

Stuart Silk Architects | Limited PS

December 12, 2018

Project Number: 1801-205

Project Address: 42xx Holly Lane

Critical Area Determination, Critical Areas Study

We are requesting alterations to a critical area that is a geologic hazard area per MICC 19.07.060.

Project Narrative

The project site is located on the lower side of a slope that descends from East to West along Holly Lane toward Lake Washington in the Rogers Holly Lane addition. The site is accessed from the north only by a driveway accessed on Holly Lane. The topography of the parcel ascends gently from an existing rock retaining wall, located at the northeastern most portion of the lot towards the West approximately 95 feet with a total change in elevation of 30.5 feet. The east to west gradient ranges from 4H:1V to 5H:1V per Geotechnical Recommendations letter dated July 20, 2016 from Robert M. Pride. The horizontal distance between high and low points measures 155 horizontal feet to for a lot slope of 19.67%. The average slope is about 12% per King County iMAP. The north property line is in Holly Lane and the south, east, and west property lines are shared borders with other single-family residences' property lines. The inclinations of the slope are from East to West toward Lake Washington with 40% or greater steep slope areas outside the proposed building envelope and side and rear yard setbacks, located along the southern and western property lines. The parcel is located within the Environmentally Critical Areas due to Low basin condition (2005 CAO) in the King County GIS mapping and geologic hazards identified in the Mercer Island Code as Landslide Hazard Areas, Erosion Hazard Areas, and Seismic Hazard Areas. Please refer to the Site Survey provided for topographical and site information.

The proposed scope of the project is to construct a new single family residence with basement and attached garage in addition to a proposed pool, hot tub, and covered terrace on a vacant, unbuilt lot. The new residence will be excavated into the hillside, creating cuts between 18-25.2 feet in overall height at the east side of the residence. The new residence will be supported as mat slab on grade with supporting driven piled and drilled piers per shoring drawings combined with spread footings per structural details, sheet S3.2, on native undisturbed dense glacial soil or compacted fill. Over excavated areas shall be backfilled with lean concrete or per Geotechnical recommendations. The shoring is permanent. The construction of the permanent structure shall commence immediately after the shoring is installed and the bulk excavation is complete. A soil nail shoring wall with waler splices, driven piles, and drilled piers will be installed into the hillside to the east to stabilize the hillside. Minor sloughing or slides shall be caught with proposed TESC measures per civil engineering TESC plan, sheet C2.1.

The Mercer Island City code reads under MICC 19.07.060 D Site Development:

D. Site Development.

1. Development Conditions. Alterations of geologic hazard areas may occur if the code official concludes that such alterations:
 - a. Will not adversely impact other critical areas;
 - b. Will not adversely impact (e.g., landslides, earth movement, increase surface water flows, etc.) the subject property or adjacent properties;
 - c. Will mitigate impacts to the geologic hazard area consistent with best available science to the maximum extent reasonably possible such that the site is determined to be safe; and
 - d. Include the landscaping of all disturbed areas outside of building footprints and installation of all impervious surfaces prior to final inspection.

The proposed scope for this project will satisfy these requirements per the Mercer Island Code. The proposed residence and related shoring wall within the sloped hillside will not adversely impact other critical areas. The development on the site is in compliance with the required side and rear yard setbacks. These include a combined 16.12' side yard per MICC 19.02.020C(1)(C)(ii) and 25'-0" rear yard.

The proposed scope for the excavation at the east side of the lot will not impact the steep slope critical areas located to the west and south sides of the lot. Please refer to the TESC PLAN, sheet C2.1, in the included plan set. This sheet illustrates the location of a proposed silt fence to catch any sediments from traveling due west towards the property below or Lake Washington. Construction limits are clearly defined at the property line boundaries. Existing vegetation adjacent to the property will be protected. Please refer to recommendations in the attached Geotechnical Letter dated July 20, 2016:

“On the basis of my site evaluation and engineering assessment there is no potential for instability to the existing steep slope that is stable and not subject to landslide movement. It is

recommended that the new structure be setback a minimum of 20 feet from the top of the existing steep slope, and that construction equipment be restricted within ten feet of this slope. Silt fencing for erosion control and equipment setback distance should be placed at the ten foot setback from the top of the slope.”

Due to the modification to the existing topography proposed in this project scope, the extent of steep slope will be reduced. The above recommendation remains applicable and we will keep 20 feet from the redefined top of steep slope. Please see sheet A1.2 for the proposed site plan with modified topography.

