

February 27, 2020

Mr. Bogdan Maksimchuk  
Barcelo Homes  
P. O. Box 1639  
Mercer Island, WA 98040

Re: **Geotechnical Recommendations**  
Proposed Residence  
3220 74<sup>th</sup> Avenue South  
Mercer Island, Washington

Dear Mr. Maksimchuk,

This report summarizes the results of our site investigation and geologic research for the residential property located on the south side of 93<sup>rd</sup> Avenue SE in Mercer Island. It is understood that three new residential structures will be built on this property after removal of an existing residence and garage.

The purpose of this report is to describe existing site and subsoil conditions, and to provide recommendations for foundation design. Geologic mapping along with recent subsurface explorations were used as references for project design.

#### Site Conditions

The property is relatively flat on the upper west side adjacent to 93<sup>rd</sup> Avenue, but there is a drop in elevation on the east side where an existing creek channel extends down to the east property line. Geologic mapping by Troost in 2006 shows this area is underlain by glacial deposits (Qvt) consisting of very dense silty sands. The existing steep slope area adjacent to the creek shows no evidence of previous landslide activity on this property that has an overall elevation drop of about 30 to 35 feet from the west to east sides of this site.

This property does not classify as a geologic hazard area based on our site investigation and confirmation of the dense underlying glacial soils. This slope is not susceptible to erosion, sliding, earthquake seismic response or other geological events based on slope gradient, dense glacial soils, hydrology, and heavy tree and vegetation covering this slope area.

Subsurface exploration was performed by excavating four test pits to document the existing soil and groundwater conditions. All test pits encountered an upper thin layer of topsoil that was underlain by medium dense to dense silty sands classified as weathered glacial till soils. No groundwater was encountered to depths ranging from 6 to 9 feet below existing grades. Our test pit excavations are described below and their locations are shown on Drawing No. 1.

- TP -1 Located on the lower east side of the property - Elev 212 feet  
 0.0 to 0.8ft Topsoil – Silty Sand with grass and sod; brown, moist, loose;  
 0.8 to 6.0ft f/m Silty Sand; light brown, moist, medium dense to dense;  
 6.0 to 7.5ft Sand and Silty Sand; light brown, moist, dense; no groundwater encountered
- TP-2 Located on the north side of the property – Elev 221 feet  
 0.0 to 0.4ft Topsoil– Silty Sand; brown, loose and moist;  
 0.4 to 2.2ft f/m Silty Sand; light brown, moist, medium dense;  
 2.2 to 6.5ft Silty Sand; light brown, moist, dense; no groundwater encountered;
- TP-3 Located near the northwest corner of the property– Elev 229 feet  
 0.0 to 0.5ft Sandy Gravel Fill; grey, slightly moist, dense;  
 0.5 to 2.5ft Silty Sand; light brown, moist, medium dense;  
 2.5 to 5.5ft Silty Sand; light brown, moist, dense; no groundwater encountered;
- TP-4 Located near the southwest corner of the property – Elev 226 feet  
 0.0 to 0.3ft Topsoil – Silty Sand; brown, moist, loose;  
 0.3 to 3.0ft Silty Sand; light brown, moist, medium dense;  
 3.0 to 6.0ft Silty Sand; light brown, moist, dense; no groundwater encountered;

On the basis of our field exploration the subsurface soil and geologic conditions consisting of dense silty sands are competent for foundation support. The underlying very dense glacial deposits are stable and will not be subject to lateral or vertical slope movement or instability due to future seismic activity.

### Geotechnical Recommendations

Based on the results of our site investigation the following recommendations have been prepared for site development and foundation design. It is understood that one new residence to be located on the lower portion of Lot 20 at the northeast corner of this property. The remaining two residences on Lots 21 and 22 will be located on the upper portion of this property adjacent to 93<sup>rd</sup> Avenue.

Foundations extending down to the dense soils may be designed for an allowable bearing value of 2000 psf and a passive value of 250 pcf. Depths of these footings will vary depending on final building pad grades, but they must be a minimum depth of 24 inches below the existing topsoil layer. An active pressure of 30 pcf and a seismic pressure of 8H should be used in the design of retaining walls. Concrete floor slabs may be poured on the final subgrade soils as long as they are proof rolled prior to pouring the concrete.

Perforated subdrain piping should be installed around the perimeter of the residence foundations, and should discharge to a catch basin before connecting to the city storm drain system. Storm water runoff from the impervious surface areas along with subdrain groundwater should be directed into a catch basin onsite before discharge to the City storm drain system or into the existing creek channel that leads toward the southeast corner of this property.

