

February 12, 2016

Board of Stillwater County Commissioners
P.O. Box 795
400 E. 3rd Avenue North
Columbus, Montana 59019

Attn: Mr. Gerald Dell

**RE: PROPOSAL FOR PHASE 2 ENGINEERING SERVICES, STILLWATER RIVER ROAD
ROCKSLIDE, STILLWATER COUNTY, MONTANA**

In accordance with your request, Shannon & Wilson is pleased to submit our proposal for Phase 2 engineering services related to rock slope instability above County Route 420, about 12.5 miles west of Absarokee, Montana.

SCOPE OF WORK

Our scope of work includes additional field observations utilizing roped rappels and photography/videography of the slope using an unmanned aerial vehicle (drone), engineering analysis (including refinement of our opinion of probable construction cost), and preparation of a summary report.

Roped Rappels

This will involve using mountaineering techniques to descend the slope in order to directly observe the rock mass conditions (including the area that recently failed) and measure discontinuity orientations not accessible from the base. We anticipate that one individual from Midwest Rockfall (Midwest) and one from Shannon & Wilson will make multiple descents at various locations along the slope above the road. A second individual from Midwest will assist with setting up the ropes, but otherwise remain at the crest of the slope unless needed to assist the climbers in the event of an emergency.

The number of descents and the locations where they can be made will be determined based in the field based on the slope conditions. Light scaling may be required for safety so that the ropes do not dislodge rocks that could fall on personnel working below. We have budgeted for two

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days of field work, which includes time to set up anchorages at the top of the slope and a contingency for adverse weather conditions.

We anticipate that the top of the slope will be accessed by hiking around from the west side. We assume that Stillwater County will facilitate right-of-entry, and understand that the adjacent landowner will require a waiver of liability from individuals accessing locations outside the County right-of-way. We will prepare a waiver form as requested to be signed by the individuals who enter the adjacent property.

Drone Photography/Videography

We plan to engage Flight Evolved, LLC of Hamilton, Montana to collect the aerial imagery. The drone will be equipped with a camera that collects high resolution video, from which 8 megapixel still photographs can be extracted. Flight Evolved will also process the collected data using photogrammetric techniques to develop both a three-dimensional point cloud and topographic contours (referenced to a local datum). This information can be utilized for engineering analyses, and will also be useful for developing final design drawings if authorized as part of a future phase of work. We have assumed that data collection in the field can be completed in one day. We assume that the landowner will not object to drone overflight of the slope.

Engineering Analyses

We plan to import the point cloud into the computer program Split-FX, from which discontinuity orientations can be measured. This information supplements the direct measurements, and helps to mitigate the bias associated with collecting information along a linear (vertical) traverse. Using the discontinuity measurements, we will use a stereonet and associated programs to update our kinematic stability and rockfall analyses.

Based on our observations and analyses, and with input from Midwest Rockfall, we will update and refine our opinion of probable construction cost for the scaling option.

Report

Our observations, analyses, and opinions will be summarized in a report to the county. We anticipate that our Phase 1 report (including responses to comments previously provided by the

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County) will be incorporated into the new document. We will submit a draft version for your review, and as before, we will schedule a meeting to discuss the document with County personnel. We anticipate that this will be a teleconference. We will then incorporate your comments and finalize the report.

FEE

We propose to complete this work on a time and materials basis. Our estimated fee for this scope of work is approximately \$40,974, and we will not exceed this amount without your approval. A detailed breakdown of the costs is attached.

In our opinion, the greatest risk for overrunning our budget as presented would be is adverse weather (forecast prior to departure or actually encountered in the field) that affects the schedule for data collection.

SCHEDULE

We are prepared to begin coordinating and scheduling the field work upon receipt of notice to proceed. The actual time frame will depend on the schedules and availability of the personnel from Shannon & Wilson, Midwest Rockfall and Flight Evolved – however, we anticipate that field data collection can occur within three weeks of notice to proceed, weather permitting.

Flight Evolved will need about one week to process the data, after which we anticipate the our engineering analyses and preparation of the draft report will require about three weeks to complete. After receipt of comments, we will need about one week to finalize the report.

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CLOSURE

We assume that the work will be governed by the terms of our agreement executed November 17, 2015 for the initial phase of the work, except that our 2016 Standard Rates (attached) will apply. Please indicate your acceptance of our proposal by signing the following page and returning a copy to us.

If you have any questions, I can be reached at (720) 258-4114 or srw@shanwil.com. We look forward to continuing to work with you.

Sincerely,

SHANNON & WILSON, INC.



Scott R. Walker
Associate

SRW:GRF/srw

Enc: Geotechnical Cost Estimate
2016 Fee Schedule

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We accept the above conditions and authorize the above work to proceed.

STILLWATER COUNTY BOARD OF COMMISSIONERS

Signature _____
Dennis Shupak, Chair

Date _____

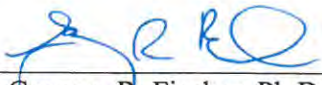
Signature _____
Maureen Davey

Date _____

Signature _____
Gerald Dell

Date _____

SHANNON & WILSON, INC.

