

November 13, 2025

JN 25355

RKK Construction
3056 – 70th Avenue Southeast
Mercer Island, Washington 98040

Attention: Jason Koehler
via email: jason@rkkconstruction.com

Subject: **Foundation and Critical Area Considerations**
Proposed Gate for Schwartz Residence
7301 West Mercer Way
Mercer Island, Washington

Greetings:

This report presents our geotechnical engineering report related to the planned gate to be installed for the driveway, at the southern border of the Schwartz property. This gate is intended to improve security for the home, which is located at the end of a small street. We expect that the gate will be metal and will be a vertical lift or pivot gate. This will minimize the gate's footprint. The earthwork associated with the gate's construction will be limited to a narrow trench for a grade beam that will extend the width of the gate.

The undersigned principal engineer visited the site to observe the existing conditions. The subject property is developed with a residence constructed in approximately 1991. This home is located on the western side of the lot, with the eastern, steeply-sloped portion of the property remaining undeveloped. The house is accessed by a private drive that meanders from West Mercer Way and also serves other several properties. The residence and driveway area located at the base of steeply-sloped ground. The proposed gate will extend across the relatively flat driveway in the southwestern corner of the property. Construction of the gate will not require disturbance of the steep slopes.

The City of Mercer Island GIS maps the entire lot, as well as all of the surrounding neighborhood, as lying within a Potential Landslide Hazard, Seismic Hazard, and Erosion Hazard. The eastern portion of the property is mapped as a Steep Slope Hazard.

From our research on the Mercer Island GIS, we know that the site was explored by excavating several test pits prior to the construction of the existing house. Logs of those explorations are attached to the end of this report. Based on the explorations and our review of published geologic maps, explorations were conducted at the approximate locations shown on the attached Site Exploration Plan. Logs of the test holes are also attached. Test Pits 12 and 13 were conducted at the approximate location of the proposed gate. These explorations revealed very dense, glacially-compressed silty sand within a few feet of the ground surface. Based on geologic maps, and our previous experience with projects in the vicinity, this very dense soil is glacial till. Our observations, and the results Test Pit 12 indicate that a few feet of fill and loose soil is present over the glacial till at the western end of the gate location.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

THIS SECTION CONTAINS A SUMMARY OF OUR STUDY AND FINDINGS FOR THE PURPOSES OF A GENERAL OVERVIEW ONLY. MORE SPECIFIC RECOMMENDATIONS AND CONCLUSIONS ARE CONTAINED IN THE REMAINDER OF THIS REPORT. ANY PARTY RELYING ON THIS REPORT SHOULD READ THE ENTIRE DOCUMENT.

In order to minimize the amount of excavation necessary for the project, we recommend that small-diameter pipe pile be used to support the grade beam for the new gate. These piles would be driven to refusal in the very dense soil, and can be installed using hand-held jackhammers.

Seismic Hazard: The glacially-compressed soils beneath the site that will support the foundations for the planned gate are not susceptible to seismic liquefaction.

Potential Landslide and Steep Slope Hazard Areas: The site lies within an area mapped as a Potential Landslide Hazard area. The explorations confirm that glacially-compressed soil lies close to the ground surface. This competent soil has a negligible potential for instability on the gentle to moderate slopes of the proposed gate location.

It is our opinion that no buffers or setbacks from the steep slopes on the east portion of the property are required for the planned gate construction, provided the recommendations presented in this report are followed. The recommendations presented in the report are intended to prevent adverse impacts to the stability of the site and the neighboring properties.

Erosion Hazard Areas: The site meets the City of Mercer Island's criteria for an Erosion Hazard Area. The temporary erosion control measures needed during the site development will depend heavily on the weather conditions that are encountered during the site work. One of the most important considerations, particularly during wet weather, is to immediately cover any bare soil areas to prevent accumulated water or runoff from the work area from becoming silty in the first place. If work occurs during the wet season, a straw wattle or wire-backed silt fence should be erected as close as possible to the planned work area, and the existing vegetation around the work area should be left in place. Soil stockpiles should be minimized. Following rough grading, it may be necessary to mulch or hydroseed bare areas that will not be immediately covered with landscaping or an impervious surface.

We provide the following "statement of risk" to satisfy City of Mercer Island conditions:

"It is our professional opinion that the development practices proposed in this report for the new development would render the alteration as safe as if it were not located in a geologic hazard area."

We recommend including this report, in its entirety, in the project contract documents. This report should also be provided to any future property owners so they will be aware of our findings and recommendations.

SEISMIC CONSIDERATIONS

In accordance with the International Building Code (IBC), the site class within 100 feet of the ground surface is best represented by Site Class Type D (Stiff Soil).

The IBC and ASCE 7 require that the potential for liquefaction (soil strength loss) during an earthquake be evaluated for the peak ground acceleration of the Maximum Considered Earthquake (MCE), which has a probability of occurring once in 2,475 years (2 percent probability of occurring in a 50-year period). The dense soils beneath the site that will support the pipe piles are not susceptible to seismic liquefaction under the ground motions of the MCE because of their compact nature and high internal strength.

PIPE PILES

A 2-inch-diameter pipe pile driven with a minimum 90-pound jackhammer or a 140-pound Rhino hammer to a final penetration rate of 1-inch or less for one minute of continuous driving may be assigned an allowable compressive load of 3 tons. Load tests are not required to verify this allowable capacity.

Extra-strong steel pipe should be used. The site soils are not highly organic, and are not located near salt water. As a result, they do not have an elevated corrosion potential. Considering this, it is our opinion that standard "black" pipe can be used, and corrosion protection, such as galvanizing, is not necessary for the pipe piles. Subsequent pipe sections should be connected together using threaded or slip couplers, or by welding. If slip couplers are used, they must fit snugly into the ends of the pipes. This can require that shims or beads of welding flux be applied to the couplers.

