December 17, 2021

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

Re: Geotechnical Report Addendum
Proposed New Residence (Lot 1)
7216 93rd Avenue SE
Mercer Island, Washington

Dear Mr. Maksimchuk,

This geotechnical report addendum has been prepared in response to comments received from the City of Mercer Island. This addendum should be used in conjunction with previous reports prepared for the site and project as listed below:

1. Geotechnical Recommendations, Proposed Residence, 7215 93rd Avenue SE, Mercer Island, Washington dated February 27, 2020 prepared by Robert M. Pride, P.E.
2. Infiltration Testing, Proposed Residence, 7215 93rd Avenue SE, Mercer Island, Washington dated June 26, 2020 prepared by Robert M. Pride, P.E.
3. Geotechnical Recommendations, Proposed Residence, 7216 93rd Avenue SE, Mercer Island, Washington dated November 5, 2020 prepared by Robert M. Pride, P.E.
4. Geotechnical Recommendations, Proposed Residence, 7216 93rd Avenue SE, Mercer Island, Washington dated November 14, 2020 prepared by Robert M. Pride, P.E.

Slope Reconnaissance

The slope conditions described in the various reports listed above was based upon soil conditions observed in subsurface explorations completed in February and June 2020 and November 2021 and as described in the above referenced reports. Additional details on subject slopes at the site can be found in the Critical Area Report for the site prepared by Sondergaard Geoscience, PLLC dated May 5, 2021.

Groundwater Conditions/Site Excavations

Subsurface explorations completed at the site in February and June 2020 indicate that ground water was not observed in the test excavations to the maximum depths explored of 7.5 to 8 feet below the existing site grades. In addition, exploration boring EB-1(see attached boring log) completed in November 2021 to a depth of 26 feet in the area of the proposed stormwater detention facility (Figure 1) did not encounter groundwater.

Based on the completed subsurface explorations at the site, it is not anticipated that groundwater will be encountered in the excavations at the site.

Impact of Demolition on New Construction

The existing residence located at the northeast corner of the subject property on Lot 20 of the proposed new construction. The existing house has a basement and the new house on Lot 20 will be constructed over the foot print of the old house. Demolition of the old house should remove all of the old foundations and slabs. All old fill location beneath new foundations and slabs should also be removed down to bearing soil. Depressions remaining after demolition that are below new foundation elements or slabs should be backfilled with structural fill.

After stripping, planned excavation, and any required over-excavation have been performed to the satisfaction of the geotechnical engineer/engineering geologist, the upper 12 inches of exposed ground should be recompacted to a firm and unyielding condition. If the subgrade contains too much moisture, adequate recompaction may be difficult or impossible to obtain and should probably not be attempted. In lieu of recompaction, the area to receive fill should be blanketed with washed rock or quarry spalls to act as a capillary break between the new fill and the wet subgrade. Where the exposed ground remains soft and further over-excavation is impractical, placement of an engineering stabilization fabric may be necessary to prevent contamination of the free-draining layer by silt migration from below.

After recompaction of the exposed ground is approved, or a free-draining rock course is laid, structural fill may be placed to attain desired grades. Structural fill is defined as non-organic soil, acceptable to the geotechnical engineer/engineering geologist, placed in maximum 8-inch loose lifts with each lift being compacted to 95 percent of ASTM:D-1557. In the case of roadway and utility trench filling, the backfill should be placed and compacted in accordance with local codes and standards. The top of the compacted fill should extend horizontally outward a minimum distance of 3 feet beyond the location of the perimeter footings or roadway edges before sloping down at a maximum angle of 2H:1V.

The other structure on the property is a garage that is located on the southeast corner of Lot 2. The structure is founded upon shallow foundations and demolition of this structure should not result in extensive excavation. Areas under new structural elements that require fill to establish the desired finished grades should be prepared and completed as described above.

Temporary Cut Slopes

In our opinion, stable construction slopes should be the responsibility of the contractor and should be determined during construction. For estimating purposes, however, we anticipate that temporary, unsupported cut slopes in the medium dense to very dense native soil may be made at a maximum slope of 1H:1V (Horizontal:Vertical). As is typical with earthwork operations, some sloughing and raveling may occur, and cut

slopes may have to be adjusted in the field. In addition, WISHA/OSHA regulations should be followed at all times.