Signature  _____
Gregory R. Fischer, Ph.D., P.E.
Senior Vice President

Date February 12, 2016

GEOTECHNICAL COST ESTIMATE
STILLWATER RIVER ROAD ROCKSLIDE PHASE 2 SERVICES

TASKS/SUBTASKS	HOURS										DOLLARS									
	PIC	VP	ASSOC	SR 3	PROF 4	CAD	CLR	Total	PIC	VP	ASSOC	SR 3	PROF 4	CAD	CLR	SUB TOTAL	ODC	TOTAL		
	GRF	WAH	SRW	AJC	RAW		LMR		\$245.00	\$200.00	\$155.00	\$140.00	\$95.00	\$83.00	\$80.00					
1.0 SITE VISIT																				
1.1 Preparation				4.0				4.0								\$560		\$560		
1.2 Travel				16.0				16.0								\$2,240	\$1,704	\$3,944		
1.3 Field Reconnaissance (Rapelling)				20.0				20.0								\$2,800		\$2,800		
1.4 Drone Photography/Videography																\$4,025		\$4,025		
1.5 Midwest Rockfall																\$10,925		\$10,925		
2.0 ANALYSIS																				
2.1 Review of Field Data					4.0			4.0												
2.2 Kinematic/Rockfall Analyses					36.0			42.0			\$930		\$380			\$380		\$380		
2.3 Refine Construction Cost Opinion								4.0			\$620		\$3,420			\$620		\$4,350		
3.0 REPORT																				
3.1 Prepare Draft	4.0	6.0	20.0	8.0	8.0	8.0	2.0	56.0			\$3,100	\$1,120	\$760	\$664	\$160	\$7,984		\$7,984		
3.2 Teleconference with County	2.0		2.0	2.0				6.0			\$310	\$280				\$1,080		\$1,080		
3.3 Finalize Report	2.0	2.0	6.0			2.0	1.0	13.0			\$930	\$80		\$166	\$80	\$2,066	\$50	\$2,116		
4.0 PROJECT MANAGEMENT																				
4.1 General								8.0			\$1,240					\$1,240		\$1,240		
4.2 QA/QC								2.0			\$310					\$310		\$310		
4.3 Safety Plan				4.0			1.0	5.0				\$560			\$80	\$640		\$640		
TOTAL	8.0	8.0	48.0	54.0	48.0	10.0	4.0	180.0	\$1,960	\$1,600	\$7,440	\$7,560	\$4,560	\$830	\$320	\$24,270	\$16,704	\$40,974		

Other Expenses	Quantity	Rate	Total
Midwest Rockfall	1 ls	\$ 10,925	\$ 10,925
Flight/Evolved	1 ls	\$ 4,025	\$ 4,025
S&W Airfare	1 ls	\$ 500	\$ 500
S&W Rental Car and Fuel	4 day	\$ 125	\$ 500
S&W Mileage/Airport Parking	1 ls	\$ 125	\$ 125
S&W Hotel	3 day	\$ 125	\$ 375
S&W Per Diem	4 day	\$ 51	\$ 204
S&W Reproduction and Shipping	1 ls	\$ 50	\$ 50
Subtotal			\$ 16,704

2016 FEE SCHEDULE

Fees for Professional Services

Fees for Shannon & Wilson's services are based on the actual time expended on the project, including travel, by our personnel and will be computed by multiplying the actual number of hours worked times the following rates:

Personnel

Senior Vice President	\$245.00/hr	
Vice President	\$200.00/hr	
Senior Associate	\$175.00/hr	
Associate	\$155.00/hr	
Senior Professional III	\$140.00/hr	
Senior Professional II	\$125.00/hr	
Senior Professional I	\$105.00/hr	
Professional IV	\$95.00/hr	
Professional III	\$90.00/hr	
Professional II	\$85.00/hr	
Professional I	\$75.00/hr	
	<i>Regular</i>	<i>Overtime</i>
Sr. Technician	\$98.00/hr	\$113.00/hr
Technician IV	\$84.00/hr	\$97.00/hr
Technician III	\$75.00/hr	\$87.00/hr
Technician II	\$65.00/hr	\$75.00/hr
Technician I	\$58.00/hr	\$67.00/hr
Sr. Drafter	\$100.00/hr	\$115.00/hr
Drafter III, IV	\$90.00/hr	\$103.00/hr
Drafter I, II	\$75.00/hr	\$87.00/hr
Administrative III/IV	\$85.00/hr	\$97.00/hr
Administrative I/II	\$65.00/hr	\$75.00/hr

The hourly rates for the services of our staff will be doubled for time spent actually providing expert testimony.

Subcontractors

Shannon & Wilson may employ subcontractors as necessary to assist in furnishing its services. Examples include, but are not limited to, drillers, excavating companies, and laboratories. Subcontractor fees will be invoiced at cost plus 15 percent.

Reimbursable Expenses

Expenses other than salary costs that are directly attributable to our professional services will be invoiced at our cost. Examples include, but are not limited to, expenses for out-of-town travel and living, information processing equipment, instrumentation and field equipment rental, special fees and permits, premiums for additional or special insurance where required, long distance telephone charges, local mileage and parking, use of rental vehicles, taxi, reproduction, local and out-of-town delivery service, express mail, photographs, laboratory equipment fees, shipping charges and supplies. The exception is for field and laboratory testing, as noted on the attached pages, which will be invoiced at the unit rates indicated.