The proposed scope for this project will not adversely impact the subject properties or adjacent properties in terms of landslides, earth movement, increase to surface water flows, etc. Please refer to the attached civil engineering preliminary report, dated November 9, 2018. All minimum requirements (numbers 1 – 9) per Figure 2.4.2 of Volume 1 of the Ecology Manual shall be met. Flow control is not required for the project because the site discharges to Lake Washington per civil engineering report, section 1, page 1. Infiltration and Low Impact Development (LID) are not feasible because the site is mapped as an Erosion Hazard Area by Mercer Island. A silt fence is proposed at downslope limits of the construction area and existing vegetation will be protected. Care will be taken to control storm water runoff with sumps and trenches and handled with designated discharge areas. Any soils will be removed immediately from site or protected from wet weather with plastic sheeting. The geotechnical engineer will be notified by the contractor if any changes need to be made by the TESC measures to achieve the intended result.

On Sheet SH1 of the general shoring notes, under section ‘12. Shoring Monitoring:’ states that a systematic program of monitoring shall be conducted during the project execution to determine the effect of construction on adjacent facilities and structures in order to protect them from damage. Section ‘14. Wet Weather Conditions’ states a site visit from the geotechnical special inspector shall occur during each day of active grading and in the event of significant rainfall which might compromise stabilization measures between November 1 and March 31.

Please refer to civil sheet Grading and Drainage Plan and Details, C3.1 for proposed systems for collecting water and discharge. 6” and 4” area drains in addition to footing and roof drains shall be provided per C3.1. Behind the shoring wall, against the hillside area that is

excavated, a drain mat is proposed to collect and drain water from the face of the shoring wall into the new storm water system.

Existing vegetation will remain on the hillside above the area of excavation. Sheet C2.1 illustrates the limits of construction on the hillside. One 11" deciduous existing tree located due south of the property line will remain on the hillside and will be protected. Other vegetation on the west and south steep slope areas shall remain without disturbance.

Care has been taken for existing vegetation and trees to remain to be protected during construction. The TESC plan clearly defines areas to not be disturbed during construction. Impervious surface has been limited per code to under 35% of the net lot area, with less than 9% of net lot area for additional hardscape.

Per the city code of Mercer Island MICC 19.07.060:

2. Statement of Risk. Alteration within geologic hazard areas may occur if the development conditions listed above are satisfied and the geotechnical professional provides a statement of risk with supporting documentation indicating that one of the following conditions can be met:

- a. The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe;
- b. Construction practices are proposed for the alteration that would render the development as safe as if it were not located in a geologic hazard area;
- c. The alteration is so minor as not to pose a threat to the public health, safety and welfare; or
- d. An evaluation of site specific subsurface conditions demonstrates that the proposed development is not located in a geologic hazard area.

The proposed project will meet the condition that "a. The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe;". Robert Pride, in his plan review letter dated September 21, 2018 states:

"Existing dense glacial till soils will provide excellent support for the existing (neighboring) residence foundations including the proposed retaining wall footings. On the basis of my final plan

review they are acceptable from a geotechnical point of view. Appropriate field inspections will be made during construction, and field memos will be prepared for submittal to the city of Mercer Island.”

Per the city code of Mercer Island MICC 19.07.060:

4. Seasonal Limitations. Land clearing, grading, filling, and foundation work within geologic hazard areas are not permitted between October 1 and April 1. The code official may grant a waiver to this seasonal development limitation if the applicant provides a geotechnical report of the site and the proposed construction activities that concludes erosion and sedimentation impacts can be effectively controlled on-site consistent with adopted storm water standards and the proposed construction work will not subject people or property, including areas off-site, to an increased risk of the hazard. As a condition of the waiver, the code official may require erosion control measures, restoration plans, and/or an indemnification/release agreement. Peer review of the geotechnical report may be required in accordance with subsection C of this section. If site activities result in erosion impacts or threaten water quality standards, the city may suspend further work on the site and/or require remedial action. (Ord. 05C-12 § 5).

Excavation and construction of the shoring wall should be done during the drier season and avoided between October 1 and April 1. When the shoring wall is installed, additional excavation may occur during the wet season if a grading extension is obtained with the possibility of additional erosion control measures being required. Upon completion of the project, exposed soils in the work area will be protected by a landscape plan that will permanently stabilize disturbed portions of the slope and the site against surficial erosion.

Included submittals:

Geotechnical Review Letter(s). See attached.

Plan set. See attached.

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This report has been prepared by:

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12/12/2018

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Robert M. Pride

12/12/18

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