Permanent cut slopes in fill and native soils or structural fill must not exceed a 2H:1V inclination. Fill slopes should either be overbuilt and trimmed back to final grade or surface compacted to a specified density.

Temporary Cuts or Shoring for Basement Construction

Construction of the proposed new house on Lot 20 will involve cuts ranging in depth from about 10 to 12 feet below the existing site grade. Based upon the plans reviewed, it appears there is sufficient space to construct safe slopes for these cuts in accordance with the recommendations for temporary cut slopes presented above. Should temporary shoring be required, recommendations for shoring can be provided based upon the specific condition identified.

Temporary Cuts for Stormwater Detention Pipe

The proposed stormwater detention system will consist of a 10 feet diameter CMP installed beneath the access drive into the property at the northwest corner of the site. Cuts on the order of 21 feet deep will be required. Due to the proximity of the property line on the north and west, cuts on the north and west sides of the CMP excavation will required temporary shoring consisting of soldier pile walls. Along the south and east sidewalls of the excavation sufficient room exists to safely cut these areas at an inclination of 1H:1V (Horizontal:Vertical) per the recommendations provided above for temporary cut slopes. To avoid having to use tie back anchors that would impinge upon the neighboring property to the north and right-of-way to the west, the retained cut height will be a maximum of 15 feet with a slope no steeper than 1H:1V and higher than 6.5 feet above the top of the shoring wall.

Soldier pile shoring walls involve wide flange piles that are installed into borings drilled to the desired depths. Design of the shoring wall should be based upon a temporary active earth pressure of 55 pcf where the cut above the shoring wall is sloped and a passive value of 350 pcf over 2 pile diameters (Figure 2). If there is no slope behind the shoring wall then an active earth pressure of 35 pcf may be used. Wood lagging may be designed for ½ of the active pressure.

Excavation for the shoring wall construction should not exceed a depth of 5 feet without lagging the native advance outwash soils. All voids behind the lagging must be backfilled with a sand slurry, pea gravel, clean crushed rock or drain rock. Care must be taken to assure that the backfill materials do not bridge so that all voids behind the lagging are filled and the lagging is in direct contact with native soil or backfill at all times.

Retaining Wall on the North Side of the Driveway

Lateral loads can be resisted by friction between the foundation and the natural glacial soils or supporting structural fill soils, and by passive earth pressure acting on the buried portions of the foundations. The foundations must be backfilled with structural

fill and compacted to at least 95 percent of the maximum dry density to achieve the passive resistance provided below. We recommend the following allowable design parameters:

- Passive equivalent fluid = 300 pcf
- Coefficient of friction = 0.32

All perimeter footing walls should be provided with a drain at the base of the footing elevation. Drains should consist of rigid, perforated, polyvinyl chloride (PVC) pipe surrounded by washed pea gravel. The level of the perforations in the pipe should be set at or slightly below the bottom of the footing and the drains should be constructed with sufficient gradient to allow gravity discharge away from the buildings. Roof and surface runoff should not discharge into the footing drain system but should be handled by a separate, rigid, tightline drain. In planning, exterior grades adjacent to foundations should be sloped downward away from the structures to achieve surface drainage.

Foundation Surcharge Loading

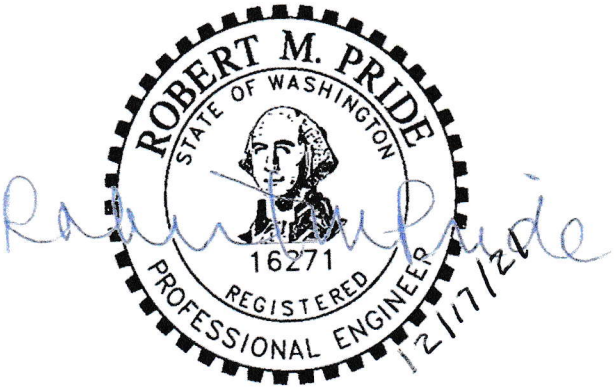
Along the west side of the proposed new house, there are areas where the shallower foundations for the garage are close enough to the basement walls to apply a surcharge load to the basement walls. We recommend that a surcharge equal to 45 pcf be applied to design of the basement walls to account for the surcharge provided by the garage footings.

