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September 15, 2016

PRO (WA) LONGVIEW COLUMBIA HEIGHTS RD LANDSLIDE REPAIR

City of Longview
Engineering Department
P.O. Box 128
Longview, WA 98632-7080

Attention: Ivona Kininmonth, P.E.

SUBJECT: **Scope of Work and Fee for Columbia Heights Road Retaining Wall Design for Landslide Stabilization Columbia Heights Road between Lynnwood and Lower Maplewood Drive Longview, Washington**

GRI is pleased to submit this scope of work and fee estimate to design a retaining wall to repair a landslide and stabilize the uphill cut slope on Columbia Heights Road. The services will consist of a geotechnical investigation; evaluation of landslide repair, slope stabilization and retaining wall options; preparation of plans and specifications for bid solicitation including a cost estimate; bidding assistance; and construction monitoring during the repair.

Background

The landslide occurred on December 7, 2015, and is located on the east (upslope) side of Columbia Heights Road about 1,300 ft south of Lower Maplewood Drive at about Station 129+00. According to a report prepared by GeoEngineers (2016), the upper several feet of soil along the face of the slope in the landslide is loose weathered rock. The loose soil became saturated during periods of heavy rainfall, which resulted in a reduction in strength and sudden slope movement. The landslide is about 75 ft wide and extends from the toe of slope adjacent to Columbia Heights Road upwards 20 to 30 ft to the east. The crest of the landslide is located beyond City of Longview right-of-way. We understand that GeoEngineers documented similar historic landslides that had occurred north and south of the slide along the road.

After the landslide, we understand the City removed the landslide debris that had accumulated on Columbia Heights Road, installed temporary concrete block barriers and drainage along the east roadway shoulder, and had covered the soil exposed in the landslide area with plastic sheeting in order to prevent erosion.

In 2006, Skillings Connolly completed design of improvements of approximately 1.3 miles of Columbia Heights Road between Fishers Lane and Cascade Drive. These improvements are planned, but not yet constructed. The design included a new sidewalk in the area of the recent landslide. The slope stabilization and retaining wall design in the area of the December 2015 landslide will be designed to match the planned 2006 sidewalk alignment.

Geology

Geologic mapping available for the area indicates the site is underlain by middle Eocene-age volcanic rocks of the Grays River Flows. These basalt flows are typically vesicular and form columnar fracture patterns (McCutcheon, 2003).

Approach and Scope of Work

Our proposed scope of work is intended to fully satisfy the services requested in the August 18, 2016, request for interview prepared by the City of Longview (City) and discussions during our September 6, 2016, scoping meeting at the City's office. This scope of work and fee assumes that a single wall type will be designed for the proposed wall. Our proposed scope of work is summarized below.

1) **Geological/Geotechnical Investigation.** This phase of our work would characterize the subsurface soil and rock conditions and failure mechanism of the recent landslide and evaluate the slope stability in the vicinity. Our proposed scope of work for this phase includes the following scope items.

    a. Review available geologic and geotechnical data from the project provided by the City of Longview and contained in our files.

    b. Prepare a site-specific safety plan (SSSP) that will be used by GRI personnel during the field exploration program and will document potential hazards at the work site and GRI's safety policies, controls, work practices, and personal protective equipment (PPE) selected to limit applicable hazards. The SSSP will be provided to the City in electronic format for review.

    c. Prepare a work plan which will provide detailed information regarding the exploration program for the project, including the proposed exploration locations and equipment, exploration operations, utility locates, and access and traffic control measures. The work plan, including a traffic control plan, will be provided to the City in electronic format for review.

    d. An experienced licensed engineering geologist and geotechnical engineer from GRI will conduct a walking geologic reconnaissance and assess the existing soil and rock conditions along the proposed wall alignment. It is assumed that the portion of the site located outside of landslide scarp will be surveyed by the City prior to completing the reconnaissance. During the surface reconnaissance, potential exploration locations will be identified and marked in the field for the purpose of completing the public utility notification process.

    e. Up to ten test pits (maximum one day field effort) will be completed to evaluate subsurface conditions in the area of the landslide and the planned wall area. The test pits will be made using a medium-sized tracked excavator with a 2-ft-wide bucket by a reputable earthwork contractor under subcontract to GRI. It is anticipated that three to four test pits will be advanced in the shoulder of Columbia Heights Road to evaluate foundation support characteristics, while the remaining test pits will be made on the

uphill face of the slope. It is anticipated that the top of the test pit excavations will be located up to 15 to 20 ft above Columbia Heights Road. It should be noted that the tracked excavator will mark the pavement surface as it traverses the paved surface.

An experienced licensed engineering geologist or geotechnical engineer from GRI will log each exploration and obtain representative samples of the soils and rock encountered. Upon completion of excavation and sampling, the excavation will be backfilled with excavated material. Depending on the location of excavations and the material encountered, it may not be feasible to place all of the excavated soils back in the test pit excavations. If this is the case, we have assumed that the City will dispose of the spoils left on the road side. .

Traffic control consisting of two flaggers and warning signs will likely be necessary throughout the test pit program. GRI will subcontract these services to a reputable traffic control firm. We have assumed that any street-use fees will be covered by the City.

f. Geotechnical laboratory testing will be conducted to provide data on the important physical characteristics of the soils and rock essential for engineering studies and analysis. The laboratory tests will include standard classification tests such as natural water content, Atterberg limits, and grain size analyses. Point load tests may be completed on representative samples of the rock to estimate the unconfined compressive strength of the rock. All testing will be performed in substantial conformance with applicable ASTM standards.