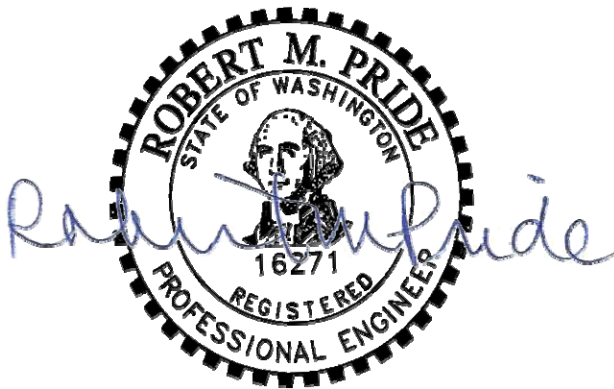
It is recommended that field inspections be performed during site excavation for the proposed building pads and the structure foundations. Field memos will be prepared for submittal to Mercer Island.

### Summary

A final plan review will be performed for each of the proposed residential projects to confirm that our geotechnical recommendations have been included on the design drawings. Our findings and recommendations provided in this report were prepared in accordance with generally accepted principles of engineering geology and geotechnical engineering as practiced in the Puget Sound area at the time this report was submitted. We make no other warranty, either express or implied.

Please call me if there are any questions.

Respectfully,

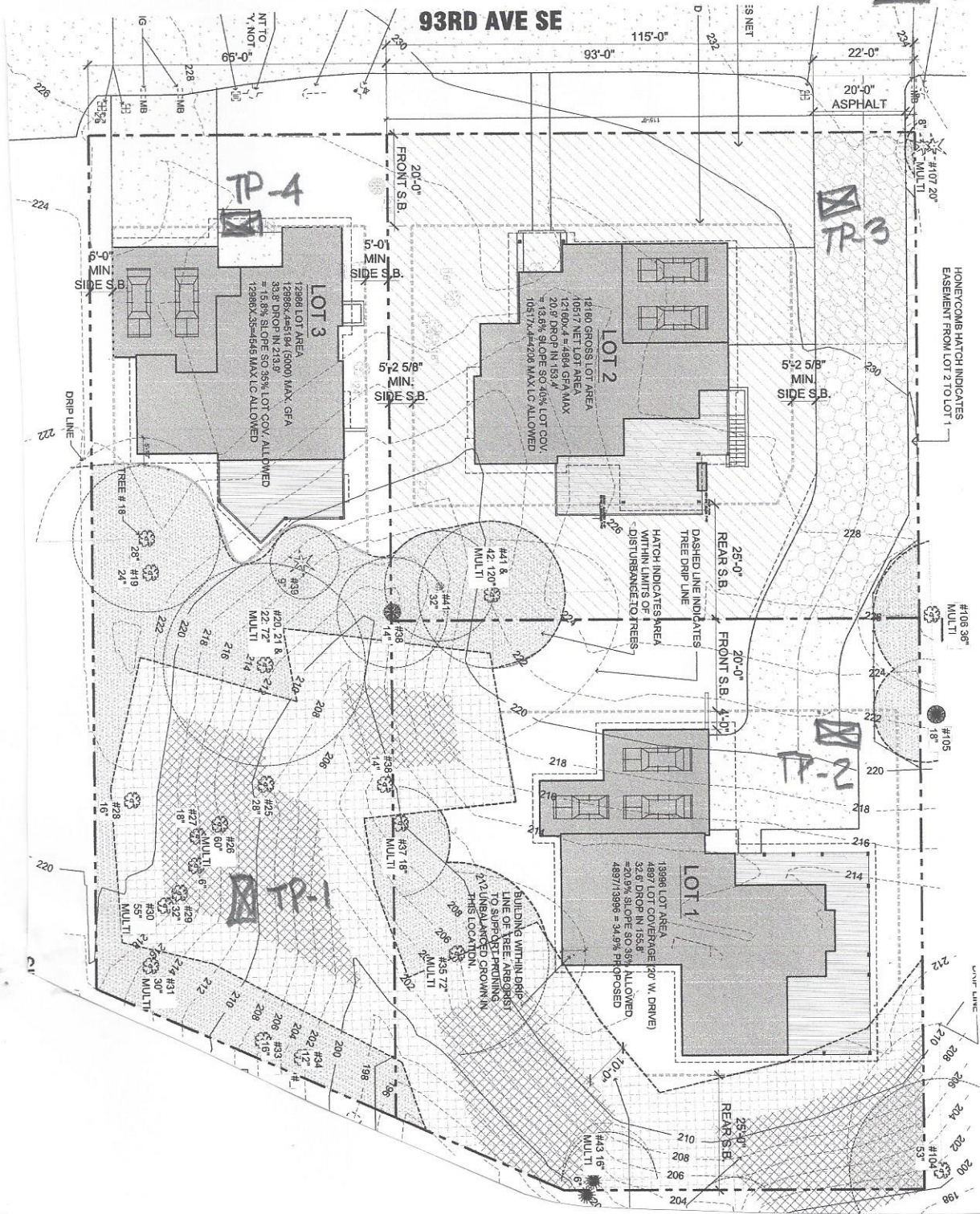


Robert M. Pride, P. E.  
Principal Geotechnical Engineer

dist: (1) Addressee

encl: Drawing No. 1

rmp: Barcelo93rdRes1



### SITE PLAN

Proposed Residences  
 9216 93<sup>rd</sup> Avenue NE  
 Mercer Island, Washington  
**Robert M. Pride, LLC**

Project No.

