

PERMIT ISSUANCE FORM

"Step 2"



GEOTECHNICAL FORM FOR PERMIT ISSUANCE : TO BE COMPLETED BY A
LICENSED ENGINEER IN THE STATE OF WASHINGTON QUALIFIED IN THE SPECIALTY OF
GEOTECHNICAL ENGINEERING AND SUBMITTED PRIOR TO PERMIT ISSUANCE ATTACHED
AS A PART OF A LETTER FROM THE GEOTECHNICAL ENGINEER BEARING
THE ENGINEER'S SEAL.

Project Number: _____ Permit Number: BLD22944 SFR

Applicant's or Project Name : Dufresne Residence (Margaret Dufresne)

Project street address: 11143 Rolling Bay Walk NE

Geotechnical Engineer's Name and License # Andrew J. Holmson #49471

Engineer's Telephone #: (206) 780-7731

Signature & Date: Andrew Holmson 5/24/2018

This form is required prior to issuance of the permit. At the time of permit issuance the recommendations of the Geotechnical Engineer are required to be incorporated into the project plans. This form is to facilitate your assurance that you reviewed the plans and found your recommendations in them.

- 1) "I have reviewed the plans and design elements related to the geotechnical aspects of the project and have observed field staked locations of proposed structures subject to the recommendations of the Geotechnical Report. I have found the plans, design and locations to be in general accordance with the recommendations of the Geotechnical Report."

I agree with the above statement Initial : AH

State any variations from your original recommendations in implementing these plans:

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- 2) In accordance with Chapter 16.20.150 of the City of Bainbridge Island Municipal Code, the Geotechnical Engineer must be able to make the following statements regarding implementation of their recommendations in the plans. Concurrence with the following statements shows that the project plans implement or include all of your required recommendations and that they meet the requirements of the City of Bainbridge Island Municipal Code; please initial each of the below statements if you fully concur that they have been met in your professional opinion:

a. The proposed activity shall not create a net increase in geological instability, either on- or off-site, which is defined as follows:

- i. The subject parcel shall not be less stable after the planned development than before; and*
- ii. The adjacent parcels shall not be less stable after the planned development than before.*

Initial AH

b. The proposed activity shall not increase the risk of life safety due to geological hazards above professionally acceptable levels.*

Initial AH

c. The proposed activity shall not increase the risk due to geological hazards above professionally acceptable levels for:*

- i. Property loss of any habitable structures or their necessary supporting infrastructure on-site or;*
- ii. Risk to any off-site structures or property of any kind.*

Initial AH

*d. Proposed buildings shall be constructed using appropriate engineering methods that respond to the geologic characteristics specific to the site in order to achieve the highest standard of safety feasible**.*

Please explain how this requirement has been met: The residence will be protected from the landslide hazard at the site by the existing tiered soldier pile wall debris catchment system. The calculated global factor of safety exceeds 1.5 for static conditions and 1.0 for seismic conditions. The residence will be supported on three sides by soldier piles that will act as foundation support, temporary shoring during construction, and permanent walls for the basement. The remaining side (northeast) will be supported by 2-inch-diameter steel pin piles. The combination of soldier piles and pin piles will result in a foundation configuration that will maintain the structural integrity of the residence such that life safety is preserved during and following the Maximum Considered Earthquake (MCE, 2,475 year return period). The construction recommendations presented in the report and should be incorporated into the construction methodology to maintain local stability and provide for competent foundation support.

Pursuant to BIMC 16.20.150 E.1 the City Engineer will generally accept:

DEPARTMENT OF PUBLIC WORKS: 280 MADISON AVENUE NORTH • BAINBRIDGE ISLAND, WA • 98110-2824

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* a "professionally acceptable level" of risk as a static factor of safety of 1.5 for new construction or 1.25 for remodel, and a seismic factor of safety of 1.0 for the design earthquake (using the USGS 2002 probabilistic ground motion values for 2% in 50 yr.)

** the "highest standard of safety feasible" has been achieved if all buildings are designed to meet the IBC as appropriate to withstand all events up to the above defined "professionally acceptable level" of risk and a reasonable explanation is provided.

- 3) The Engineering Department requires the Geotechnical Engineer to communicate the overall risk of failure and impact to the proposed structures in a quantified manner, along with the level of certainty in this quantification. This quantification may be a factor of safety or some other quantification acceptable to the City Engineer, and needs to communicate to the owner (and future owners) an understandable, estimated or calculated risk to or from their proposed activities or structures in some relevant time frame (often the lifetime of the structure).

Please provide your determination of the above required level of risk here: _____

____ Factors of safety against deep-seated slope movement effecting the proposed residence exceeds 1.5 static and 1.0 seismic. The use of soldier piles and pin piles driven to refusal mitigate for liquefaction hazards associated with the maximum considered earthquake (MCE) or an earthquake with a return interval of 2,475 years. The risk of occurrence of landslide-related damage to the proposed structure is less than 1-in-100 years and the risk of occurrence of significant liquefaction or earthquake-related damage (collapse) to the proposed structure is less than 1-in-2,475 years; however, structural and cosmetic repairs may be needed following the MCE.

- 4) Storm-water:

X a. Landslide hazard areas or erosion hazard areas. I confirm that the Erosion and Sediment Control Plan in the application dated: February 9, 2017 (**AH**) is in accordance with my recommendations.

b. Landslide hazard areas, erosion hazard areas, area of influence. I confirm that the Surface & Storm Water Management Plan in the permit application dated: (N/A) is in accordance with my recommendations.

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- 5) Address any special geotechnical conditions requested by the City after the City's review of the geotechnical report and permit application forms here (attach more sheets as needed and any supporting documentation): _____

The City of Bainbridge Island has requested geotechnical review of the planting plan and bluff management considerations presented in the February 28, 2017 Site-Specific Impact Analysis Report prepared by Marine Surveys & Assessments. We understand the planting plan includes snowberry, Nootka rose, sword fern, Oregon grape, ocean spray, coastal strawberry, and vine maple in a variety of quantities around the proposed residence. Currently, the planting plan does not show planting within the septic drainfield area.

In our opinion, the planting plan generally meets the requirements of our geotechnical report for permanent erosion control and slope stabilization. Slope stabilization at the site is primarily achieved through the existing and proposed retaining walls, but vegetation is important for achieving permanent erosion control. We recommend the drainfield (approximately 1,600 square feet) be planted with low-lying ground cover (no trees) for permanent erosion control while balancing the need for future maintenance access of the drainfield. The Stabiligrid surface proposed over the drainfield will allow for smaller plants and grasses to grow, but it will be difficult to establish larger plants or trees. While designating specific plants is outside our area of expertise, it has been our experience that grasses or low-lying ground cover like the wild strawberry proposed elsewhere on the site or creeping Myrtle may be appropriate for this application and planting over the drainfield.

SUBMITTAL REQUIREMENTS

Two (2) copies of the completed forms, two (2) copies of the recorded indemnification forms, two (2) copies of all supporting documents (Geotechnical analysis, erosion and sediment control plan, etc.).
Proposals will not be considered further for each step of the permit until form packets are complete