



## Mud Bay Geotechnical Services, LLC

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April 5<sup>th</sup>, 2025

Project No. 1376-KIN

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Subject: 9007 SE 44<sup>th</sup> St,  
Mercer Island, WA 98040  
Parcel #759810-0082  
Geotechnical Recommendations

Dear Jeff Garrett,

This report provides geotechnical recommendations for the current project as proposed, which includes reconstruction of the mudroom addition off the eastern side of the kitchen. The existing mudroom will be demolished with a replacement constructed within the same footprint. The new mudroom will be raised up so that entry is at the same level as the current kitchen.

A total of three (3) push piers were installed previously off the southeastern side of the home off the kitchen. The subsurface explorations that were conducted for that project were used in the development of the recommendations for the current mudroom project addressed in this report.

### **SUBSURFACE CONDITIONS**

As part of the subsurface investigation for a previous foundation repair project, a site visit was performed on October 24<sup>th</sup>, 2020, to observe the soil conditions on the parcel. One shallow hand boring was completed to characterize the local soils. Based on the conditions observed in the hand auger boring, BH-1-20, the subsurface consists of *very loose, moist, grey-brown, silt with sand and gravel (ML)* from the existing ground surface to a depth of 41 inches below ground surface. This unit was underlain by *medium dense to very dense, moist, grey, silty sand (SM)* from the interface at 41 inches to the final depth of the boring at 62 inches. Groundwater was not encountered within the boring.

## **GEOTECHNICAL RECOMMENDATIONS**

The subsurface exploration revealed that loose silts are present at the site to a depth of approximately 3.5 feet. We recommend a minimum embedment of 12-inches for all new foundations.

The foundation subgrade should be inspected for any pockets of loose material. Loose material should be removed and replaced with a minimum of 6-inches of Crushed Surfacing Base Course (CSBC) meeting the requirements of Section 9-03.9(3) of the WSDOT Standard Specifications, or an equivalent material. The CSBC should be placed in layers no greater than 6-inches and compacted to at least 95 percent of the maximum dry density.

Based on the conditions observed in the explorations performed, and provided that the foundation preparation is performed as described previously, new shallow strip footing can be designed assuming a maximum allowable bearing pressure of 1,500 psf. The maximum allowable bearing pressure may be increased by up to one-third for short-term transient loading conditions such as wind and seismic loading. We anticipate that the total new settlement will not exceed one inch, and the additional differential settlement along a 50-foot length will not exceed half of the total settlement. The settlement is expected to be elastic and will occur as the footings are loaded. We recommend a minimum footing width of 16 inches for all exterior and interior strip footing foundations.

We recommend footing subgrade preparation be evaluated by Mud Bay Geotechnical Services, LLC prior to placement of concrete. Subgrade preparation should not be performed during periods of wet weather. We recommend staging the subgrade excavation, compaction of native subgrade soils, and placement of CSBC to limit the time the foundation subgrade is exposed to weather.

We recommend all material used as backfill for footings be placed in horizontal layers no more than 6 inches thick with each layer compacted to 95 percent of the maximum density. The backfill material should be comprised of Gravel Backfill for Walls material meeting the requirements of Section 9-03.12(2) of the WSDOT Standard Specifications, or an equivalent free-draining material.

Prior to backfilling, a perimeter footing drain system, consisting of a 4-inch diameter, perforated, or slotted, rigid plastic pipe placed at the base of the structure excavations wherever existing footings are exposed as part of the work. The drain should be embedded in a clean, free-draining sand and gravel meeting the requirements of Section 9-03.12(4) of the WSDOT Standard Specifications for Gravel Backfill for Drains. The drains should be sloped slightly to drain to an appropriate discharge area.

We appreciate the opportunity to serve your geotechnical needs on this project and look forward to working with you in the future. Please contact us at your earliest convenience if you have any questions or would like to discuss any of the contents of this report.

Sincerely,

Chris Heathman, PE  
Mud Bay Geotechnical Services, LLC



4/5/2025