Drawing No. **1**  
 Consulting Engineer

November 5, 2020

Mr. Bogdan Maksimchuk  
Barcelo Homes  
P. O. Box 1639  
Mercer Island, WA 98040

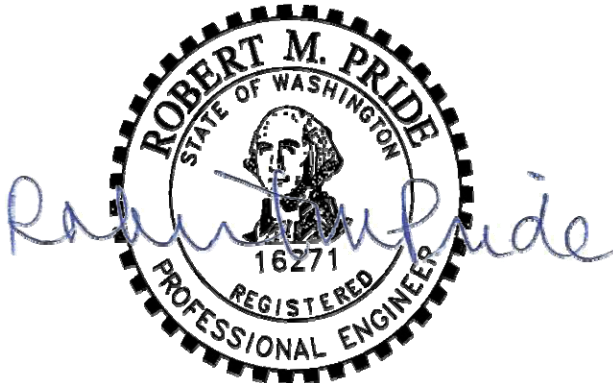
Re: **Geotechnical Recommendations**  
Proposed Residences  
7216 93<sup>rd</sup> Avenue SE  
Mercer Island, Washington

Dear Mr. Maksimchuk,

This report summarizes the results of our site investigation and geologic research for the residential property located on the south side of 93<sup>rd</sup> Avenue SE in Mercer Island. It is understood that three new residential structures will be built on this property after removal of an existing residence and garage.

This property does not classify as a geologic hazard area based on our site investigation and confirmation of the dense underlying glacial soils. The existing slopes extending down below the proposed residence building pad areas are not susceptible to erosion or landslide failures based on slope gradient, dense glacial soils, hydrology, and heavy tree and vegetation covering this slope area. Based on site exploration and evaluation of existing steep slope conditions, it has been recommended that a ten foot buffer zone be established from the top of the steep slopes for permanent protection of the proposed residences. All previous recommendations for foundation installations are appropriate.

Respectfully,



Robert M. Pride, P. E.  
Principal Geotechnical Engineer

dist: (1) Addressee

rmp: Barcelo93rdRes3

November 14, 2020

Mr. Bogdan Maksimchuk  
Barcelo Homes  
P. O. Box 1639  
Mercer Island, WA 98040

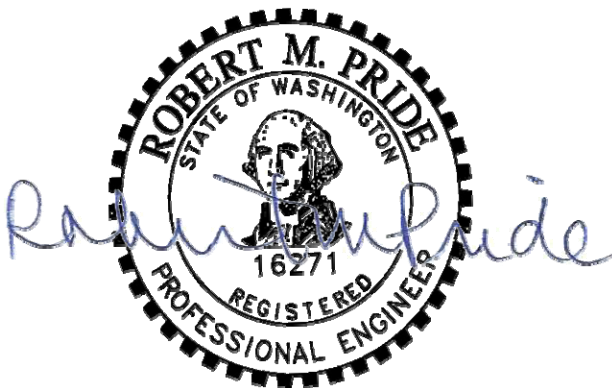
Re: **Geotechnical Recommendations**  
Proposed Residences  
7216 93<sup>rd</sup> Avenue SE  
Mercer Island, Washington

Dear Mr. Maksimchuk,

This report provides supplemental information for this property as requested by Mercer Island. The entire property including the existing steep slope adjacent to the creek channel is underlain by dense glacial deposits that are not subject landslide movement or is considered a seismic hazard area. Very shallow surficial erosion may occur if heavy storm water is allowed to flow down the steep slope areas, but existing observations showed no significant erosion conditions have occurred.

The proposed deck extension on the north side of the new residence on Lot 1 has the NE corner extending about five feet into the ten foot buffer zone. It has been recommended that the deck footing extend down to 3 feet at the corner to maintain a ten foot horizontal setback from the face of this steep slope. All footings will bear on the dense glacial soils as previously recommended, and the entire residence building pad will remain outside of the this ten foot buffer..

Respectfully,



Robert M. Pride, P. E.  
Principal Geotechnical Engineer

dist: (1) Addressee

rmp: Barcelo93rdRes4