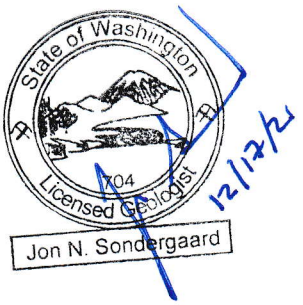
Top of Steep Slope Set Back

The current footprint for the house on Lot 1 meets the setback requirements of the Mercer Island Municipal Code (MIMC) Title 19 Chapter 19.07 Section 19.07.1160(C)(2)(a) in that the set back is equal to the height of the slope in this area (see Figure 3).

Should you have any questions regarding this letter or other geotechnical aspects of the project, please call at your earliest convenience.

Respectfully,



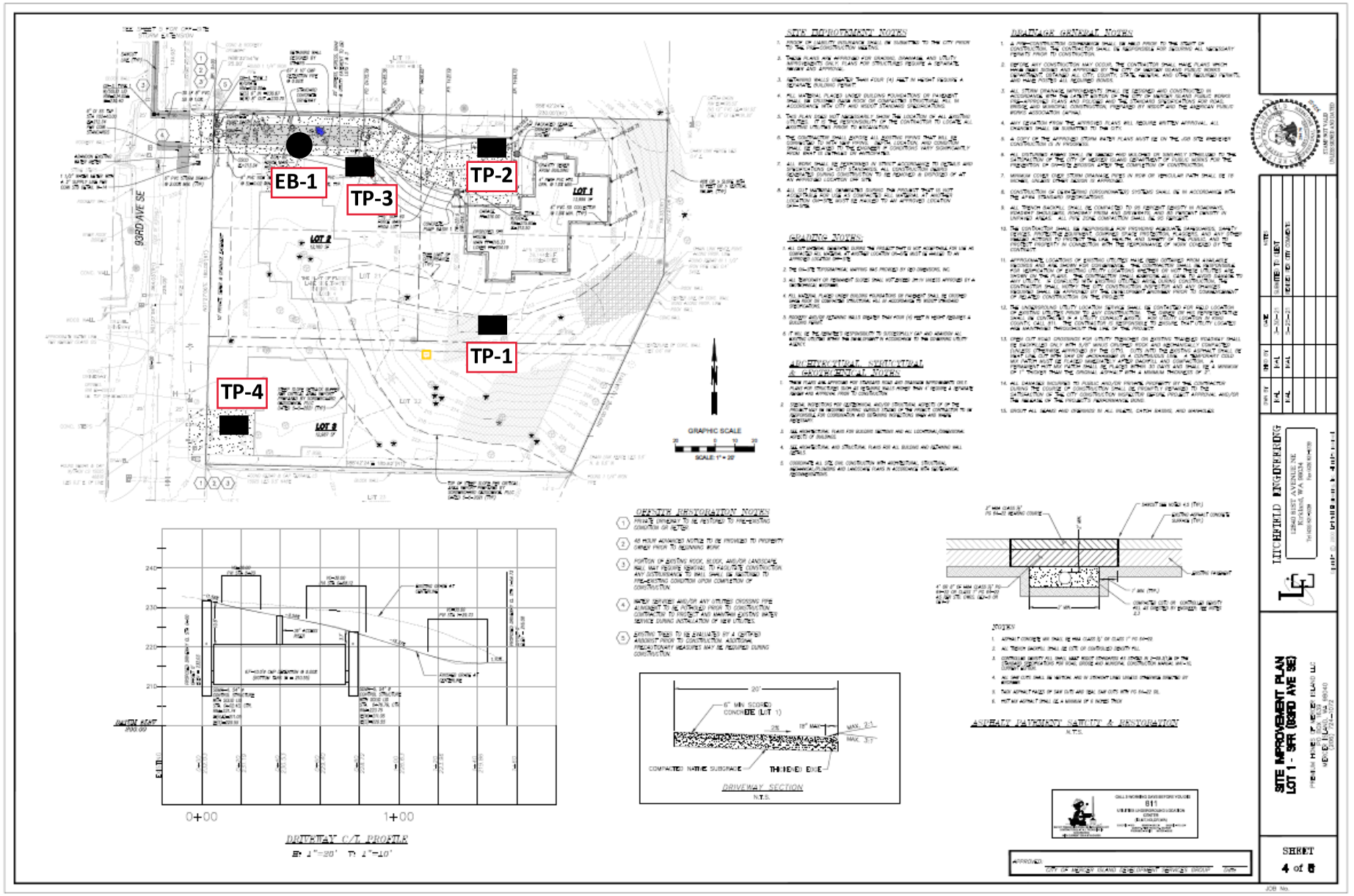


Robert M. Pride, P. E.
Principal Geotechnical Engineer

Jon N. Sondergaard, L.E.G.
Engineering Geologist

dist: (1) Addressee
(2) McCullough Architects

Attachments: Figure 1 Site and Exploration Plan
Figure 2 Shoring Earth Pressure Diagram
Figure 3 Top of Steep Slope Set Back
Exploration Boring Log
Bob Pride, P.E. Registration



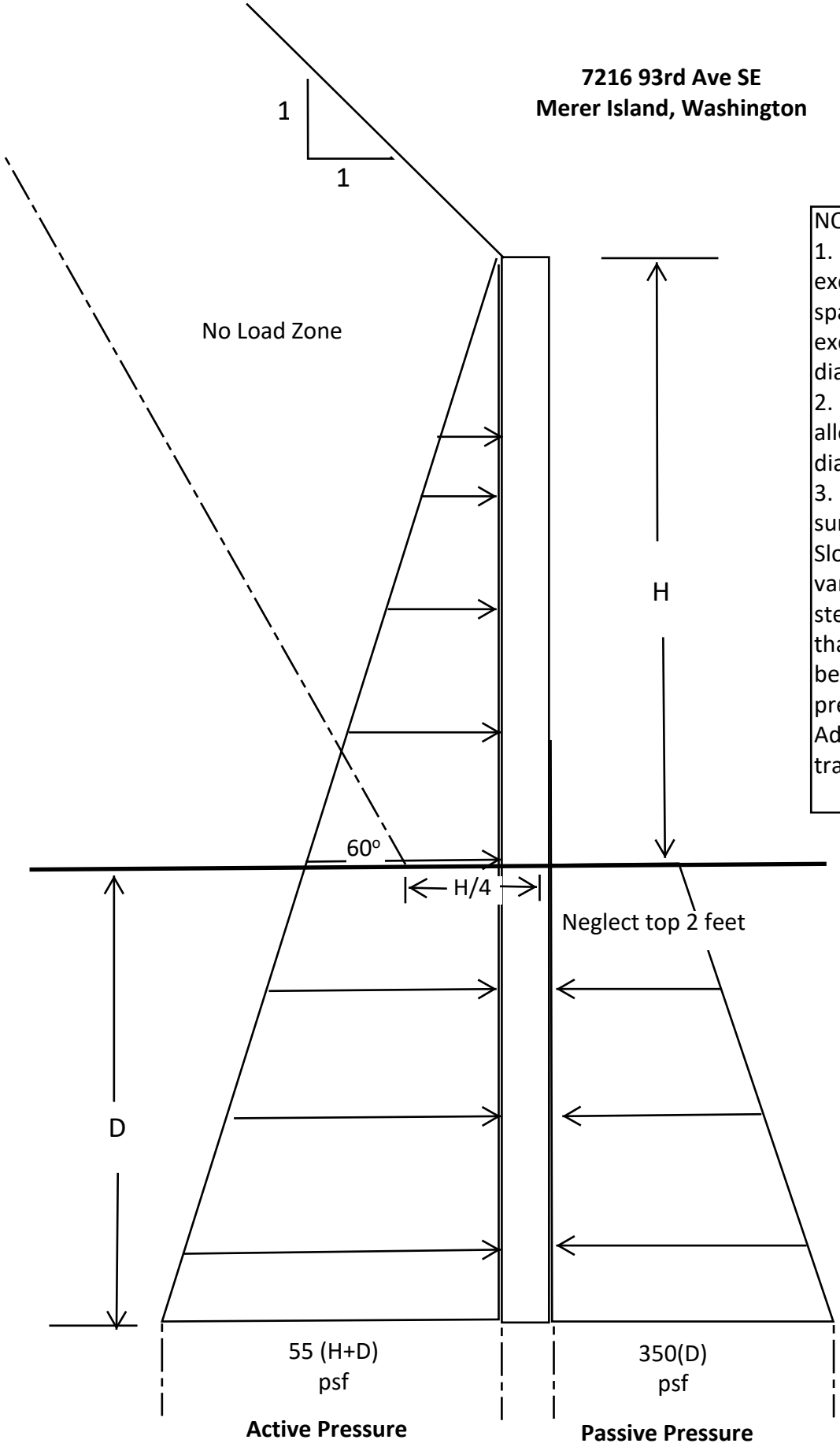
● EB-1 Boring Number and Approximate Location SGP November 2021

