

November 29, 2022

JN 22396

Jordan Naftolin and Erin Dillon-Naftolin
4524 – 90th Avenue Southeast
Mercer Island, Washington 98040
via email: jordan.naftolin@gmail.com

Subject: **Geotechnical Engineering Report Letter**
Proposed Residence Addition Project
4524 – 90th Avenue Southeast
Mercer Island, Washington

Dear Mr. and Mrs. Naftolin:

We are pleased to present this geotechnical engineering report for proposed residence addition project at 4524 – 90th Avenue Southeast on Mercer Island. The scope of our services consisted of exploring site surface and subsurface conditions, and then developing this report to provide recommendations for general earthwork and design considerations.

Based on plans we have received that were prepared by Hersh L.D. Parnes and dated September 30, 2022, we understand that a one-story addition is proposed on the southeastern side of the existing residence. The floor level of the addition will be at the same grade as the main floor of the residence, which will be approximately 3.5 feet above the existing grade on the addition's eastern side. The plans also indicated that a footing foundation is proposed that has been designed for a bearing capacity of 1500 psf.

If the scope of the project changes from what we have described above, we should be provided with revised plans in order to determine if modifications to the recommendations and conclusions of this report are warranted.

SITE CONDITIONS

SURFACE

The residential property is located on the eastern side of 90th Avenue Southeast near the northwestern/central portion of Mercer Island. The property and adjacent sites generally slope very gently downward to the east/northeast. The addition area is located approximately 275 feet southwest of a steep slope that declines to the north.

The property is nearly flat, although there a slight decline to the east on approximately its eastern half. The existing residence is generally located on the mostly flat, western portion of the property. Some patios and a hot tub are located just east of the residence. The eastern portion of the property is mostly covered with a lawn and landscape areas.

Based on the City of Mercer Island GIS Mapping Portal, much of the property and nearby properties are mapped as a Potential Seismic Hazard Area. No other Geologic Hazard Areas are mapped on or near the site.

SUBSURFACE

The subsurface conditions were explored by excavating a test hole in the new addition location on November 23, 2022 at the approximate location shown on the attached Site Exploration Plan. We also obtained the logs of some test pits excavated on the western side of 90th Avenue Southeast across from the property.

The underlying core soils revealed in the nearby test pits was competent, dense to very dense, native silty sand. The nearest test pit to the subject property revealed this competent soil at a depth of about 2 feet. In the test hole excavated in the addition area, the dense to very dense silty sand was revealed at a depth of approximately 4 feet. Revealed directly above the competent silty sand was approximately a foot of medium-dense, coarse sand. The upper soil in the test hole consisted of about 6 inches of topsoil and 2.5 feet of loose, root-laden silty sand. A log of the test hole is attached with this report.

Perched groundwater was revealed in the onsite test hole at a depth of approximately 3.5 feet.

CONCLUSIONS AND RECOMMENDATIONS

The onsite test hole, as well as the adjacent test hole, revealed that the core of the site is dense to very dense native, glacially-consolidated silty sand. In the test hole, medium-dense sand was revealed overlying the dense to very dense silty sand. Conventional footings can be used to support the addition, as included in the project structural plans for the project, provided they bear on the medium-dense sand or on structural fill placed above the medium-dense sand. For this project, due to the wet condition of the medium-dense sand, we believe it is most appropriate for this project to use free-draining structural fill above the sand. The structural fill should consist of a clean, angular material. The design bearing capacity for footings of 1,500 psf, as noted in the structural plans is suitable for the project.

Discussion of Critical Areas (MICC 19.07)

As noted above, per the Mercer Island GIS, the site is shown to be located in a potential Seismic Hazard. No Steep Slope Hazard Areas are within at least 275 feet of the site. Because the core soil of the site and vicinity is dense to very, glacially-consolidated silty sand, and this soil was revealed at shallow depths, it is our professional opinion that the project and site do not meet the criteria for a Seismic Hazard as noted in the MICC. We believe the project is very suitable from a geotechnical engineering standpoint provided the recommendations in this report and project plans structural plans are followed.

Statement of Risk: In order to satisfy the City of Mercer Island's requirements, a statement of risk is needed. As such, we make the following statement:

Provided the recommendations in this report and the project structural plans are adhered to, it is our professional opinion that the recommendations presented in this report for this project will render the development as safe as if it were not located in a geologically hazardous area and will not adversely impact critical areas on adjacent properties.

LIMITATIONS

The conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our explorations and assume that the soil and groundwater conditions encountered in the onsite and adjacent explorations are representative of subsurface conditions on the site. If the subsurface conditions encountered during construction are significantly different from those observed in our explorations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. Unanticipated conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking samples in borings. Subsurface conditions can also vary between exploration locations. Such unexpected conditions frequently require making additional expenditures to attain a properly constructed project. It is recommended that the owner consider providing a contingency fund to accommodate such potential extra costs and risks. This is a standard recommendation for all projects.

This report has been prepared for the exclusive use of Jordan Naftolin and Erin Dillon-Naftolin, and their representatives, for specific application to this project and site. Our conclusions and recommendations are professional opinions derived in accordance with our understanding of current local standards of practice, and within the scope of our services. No warranty is expressed or implied. The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design.

ADDITIONAL SERVICES

In addition to reviewing the final plans, Geotech Consultants, Inc. should be retained to provide geotechnical consultation, testing, and observation services during construction. This is to confirm that subsurface conditions are consistent with those indicated by our exploration, to evaluate whether earthwork and foundation construction activities comply with the general intent of the recommendations presented in this report, and to provide suggestions for design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. However, our work would not include the supervision or direction of the actual work of the contractor and its employees or agents. Also, job and site safety, and dimensional measurements, will be the responsibility of the contractor.

During the construction phase, we will provide geotechnical observation and testing services when requested by you or your representatives. Please be aware that we can only document site work we actually observe. It is still the responsibility of your contractor or on-site construction team to verify that our recommendations are being followed, whether we are present at the site or not.

We appreciate the opportunity to be of service on this project. Please contact us if you have any questions, or if we can be of further assistance.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



11/29/2022

D. Robert Ward, P.E.
Principal

Attachments: Site Exploration Plan, Log of Test Hole

cc: **Hershal Parnes**
via email: parnes.arch@gmail.com

DRW:kg

TEST HOLE LOG

TEST HOLE

Depth (feet)	Soil Description
0.0 – 0.5	Topsoil
0.5 – 3.0	Reddish-brown silty SAND with roots, fine -grained, dry, moist loose [SM] - becomes very moist to wet at 2 feet
3.0 – 4.0	Gray SAND, coarse-grained, wet to very wet, medium-dense [SP]
4.0 – 4.5	Gray gravelly silty SAND, very moist, dense to very dense [SM]

The test hole was terminated at 4.5 feet on November 24, 2022.
Perched groundwater seepage was encountered in the test hole at approximately 3.5 feet.

***NOTE** – Letters in brackets [] denote the USCS soil classification.