2) **Geotechnical Assessment.** A geotechnical assessment will be completed to meet the requirements of Chapter 17.12.030 of the City of Longview Municipal Code. The geotechnical assessment will be stamped by a licensed geotechnical engineer and include a discussion of the surface and subsurface geologic conditions at the site, a site plan delineating all of the site subject to landslide geological hazards, and a site contour map (we assume the City can provide us with topography data). The geotechnical assessment will be provided in electronic format for your use and distribution.

3) **Alternatives Analysis.** Based on the subsurface conditions, the city provided survey, and the project layout provided by Skillings Connolly, GRI and BergerABAM will identify potential slope stabilization/wall design alternatives for the project. Potential slope stabilization/wall design measures that may be considered include rock infill, gravity concrete block, gabion block, cast-in-place concrete, soil nail, and/or rock cuts with soil support. Assumed wall height is up to 10 ft. A recommended alternative will be presented to the City in a conference call. The conference call will include a brief discussion of the alternatives evaluated and a summary of advantages and disadvantages for each alternative such as costs, constructability, site disturbance, and impacts to traffic. Simplified sketches may be used to illustrate one or two wall types. Based on City input the preferred slope stabilization/wall type will be selected for design.

4) **Geotechnical Report.** A geotechnical report will be provided that describes the geotechnical/geological investigation, the slope stabilization/wall design alternatives considered,

the recommended repair alternative, and geotechnical design recommendations for the selected slope stabilization/wall repair alternative. The geotechnical report will be provided in electronic format for your use and distribution.

5) **Plans, Specifications, and Estimates (PSE).** After review and acceptance of the recommended repair by the City, GRI and BergerABAM will complete the engineering analysis and design. A retaining wall design package with plans and specifications for bidding will be provided. It is anticipated that the plans will include a wall plan and profile. The retaining wall specifications will be prepared as Special Provisions to the WSDOT Standard Specifications. It is anticipated that the City will incorporate the PSE package into the WSDOT Division 1 specifications. A preliminary PSE package will be submitted for review by the City. The final PSE design package will address the City review comments.

6) **Bidding Assistance.** GRI and BergerABAM will provide assistance to the City during bidding and evaluation of the bids.

7) **Construction Support.** We understand it is the City's intent for GRI to provide construction-phase engineering services for this project. Following completion of the Design Phase Services, and upon the City's satisfaction with the GRI's performance during design, and after the City and WSDOT have approved the final bidding documents, we understand the City reserves the right to request GRI to prepare an amendment to this contract for future services. The amendment will include engineering work necessary to carry the project through construction and closeout of the project.

   In the amendment, GRI shall include a detailed scope of work, schedule, and budget for the remaining engineering work. This amendment shall be negotiated in good faith between the City and GRI and signed by the City and GRI before GRI is authorized to proceed with the work.

8) **Meetings.** It is assumed that three meetings will occur during the duration of the project. One site meeting will occur after GRI has completed our geologic reconnaissance to confirm the project goals and design constraints with respect to the future improvements. One phone conference meeting will occur to discuss the results of the alternatives analysis and select the preferred wall option, and one meeting at the City office after submittal of the preliminary PSE package. It is assumed that up to three members of the GRI and BergerABAM team will attend each meeting, that each meeting will take about two hours.

9) **Project Management.** This task item includes coordination with City personnel, subcontractors, preparation and submittal of project invoices, and other project management tasks.

ASSUMPTIONS

- Plans, specifications, and estimates (PS&E) produced will be in Washington State Department of Transportation (WSDOT) format.
- All plans will be prepared in AutoCAD format.

- All topographic and boundary survey data will be obtained and maintained by the City and will be provided to the Consultant for use in preparing the retaining wall plans, profiles, and details.
- The project PS&E will be produced and assembled by the City, with the exception of the specific work products described in this SOW as being produced by the Consultant.
- The City will produce traffic control plans, drainage plans, project cover sheet, summary of quantities, typical roadway sections, survey control plans, roadway plans and profiles, and all other plans necessary for the project, except for retaining wall plans and profiles and retaining wall details, which will be produced by the Consultant.
- The City will produce the WSDOT Division 1 specification, including the bid form, and all other special provisions related to the portions of the work for which the City will be performing.
- The City will apply for and obtain all environmental and land-use permits required for the project. The Consultant will provide the City with quantities and work descriptions for the retaining wall construction to support the permit applications.
- The City will provide coordination with all affected utilities.
- The City will provide right of entry on private property, if necessary, for geotechnical explorations or other site reconnaissance.
- The City will negotiate all Right-of-Way acquisitions, easements, etc., if necessary for construction of the retaining wall or other improvements associated with the project.
- The reproduction of bidding and contract documents will be provided by the City.
- The advertisement of the construction project, the administration of the bidding process including the evaluation of the bids, and all construction management will be provided by the City.
- All public outreach services will be provided by the City.
- Any services required for the project, but not explicitly described in the Statement of Work, are assumed to be provided by the City or others and will not be provided by the Consultant unless an amendment to this Statement of Work is agreed to by both the City and the Consultant.

SCHEDULE

Pending notice to proceed by September 26, 2016, and depending somewhat on subcontractor availability and receipt of the traffic control plan, we anticipate that the geotechnical/geological investigation can be completed by October 13, 2016. It is anticipated that the slope reconnaissance and test pit program will take about four days to complete. The geotechnical assessment, alternatives analysis memorandum, and geotechnical report can be completed within four weeks after geotechnical/geological investigation is completed. It is anticipated that final design and the preliminary PSE package can be submitted by December 8, 2016, within the final PSE package submitted by January 12, 2017. Information can be submitted to you informally as soon as it becomes available from the explorations.