■ TP-1 Test Pit Number and Approximate Location Pride April 2020

SITE AND EXPLORATIO NPLAN
7216 93RD AVENUE SE
MERCER ISLAND, WASHINGTON

FIGURE 1

7216 93rd Ave SE
Merer Island, Washington



NOTES:
1. Active pressure above excavation acts over one pile spacing. Active pressure below excavation acts over one pile diameter.
2. Passive pressures are allowable acting over 2 pile diameters.
3. Active pressure includes surcharge for slope behind wall. Slope inclination and height will vary with topography but no steeper than 1H:1V and no taller than 6.5 feet. Where slope behind wall is flat then active pressure of 35 psf may be used. Add appropriate surcharges for traffic or parking.

TEMPORARY SHORING
DRILLED WIDE FLANGE PILES
EARTH PRESSURE DIAGRAM

J-0165

93RD AVE SE

115'-0"

93'-0"

22'-0"

20'-0" ASPHALT

65'-0"

WATER METERS

MAILBOXES, EXISTING LOCATION

CATCH BASIN

FIRE HYDRANT (ADDITIONAL HYDRANT TO NORTH OF PROPERTY, NOT SHOWN)

GUY WIRE

UTILITY POLE

THICK DASHED LINE INDICATES PROPOSED BUILDING PAD, TYP.

LINE HATCH INDICATES NET LOT 2 AREA

WATER METER

MAILBOX

UTILITY POLE

RECOMMENDED TOPO OF STEEP SLOPE SET BACK BUFFER

HONEYCOMB HATCH INDICATES EASEMENT FROM LOT 2 TO LOT 1

LOT 3

12986 LOT AREA
12986x.4=5194 (5000) MAX. GFA
33.8' DROP IN 213.9'
= 15.8% SLOPE SO 35% LOT COV. ALLOWED
12986X.35=4545 MAX LC ALLOWED

LOT 2

12160 GROSS LOT AREA
10517 NET LOT AREA
12160x.4 = 4864 GFA MAX
20.9' DROP IN 153.4'
= 13.6% SLOPE SO 40% LOT COV.
10517x.4=4206 MAX LC ALLOWED

LOT 1

13996 LOT AREA
4897 LOT COVERAGE (20' W. DRIVE)
32.6' DROP IN 155.8'
=20.9% SLOPE SO 35% ALLOWED
4897/13996 = 34.9% PROPOSED

5'-0" MIN SIDE S.B.

5'-2 5/8" MIN. SIDE S.B.

25'-0" REAR S.B.

20'-0" FRONT S.B.

4'-0"

DRIP LINE

DASHED LINE INDICATES TREE DRIP LINE

HATCH INDICATES AREA WITHIN LIMITS OF DISTURBANCE TO TREES

BUILDING WITHIN DRIP LINE OF TREE. ARBORIST TO SUPPORT PRUNING UNBALANCED CROWN IN THIS LOCATION.

TREE LIMIT OF DISTURBANCE LINE, TYP.

