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September 11, 2017

PRO REV OREGON CITY OPS CENTER ADDITIONAL SVCS

City of Oregon City
Public Works Department
122 South Center Street
Oregon City, OR 97045

Attention: John Lewis

SUBJECT: Revised Proposal for Additional Geotechnical Services
Oregon City Public Works Operations (OPS) Center
122 S. Center Street
Oregon City, Oregon

GRI is pleased to submit this revised proposal to provide additional geotechnical services for the proposed improvements to the Oregon City Public Works OPS Center. The improvements are planned on the east side of S. Center Street, north of S. 2nd Street, west and north of Water Board Park Road, and south of residential properties. As part of our initial investigation for the site, GRI completed 12 solid-stem auger borings, eight mud-rotary borings, and four test pits. The results of our initial geotechnical investigation for the site will be summarized in a geotechnical report that will be provided to the City of Oregon City (City) in the future.

Based on the results of preliminary slope stability modeling of the existing slope south of the project site, a slope stability risk during a seismic event was identified. This instability may impact improvements planned for the site. GRI subsequently had two meetings with City staff to discuss potential impacts of this instability to current and future planned improvements. During the second meeting, it was discussed that additional subsurface explorations and geophysical profiles should be completed to further evaluate subsurface conditions along the existing slopes south of the project site. This additional subsurface information would be used to refine our preliminary stability analysis and the potential impacts of slope movement to the planned improvements.

Our proposed scope of work is based on our understanding of geologic conditions at the site, the preliminary results of our initial geotechnical investigation for the project site, and conversations with you during the second design meeting. To limit costs, we recommend a phased approach to the additional geotechnical services. The additional geotechnical services will include geophysical profiles along up to three slope alignments south of the project site near Water Board Park Road. Due to the presence of near-surface boulders observed along the planned alignments, we recommend completing and processing one alignment profile initially. Based on the quality of the data obtained from the first profile, the additional two profiles will be completed. Following completion of the geophysical investigation, three sonic or mud-rotary borings will be completed to further evaluate subsurface conditions. The proposed geotechnical investigation will include the following items of work:

1) Complete up to three apparent resistivity versus depth profiles along the slope south of the project site near Water Board Park Road to obtain subsurface profiles of depth to intact basalt. The length of the resistivity profiles would range from about 275 to 490 ft long. A subconsultant would be contracted to perform the resistivity survey. The presence of near-surface boulders may diminish the quality of the subsurface data obtained. Due to this uncertainty in the quality of data, we recommend completing the geophysical profiles in a phased approach. The initial phase would include completing geophysical testing and data processing of one profile line that would extend from the upper portion of Water Board Park Road to the south side of the existing armory building in a generally north-south direction. Depending on the quality of data obtained from this initial profile, two additional profiles lines would be obtained. The additional two profiles would include a generally northwest-southeast profile line from near the upper portion of Water Board Park Road to the property located at 306 S. Center Street. The final profile would be completed in a generally north-south direction about halfway between the Armory building and the property located at 306 S. Center Street. The results of the resistivity profiles would be provided as an attachment in the geotechnical report.

2) Three sonic borings will be drilled to provide additional subsurface information along the slope south of the site. Two of the borings would be completed along Water Board Park Road and one boring would be completed within the driveway of 306 S. Center Street. The borings along Water Board Park Road would be completed to depths ranging from about 50 to 150 ft. The deeper boring would be completed along the upper portion of Water Board Park Road where the roadway drops abruptly several feet in elevation. The 50-ft boring would be completed where Water Board Park Road begins to curve to the south, about 175 ft southeast of the 306 S. Center Street property. The boring at 306 S. Center Street would be completed to a depth of about 30 ft. The borings will be completed with a track-mounted sonic rig. We understand the City will assist with arranging for access to the driveway of the residence at 306 S. Center Street.

   Disturbed split-spoon samples (SPTs) and/or undisturbed Shelby tube samples will be obtained from the borings in the upper 15 ft and at about 5-ft intervals below this depth. The presence of basalt boulders in the landslide debris expected in the upper portions of borings along Water Board Park Road may limit sample recovery from split-spoon and Shelby tubes. The Standard Penetration Test will be conducted while the disturbed split-spoon samples are being taken.

   The borings will be subcontracted to a drilling contractor experienced in drilling and sampling soils for engineering purposes. The drilling and sampling will be accomplished under the direction of a member of GRI's engineering or geology staff who will locate the general areas for drilling and maintain a log of the materials and conditions uncovered during the course of the work.

Vibrating wire piezometers will be installed in the borings in Water Board Park Road to evaluate the groundwater depth along the alignment of the slope.

3) Laboratory tests will be conducted to provide data on the important physical characteristics of the subsoils, essential for engineering studies and analyses. The laboratory tests will include standard classification tests, such as natural water content and unit weight determinations, as well as strength and consolidation testing, if appropriate. The latter will provide the quantitative data necessary for the various foundation design studies, such as foundation types and estimated settlements. In addition, unconfined compression strength tests will be completed on suitable intact rock core samples (if obtained) to provide information on appropriate bond strengths for rock bolts/anchors and rock hardness for drilled shaft construction.

4) GRI will provide lateral earth pressure parameters for retaining wall or slope stability mitigation options. Additional engineering studies and analyses will be accomplished to further evaluate slope stability considerations and feasible mitigation options for the existing slope south of the project site along two to three alignments. GRI will subcontract with BergerABAM, Inc., to provide concept planning level structural engineering services for the proposed mitigation options. Structural member sizes and quantities will be developed to establish a planning level cost estimate for the mitigation options. A plan view and typical section for the recommended alternative will be provided.

