

April 4, 2023  
File No. 19-062.200

Mr. Benjamin C. Altman, Exe.,  
The Estate of James Altman, Sr.  
**Attn: George Steirer, Plan to Permit, LLC.**  
10365 El Honcho Place  
San Diego, CA 92124-1219

**Subject: Geotechnical Plan Review, Report Addendum, Comment Response  
Proposed SFR, East Lot, Parcel 302405-9151  
6423 E Mercer Way, Mercer Island, WA**

Dear Mr. Altman,

As requested, PanGEO prepared this letter to clarify foundation design recommendations and conducted a review and provided the responses below to the City of Mercer Island geotechnical comments. In preparing this response we reviewed the comments on-line on the Cover Sheet from Litchfield Engineering, Site Development Plan Sheet 3 of 6, and Sheets S1.0 and S3.0 from MC Squared, dated May 15, 2020.

#### **GEOTECHNICAL COMMENTS REVIEW AND RESPONSE**

Comments on Cover Sheet.

- **Update** - Update all plans and calculations to comply with 2018 IBC.
- **Plan Review and Minimum Risk Statement** – Reviews are to be conducted on the final plans and will be conducted at the appropriate time.

Comments on sheet S1.0.

- **6H Seismic Earth Pressure** – Based on ASCE 7-16 the PGA for the site is 0.621g.
- **Soil Density and Angle of Internal Friction** - In our opinion, if needed for structural design, use soil unit weight of 120 pcf and an internal friction angle of 32 degrees.
- **Coefficient of Friction and Passive Resistance** – We recommend using a revised coefficient of friction of 0.3 and a passive resistance of 300 pcf for all structural

calculations. This supersedes the recommendations presented in our report dated April 16, 2019. Please revise the structural calculations as needed.

- **Pin Piles** – Per our Report Addendum dated December 3, 2021, spread footings may be used for foundation support. Per the foundation plan call-out (Sheet 2.0), portions of the foundations are to be supported on two rows of 4-inch pin piles on 32-inch centers. Recommendations for pin piles are provided in our April 16 report. 4-inch pin piles are typically driven with a small excavator mounted hammer and jack hammers are not appropriate for this size pile. See the table on page 10 of our April 16 report for refusal criteria. One minute of driving for one inch penetration is the criteria for a 2-inch pin pile and is not appropriate for a 4-inch pin pile. Welded splices are not appropriate for pin piles, which should be spliced using fitted compression sleeve couplers, per our report. Load testing should be done on 3 percent of the installed piles or a minimum of 1 pile, per ASTM 1143/D1143M – 07. The suggestion that the parameters given on the plan sheet are derived from our April 16 report is incorrect.

Comment on sheet S3.0

- **Entry Column Footing Support** – The two columns on the north side of the house at the entry are underlain by 8 to 10 feet of loose fill or alluvium. Consequently, we recommend supporting the columns on 2” diameter pin piles. 2-inch pin piles driven to a refusal criteria of one inch of penetration over one minute of continuous driving, using an 80-lb jack hammer or 140-lb Rhino hammer, will support a load of 3 tons. As stated above, welded couplers are not acceptable. Pipe sections should be joined with compression sleeve couplers.

Civil Sheet 2 and 3 of 5

- **Sheet 2 of 5** – Purely a comment for the Civil Engineer.
- **Sheet 3 of 5** – Five comments mainly for the structural engineer. As stated above, we recommend using a revised coefficient of friction of 0.3 and a passive resistance of 300 pcf for all structural calculations. An easement will be required for construction of a retaining wall along west property line unless there is space available for an open 1H:1V cut slope. Vertical cuts greater than 4 feet are not acceptable.

- Open cuts in glacial soils should be sloped 1H:1V. Loose alluvial soil may require slopes of 2H:1V. Trench boxes may be used for temporary shoring in lieu of open cuts. The final comment regarding the back slope above the retaining wall south of the house will have to be addressed in the final grading plan.

### CLOSURE

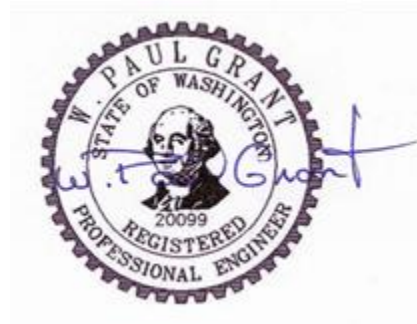
We trust that the information presented herein meets your need at this time. Please call if you have any questions.

Sincerely,



*Stephen H. Evans*

Stephen H. Evans, L.E.  
Senior Engineering Geologist



W. Paul Grant, P.E.  
Principal Geotechnical Engineer