Pile caps and grade beams should be used to transmit loads to the piles. We recommend a minimum of two piles be included at each end of the grade beam with additional piles spaced along the length of the grade beam, if needed.

LIMITATIONS

This report has been prepared for the exclusive use of RKK Construction and its 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.



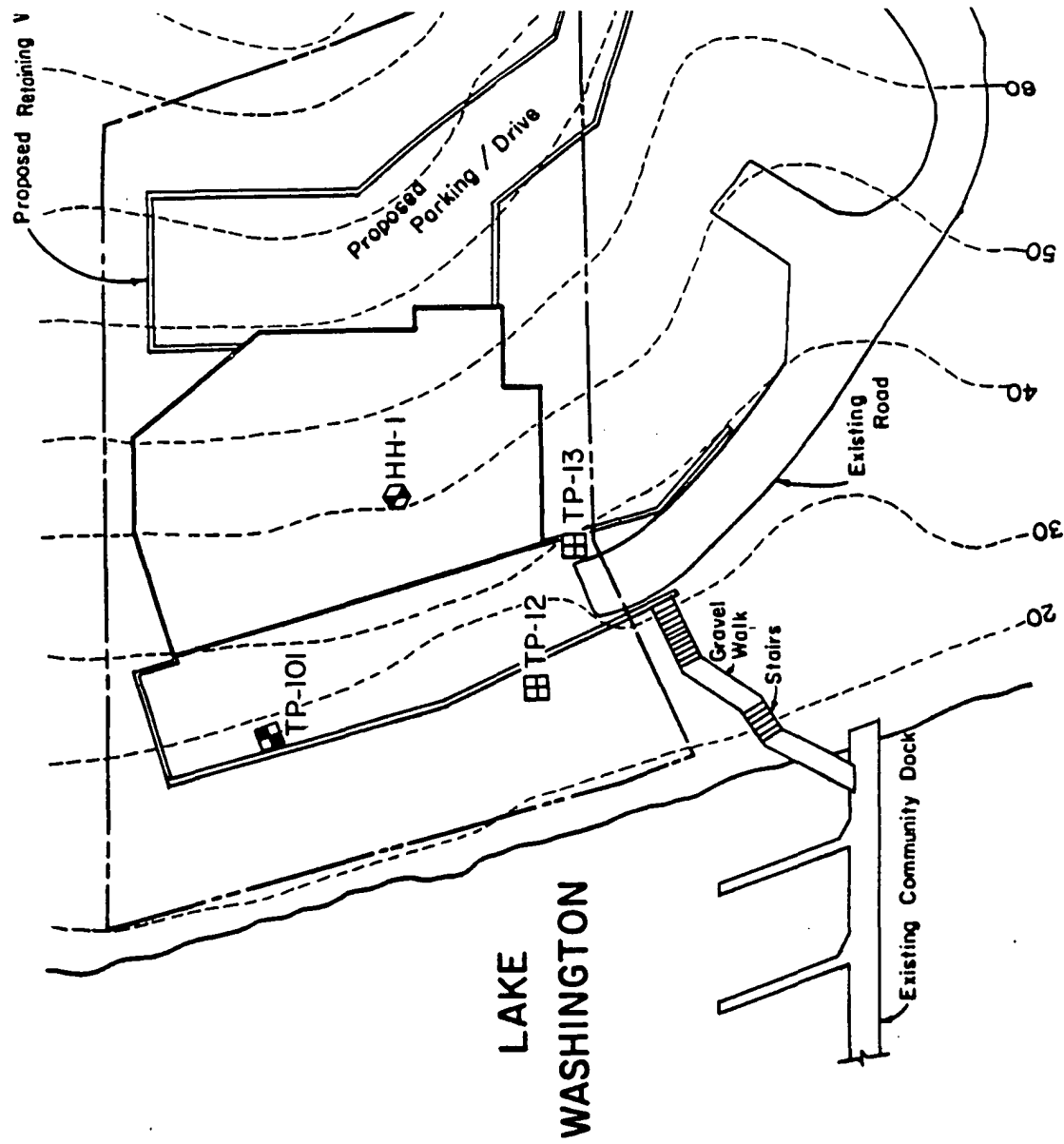
11/13/2025

Marc R. McGinnis, P.E.
Principal

Attachments:

- Logs of Previous Explorations

MRM:kg



Depth (feet) Soil Classification

Test Pit No. 10 (In Bank)

0.0 - 1.0 Soft, black, organic topsoil
1.0 - 3.0 Loose, brown, silty, fine to medium sand
3.0 - 4.0 Loose, saturated, brown, fine to medium sand
No seepage

Test Pit No. 11

0.0 - 1.0 Soft, brown topsoil
1.0 - 3.0 Soft, wet, brown, silty, fine to medium sand with gravel (Fill)
3.0 - 7.0 Loose to medium dense, mottled, wet, brown, silty, fine to
medium sand with gravel, cobbles and boulders
Water flowing at 5 feet

Test Pit No. 12

0.0 - 1.5 Very loose, brown, silty, fine to medium sand (Fill)
1.5 - 4.0 Loose, wet, gray, silty, fine to medium sand with gravel
4.0 - 5.0 Very dense, brown, silty, fine to medium sand with gravel
and cobbles
Seepage at 4 feet

Test Pit No. 13 (Bank)

0.0 - 6.0 Very dense, brown, silty, fine, silty, fine to medium sand
with gravel
No seepage