,259.00</u>
Phase 88	Quality Assurance	<u>\$2,992.00</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. 16-01, Schedule 2, Sanitary Sewer Replacement Projects**

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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.

## **Appendix D**

### **Additional Services of Engineer W.O. 16-01, Schedule 2, Sanitary Sewer Replacement Projects**

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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.

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

**Section 1. Professional Services.**



Standard Billing Rates Schedule  
Rates Effective Thru  
May 31, 2016

6/22/2015  
Q27

		Standard Rate	Overtime Rate
Professional Services	<b>Principal</b>	Principal	188.00 188.00
	<b>Engineer</b>	Supervising Engineer III	177.00 177.00
		Supervising Engineer II	165.00 165.00
		Supervising Engineer I	156.00 156.00
		Senior Engineer II	143.00 143.00
		Senior Engineer I	132.00 132.00
		Design Engineer II	121.00 121.00
		Design Engineer I	110.00 110.00
		Engineer Intern II	98.00 98.00
		Engineer Intern I	88.00 88.00
	<b>Planner</b>	Supervising Senior Planner	171.00 171.00
		Senior Planner	136.00 136.00
	<b>Scientist</b>	Environmental Scientist II	99.00 99.00
		Environmental Scientist I	89.00 89.00
		Senior Geologist	168.00 168.00
		Geologist III	145.00 145.00
		Geologist I	89.00 89.00
	<b>Engineering Technician</b>	Senior Engineering Technician	122.00 122.00
		Cad Designer II	105.00 105.00
		Cad Designer I	95.00 142.50
		Cad Tech II	83.00 124.50
		Cad Tech I	73.00 109.50
	<b>Resident Project Representative</b>	Senior Resident Project Representative	126.00 126.00
		Resident Project Representative II	105.00 105.00
		Resident Project Representative I	89.00 133.50
	<b>Clerical, Graphics, and Reproduction</b>	Administrative Manager	90.00 90.00
		Administrative Coordinator III	85.00 85.00
	Administrative Coordinator II	80.00 80.00	
	Administrative Coordinator I	65.00 97.50	
	Project Coordinator III	85.00 127.50	
	Project Coordinator II	75.00 112.50	
	Technical Intern	60.00 90.00	
	Graphic Designer	74.00 74.00	
	Cad Manager	115.00 115.00	
Surveying Services	<b>Survey</b>	Senior Survey Manager	151.00 151.00
		Land Surveyor III	117.00 117.00
		Land Surveyor II	105.00 105.00
		Survey Technician III	82.00 123.00
		Survey Technician II	72.00 108.00
		Survey Technician I	59.00 88.50
Expert Witness	Recommended rate for expert witness services (depositions and/or time in court) is charged at an hourly rate of 150-200% of the standard billing rate.		

**EQUIPMENT RATES**

Company Vehicle: highway miles - Pickups/SUV/4WD	\$ .71/mile
highway miles - Sedans	\$ .581/mile
on-site mileage	\$ .581/mile plus \$5.00/hour
Private Vehicle	\$ .575/mile
ATV/Snowmobile	\$50.00/day
UTV	\$100.00/day
GPS (2 Receivers)	\$240.00/day
Total Station	\$80.00/day
Robotic Total Station	\$240.00/day
FARO Focus 3D X 130 Laser Scanner	\$50.00/hour, \$400.00/day
Nuclear Density Meter	\$10.00/hour, \$35.00/day
Airflow Balancing Hood	\$75.00/day

**HYDROLOGICAL EQUIPMENT**

Conductivity Meter	\$15.00/day
Disposable Bailers	\$10.00/each
Dissolved Oxygen Meter	\$20.00/day
PH Meter	\$15.00/day
PH/Temp/Conductivity Meter	\$25.00/day
Water Sample Fee	\$10.00/each
In Situ Level Troll 700	\$63.00/day, \$250.00/week
AquaCalc Pro	\$60.00/day, \$120.00/week
Marsh McBirney 2000 Flowmeter	\$60.00/day, \$120.00/week
Global Water FP 111 Flowmeter	\$25.00/day, \$75.00/week
Submersible Pump (Redi Flo 2)	\$155.00/day
Water Level Meter, 300 Ft.	\$25.00/day, \$50.00/week
Water Level Meter, 500 Ft.	\$35.00/day, \$75.00/week
Oil/Water Interface Well Probe	\$40.00/day, \$120.00/week
Hach Flo-Dar (logger & sensor)	\$400.00/week, \$1,000.00/month
Rain Gauge Sensor	\$15.00/week, \$80.00/month

**PRINTING EXPENSES**

Black & White Copies	\$ .10/8.5x11, \$.20/11x17, \$.13/8.5x14
Color Copies	\$ .20/8.5x11, \$.40/11x17, \$.20/8.5x14
Binding	\$.25/each
Lamination	\$1.00/each
Cover Stock	\$.10/each
Acetate	\$.30/each
Tabs	\$.10/each
Oversize Print Black & White	\$5.00/each
Oversize Print Color	\$6.00/each
Print & Basic Mount	\$12.00/each
Print & Machine Mount	\$20.00/each
Print, Machine & Laminate White Board	\$32.00/each
Print, Machine & Laminate Black Board	\$35.00/each
Foam Board	\$3.50/each
Small View Binder	\$5.00/each
Large View Binder	\$10.00/each

**MISCELLANEOUS EXPENSE**

Lodging	Current Rates
Meals	\$40.00/day
Technology and Communications	\$6.00 per labor hour

Materials and other direct costs will be invoiced at current rates plus a 10% handling fee. Included as direct costs are the following:

- \* Approved employee meals, lodging, transportation
- \* Premium delivery service (UPS, Federal Express, etc.)
- \* Testing supplies
- \* Premiums for Special Insurance, Performance Bonds, etc.
- \* Other out-of-pocket expenses
- \* Consultants

The cost of professional liability insurance coverage is included in the hourly rates of personnel.

Section 9. Materials and Other Direct Costs.

Materials and other direct costs will be invoiced at current rates, plus a ten percent (10%) handling fee. Included as direct costs are the following:

- A. Approved Employee Meals, Lodging, Transportation
- B. Premium Delivery Service (UPS, Federal Express, etc.)
- C. Toll Communication Services (Telephone, Fax, etc.)
- D. Supplies
- E. Premiums for Special Insurance, Performance Bonds, etc.
- F. Other Out-of-Pocket Expenses
- G. Consultants

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

## Appendix E

### Project Schedule W.O. 16-01, Schedule 2, Sanitary Sewer Replacement Projects

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Based on a notice to proceed by Billings date no later than October 12, 2016, the completion date for the Engineer's work through final design shall be:

#### SCHEDULE 2A

1. Preliminary Engineering Services (30% Design): December 4, 2015
2. Preliminary Engineering Services (70% Design): January 8, 2016
3. Preliminary Engineering Services (90% Design): January 29, 2016
4. Final Engineering Services (100% Design): February 4, 2016
5. Construction Services to be based on Contractor Schedule.

#### SCHEDULE 2B

1. Preliminary Engineering Services (30% Design): December 11, 2015
2. Preliminary Engineering Services (70% Design): February 12, 2016
3. Preliminary Engineering Services (90% Design): March 4, 2016
4. Final Engineering Services (100% Design): March 17, 2016
5. 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.

**Appendix F**

**Certificate(s) of Insurance  
W.O. 16-01, Schedule 2, Sanitary Sewer Replacement Projects**

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Attach Certificate(s) of Insurance