PanGEO INCORPORATED
Geotechnical & Earthquake Engineering Consultants

January 6, 2022
File No. 21-004.200

Elizabeth Huber
C/O Brandt Architects
Attn: Kate Miller
18915 142nd Avenue NE #140
Woodinville, WA 98072

Subject: **Response to Geotechnical Review Comments**
9611 SE72nd Street
Mercer Island, WA

Dear Elizabeth,

This letter provides geotechnical responses to the document 211216 Geotech Comments, the geotechnical plan review comments from the City of Mercer Island, and provides recommendations for addressing the City's review comments.

Landslide Hazard / Steep Slope Assessment / Shoring Wall / Stability Assessment

The site is mapped within a potential landslide hazard area according to the City of Mercer Island's Geologic Hazards Map. Additionally, the City of Mercer Island landslide hazard map indicates a known slide scarp above the property, between East Mercer Way and SE 72nd Street. The subject property, however, is not mapped as a steep slope area and has a relatively low surface gradient.

While on site, we observed no indications of current, active slope movement. Specifically, we did not observe any indications of distress in the existing small concrete block wall on the upslope side of the existing driveway. Based on our field observations and the results of our site borings, it is our opinion that the site is globally stable in its current configuration. It is also our opinion that the planned construction will not adversely impact the overall stability of the subject and surrounding properties, provided

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that the soldier pile wall is constructed as per plan and that the recommendations presented in our report are properly incorporated into the design and construction of the project. The City of Mercer Island does not show any identified landslides on the subject site; however, the Washington Department of Natural Resources maps the area below East Mercer Way as a pre-historic slide area, based on Lidar assessment, and the slope is mapped as mantled with mass wasting depoists. In our opinion, the slope area is currently inactive, and catchment provisions are not required. As a precautionary measure, the soldier pile wall may be designed with 1 foot of catchment to control any potential soil creep.

Shoring Wall / Erosion Hazards

The site is mapped within a potential erosion hazard area in accordance with the City of Mercer Island's Geologic Hazards Map. Based on the results of our test borings, the hard clayey site soils over most of the site are anticipated to exhibit moderate to low erosion potential. However, the wet, sandy soils located on the slope above the house are potentially vulnerable to erosion resulting from groundwater drainage.

In our opinion, the erosion hazards at the site can be effectively mitigated with the best management practice during construction and with properly designed and implemented landscaping for permanent erosion control. During construction, the temporary erosion hazard can be effectively managed with an appropriate erosion and sediment control plan, including but not limited to temporary dewatering of the excavation area where wet sand is present (as recommended in our report dated September 7, 2021), prompt placement and backfill of soldier pile wall lagging, installing silt fence at the construction perimeter, limiting removal of vegetation to the construction area, placing rocks or hay bales at the disturbed/traffic areas and on the downhill side of the project, covering stockpile soil or cut slopes with plastic sheets, placing rocks at the construction entrance, etc.

Permanent erosion control measures should include installing a seepage collection at the face of the wall with discharge into a storm water drain or discharge to an approved discharge point. Furthermore, the project design should include vegetation, landscape plants, and permanent drainage in a way that controls any piping of soil material.

Wall Design for Surcharge Loads

Wall design should include effects of surcharge of adjacent structures or footings where wall segments are located below a 1(H):1(V) projection from the base of adjacent footings. Lateral surcharge pressures should 30% of the live and dead load of the adjacent footings.

Seismic Hazards

The City of Mercer Island Code defines seismic hazard areas as those areas subject to risk of damage from earthquake-induced ground shaking, slope failure, and soil liquefaction or surface faulting. The proposed construction area is mapped as seismic hazard area. In our opinion, due to the cohesive nature of most of the site soils, the potential for soil liquefaction and seismic settlement during an IBC-code level earthquake is low. It is also our opinion that the potential for seismic-induced landslide hazard is low based on the current building layout, and special design considerations associated with soil liquefaction and seismic-induced landslides are not necessary for this project.

Shoring – South Side

Per our geotechnical report dated September 7, 2021, we recommend shoring along the south side of the excavation. In the cut for the garage, it may be more effective to add 2 or 3 soldier piles along the south side. In general, cuts less than 5 feet in height and cuts in the hard clay may be retained with Ultrablock™ walls, per our report. We also recommend that, prior to any construction, a survey be taken of the house structure to the south, and that temporary monitoring points be established on the house adjacent to the excavation. These points should be surveyed weekly during the time the excavation is open, and the results should be forwarded to us for review. The elevation of the foundations of the adjoining house should be confirmed and considered in planning open cuts and shoring.

Drainage

Our report of September 7, 2021, recommended permanent soldier pile walls above the driveway with weepholes for drainage. The weepholes should be designed and installed

to prevent piping of soil behind the wall. Soldier pile walls constructed against concrete foundations, such as above the garage, should be provided with drainage strips. These should be connected to a drainage system separate from the foundation footing drain and discharge at an approved discharge point.

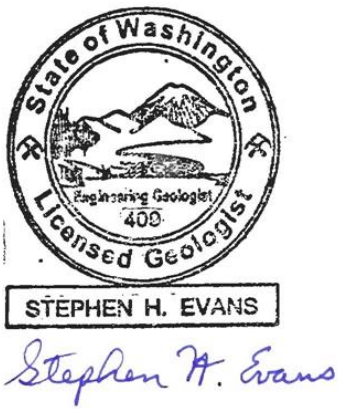
As we have communicated previously, there appears to be an existing French drain across the slope with an access pipe roughly 10 feet above the location of our PG-3. We recommend that the facility be inspected to determine if it is, in fact, a functional drain. If it is not function, it should be assessed for potential restoration.

Coefficient of Friction

Upon review of the soil conditions at the site and given that we anticipate fine grained clay soils at the foundation elevations, we concur with the City's comment and revise our recommended coefficient of friction to 0.3.

We trust that this addendum will meet your needs at this time. Once the corrections outlined by the City have been incorporated into the design plans, along with the recommendations contained in this Addendum and our report dated September 7, 2021, the revised plans should be forwarded to us for review, per the plan review dated December 28, 2021, from the Kolke Consulting Group. For efficiency, please forward plans for review only when all comments from the City reviewers have been satisfied.

Sincerely,



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