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September 25, 2020

Mr. Gregg Petrie
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Geotechnical Plan Review Letter
Petrie Residence Additions
2431 – 60th Avenue SE
Mercer Island, Washington
NGA File No. 1159920

Dear Mr. Petrie:

This letter presents the results of our geotechnical engineering review of plans for the Petrie Residence Additions project located at 2431 – 60th Avenue SE on Mercer Island, Washington.

INTRODUCTION

We previously prepared a geotechnical engineering evaluation for the project site titled **"Petrie Residence Additions and Liquefaction Assessment," dated March 10, 2020.** The site is currently occupied by an existing single-family residence within the eastern portion of the approximately 0.43-acre, rectangular-shaped property. The property gently slopes westward toward the shoreline along Lake Washington. The proposed development plan consists of adding additions to the existing single-family residence and constructing a new detached garage, along with a 30-foot by 16-foot in-ground pool on the downslope side of the residence. We understand the pool will be between 4 and 6 feet in depth, maximum. We understand that the City of Mercer Island has requested our review of the most recent set of plans. For our use in preparing this letter, we were provided with the following documents:

- Architectural Plan Set titled "A Custom Residence for Gregg Petrie," dated September 4, 2020 and prepared by Anderson Architecture.
- Structural Plan Set titled "A Custom Residence for Gregg Petrie," dated May 13, 2020 and prepared by Stephen Tapp, Architect/P.E.

- Civil Engineering Plan Set including Erosion Control and Drainage plans, titled "Petrie Residence," dated May 14, 2020 and prepared by Civil Engineering Solutions.

- Landscape Site Plan titled "Petrie Residence," dated July 24, 2020 and prepared by Darwin Webb Landscape Architects, P.S.

PLAN REVIEW AND CONCLUSIONS

We have reviewed the geotechnical aspects of the provided retaining wall plans and found the plans to be in general compliance with our recommendations as presented in our previous geotechnical report, with some notable exceptions. It is our opinion that the proposed development should not adversely impact existing slope stability conditions within the subject site and neighboring properties. Project plans indicate that new foundations will be embedded at least 18 inches. Structural Plans on Sheet S-1.0 specifically indicate soil bearing pressures of 2,500 pcf and 15,000 psf were utilized in the design. Our report recommended foundations be designed to be supported by an allowable bearing pressure of not more than 2,000 psf on the medium dense or better native bearing soils or rock spalls extending to the competent native material. If higher bearing pressures are needed, we should be retained to observe subgrade excavations and provide feedback during construction.

4- to 6-foot tall retaining walls are proposed to level the backyard area and provide space for the planned pool. Along the southern portion of the graded area, the walls will be tiered to provide a total vertical relief of 6- to 10 feet. Specific design details for landscape retaining walls on the western portion of the property were not provided in the landscape or Civil Engineering plan sets, instead referring to prescriptive concrete cast-in-place walls on the Structural Plans. The retaining wall schedule indicates the design utilized an allowable soil bearing pressure of 2,000 psf, and an active pressure of 40 pcf which is consistent with our recommendations. In accordance with our previous recommendations, all retaining walls should include footing drains to prevent hydrostatic loading by the perched groundwater condition on the site. The network of footing drains should be shown on the drainage plan to ensure proper fall can be maintained to the drainage tightline. The planned pool and spa appear to include a connection to the stormwater drainage network on site.

We recommend that grading and the proposed repairs be performed in a manner that minimizes disturbance to the areas outside of the wall area. We also recommend that all disturbed areas be revegetated and vegetation maintained until it is established. All other recommendations provided in our previous report should be strictly followed.

MINIMUM RISK STATEMENT

Based on our understanding of the proposed plans, and provided that the recommendations in our previous report and this letter are strictly followed during construction and the foundations are constructed under the supervision of NGA, the areas disturbed by construction should remain stable meeting the criteria stated in Mercer Island City Code 19.07.160.B.2.a-d. In addition, the development has been designed so that the risk to the lot and adjacent properties is eliminated or mitigated such that the site is determined to be safe, meeting the requirements stated in Mercer Island City Code 19.07.160.B.3.b.

CLOSURE

We recommend that NGA be retained to provide monitoring and consultation services during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities comply with contract plans and specifications.

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We appreciate the opportunity to provide service to you on this project. Please contact us if you have any questions regarding this letter or require further information.

Sincerely,

NELSON GEOTECHNICAL ASSOCIATES, INC.

Carston Curd

Carston T. Curd, GIT
Project Geologist

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