5) The results of our additional services will be provided in a draft report for the Oregon City Operations Center.

6) GRI will attend up to two, two-hour meetings and provide post-report consultation as requested by the project team.

Optional Task:

1) Inclinometers were installed south and southwest of the existing Armory Building along Water Board Park Road during our initial investigation program. To assist in evaluating potential long-term slope movement affecting portions of the site farther to the west, we recommend installing an additional inclinometer in the 50-ft-deep boring planned along Water Board Park Road where the road begins to curve toward the south about 175 ft southeast of the 306 S Center Street property. The inclinometer would be read one time to initialize. Additional monitoring could be completed in the future if slope movement was observed.

ASSUMPTIONS

1) Our proposal assumes that petroleum products or other potentially hazardous materials will not be encountered during our subsurface explorations. If petroleum products or other potentially hazardous materials are encountered during our subsurface exploration, we will immediately stop drilling, put the drilling subcontractor and our field staff on standby, and contact you for further guidance. The standby time has not

been included in our cost estimate and will be billed on a time-and-expenses basis in accordance with the attached Fee Schedule.

2) We assume that all property access approvals will be coordinated and completed by others. We assume that our field work can be completed without time delays associated with property access approvals. If access to subsurface explorations is delayed due to lack of property access approvals or other property access issues, we will put the drilling subcontractor and our field staff on standby, and contact you for further guidance.

3) Topographic survey of the project site and slopes to the south of the project site will be required to complete our stability analysis. We have assumed the topographic survey will be provided by others.

4) It is our understanding Water Board Park Road is a private road that will not require traffic control plans or ROW permits.

5) Steel bollards restricting vehicular access to Water Board Park Road will be removed by others for drill rig access.

6) Our cost estimate assumes the vibrating wire piezometer will be read a total of two times, with the first reading completed near the time of installation.

SCHEDULE

We have schedule the geophysical work for September 21, 2017, and the drilling for the week of October 2, 2017. It is anticipated the final report on the investigation can be submitted to you within four weeks after the completion of all field work. Information can be submitted to the project team informally as soon as it becomes available from the studies.

FEE

The services will be provided in accordance with the attached General Conditions of the Proposal. The fee for the above-described work will be computed on a time-and-expenses basis in accordance with the attached Fee Schedule. Our estimated costs for the investigation are summarized below:

Subsurface Explorations

Geophysical Profile – Initial Profile	
Resistivity Subcontractor	$ 2,750
GRI Field Time	500
Geophysical Profile – Additional Two Profiles	
Resistivity Subcontractor	5,400
GRI Field Time	500
Drilling	
Drilling Subcontractor	16,500
Private Utility Locator	500
Vibrating Wire Piezometers (VWP)	1,500
GRI Engineering Staff (Drilling/Locates/Read VWP)	8,000
Subtotal:	$ 35,650

Laboratory Testing	$ 4,000
Structural Engineering (BergerABAM)	$ 10,000
Engineering and Report	$ 10,000
Meetings and Post-Report Consultation	$ 3,850
Estimated Total:	**$ 63,500**
Optional Task 1: Inclinometer Installation and Initial Reading	$ 1,500
Estimated Total, Including Optional Task 1:	**$ 65,000**

GRI has approximately $3,000 remaining from our original budget of $59,900 to complete the scope of work from our original geotechnical investigation. The estimated total provided above is in addition to the $3,000 remaining from our original budget. If all optional tasks and geophysical profiles listed above are completed, we recommend that you increase our budget for the project from $59,900 to $124,900. This total will be reduced by $5,900 if the data from the initial geophysical profile line is inconclusive and the additional geophysical profile lines are not completed. This budget can be reduced by an additional $1,500 if the optional task is not approved. Our work will be completed under the terms and conditions of our existing agreement for this project. We request that you provide formal authorization for these additional services by signing and returning one copy of this letter.

Submitted for GRI,

George A. Freitag, CEG
Principal

Enclosed: Fee Schedule

I hereby authorize GRI to provide the services described in this proposal:

Name _____ Date _____

(Please return a copy of this proposal and signed authorization to GRI)

GRI
Beaverton, Oregon

2017 FEE SCHEDULE

Personnel	Rate/Hour
Principal	$ 215
Associate	$ 190
Senior Engineer/Geologist	$ 160
Project Engineer/Geologist	$ 140
Staff Engineer/Scientist	$ 115
Engineering Assistant	$ 90
Contract Administrator	$ 125
Technical Editor	$ 120
Drafter	$ 100
Secretarial Services	$ 65

Other Charges

Vehicle:	Vehicles will be billed at the current IRS business mileage reimbursement rate.
Fill Control Equipment:	Nuclear Density Gage rental will be billed at $5 per hour, with a maximum charge of $25 per day or $125 per week.
Reproduction:	In-house reproduction, $0.10 per sheet.
Field Instrumentation and Monitoring Equipment:	Due to varied conditions, equipment requirements, location, and use, rates for field instrumentation, monitoring, and other specialized equipment will be provided as required.
Subcontractor Services:	Charges for subcontractor services will be computed at cost plus 10%.
Travel and Subsistence:	All charges related to travel and subsistence will be computed at cost.

(LAST REVISED 5/1/2016