DRIP LINE

TOP OF STEEP SLOPE

REFERENCE LINE FROM TOP OF SLOPE

DARK HATCH INDICATES MAPPED STEEP SLOPE AREAS PER SURVEY, TYP.

TREE # 18

#8 28" #19 24"

#39 9"

#42: 120" MULTI

#41 32"

#38 14"

#20, 21 & 22: 72" MULTI

#36 14"

#37 18" MULTI

#35 72" MULTI

#25 28"

#26 60"

#27 18"

#28 16"

MULTI 6"

#29 32"

#30 55" MULTI

#31 30" MULTI

#33 16"

#34 12"

24" SNAG

#43 16" MULTI 6"

#101 20"

#102 32"

#103 70" MULTI

#104 53"

#105 18"

#106 36" MULTI

#107 20" MULTI

PROPOSED PROPERTY LINE

SITE PLAN

SCALE: 10 0 20

KEY:

- TREE LIMITS OF DISTURBANCE
- MAPPED STEEP SLOPE PER SURVEY
- 10' BUFFER FROM TOP OF SLOPE
- BUILDING
- WOOD DECK
- IMPERVIOUS SURFACE
- EASEMENT FROM LOT 2 TO LOT 1
- LOT 2 NET AREA
- EXTENT OF BUILDING PAD
- PROPERTY LINE

RECOMMENDED TOP OF STEEP SLOPE SETBACK BUFFER
7216 93RD AVENUE SE
MERCER ISLAND, WASHINGTON

J-0165 FIGURE 3

Short Plat Application Set

A1 Site Plan

PRELIMINARY SHORT PLAT APPLICATION

7216 93rd AVE. SE
MERCER ISLAND, WA 98040

7806 REGISTERED ARCHITECT A. PHILIP MCCULLOUGH STATE OF WASHINGTON

Date:	2021.04.12
Job No:	19-034
Project No:	00000
Drawn:	MCG
Approved:	APM

Owner

Barcelo homes

Revisions	Comment
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MCCULLOUGH ARCHITECTS
2910 First Ave South, Suite 201
Seattle. WA. 98134
206.443.1181
mccullougharchitects.com

7216 93rd AVENUE SE
EXPLORATION LOGS

EB-1

Sample Depth (ft)	SPT	Sample No.	Soil Description
			FILL
2.5 – 4.0	6/5/4	S-1	Medium dense, moist, mottled, slightly oxidized brown to gray, sandy SILT with scattered gravel (2.5 – 3.5
			Vashon Advance Outwash
			Medium dense, moist, gray, fine to medium SAND (3.5 – 4.0)
5.0 – 6.5	3/16/11	S-2	Medium dense, moist to wet, brown to gray, slightly silty, SAND with scattered gravel.
10.0 – 11.5	10/11/11	S-3	Medium dense, moist, gray, slightly silty to silty SAND
15.0 – 16.5	14/16/18	S-4	Dense, moist, gray, slightly silty fine SAND
20.0 – 21.5	14/18/15	S-5	Dense, moist, gray, slightly silty fine SAND with scattered silt lenses. Gravelly drilling at 23 feet
			Pre-Olympia Non-glacial Deposits
25.0 – 25.3	50 – 4 inches	S-6	Very dense, moist, oxidized brown, silty, sandy GRAVEL. Hard drilling
26.0 – 26.1	50 – 1 inch	S-7	Very dense, moist, oxidized brown, silty, sandy GRAVEL. Hard drilling

Refusal to auger drilling at 26.0 feet on 11/10/21.

Ground water seepage not encountered at time of drilling.

WASHINGTON STATE DEPARTMENT OF LICENSING

WASHINGTON STATE DEPARTMENT OF LICENSING

License lookup

Professional License Details

Information as of December 09, 2021, 11:51:13 AM

License Number: 16271
License Type: Professional Engineer
Status: Active

Name: ROBERT M PRIDE
Sub-status: None
Disciplinary Action: No
Program: Engineers

Prior Name: None
City: Kirkland
State: WA
Country: United States

First Issue Date: November 05, 1976
Current Issue Date: September 28, 2021
Expiration Date: July 20, 2022

Endorsements

Civil