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**MEMORANDUM**

DATE: November 10, 2017

TO: Mr. Ben Zhang – Cove Club, LLC

CC: Mr. Fred Baxter – Fred Baxter & Associates

FROM: Khaled M. Shawish, PE  
Lee S. Bellah, LG

RE: Geotechnical Comment Memorandum  
**Zhang Residence Development**  
**7908 – 53<sup>rd</sup> Avenue West**  
**Mukilteo, Washington**  
NGA File No. 9365B16

DEC 04 2017 end



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This memo presents the our additional geotechnical review for the proposed Zhang Family Residence project located at 7908 – 53<sup>rd</sup> Avenue West in Mukilteo, Washington.

**INTRODUCTION**

We previously prepared a geotechnical engineering evaluation for this site dated June 16, 2016. We also prepared a supplemental geotechnical letter dated February 8, 2017. For our use in preparing this memo, we were provided with Plan Sheets C1 through C8 and A1.1 titled “New Residence – 7908 - 53<sup>rd</sup> Ave W” dated May 31, 2017, prepared by Site Development Services and Fred Baxter & Associates.

We understand that project plans at this point include the removal of the existing single-family residences and construction of a new single-family residence within the same approximate location. A new paved access driveway is to be constructed along the eastern portion of the property. As a part of the proposed development the property will be subdivided to create two new parcels immediately east of the proposed residence. Single-family residences will likely be constructed on these parcels at a later date. We understand that the City of Mukilteo has requested our opinions and additional geotechnical information regarding the proposed site development in a letter dated September 19, 2017. In the following sections, we have provided the geotechnical concern raised by the City of Mukilteo followed by our response.

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## CITY OF MUKILTEO REVIEW COMMENT AND OUR RESPONSE

### Comment 10:

*Provide a supplemental geotechnical evaluation evaluating the existing access driveway for stability and the ability to handle the increased traffic and fire truck access. As well as an evaluation of the grading and storm drainage plan for the project, specifically the 50 feet setback area from the top of the steep east-facing slope and the 75 feet setback area from the top of the west-facing slope.*

### Response:

As a part of the proposed development plans, we understand that the existing asphalt roadway within the eastern portion of the property is to be removed and a new asphalt paved driveway will be constructed slightly west of the existing roadway. As a result, the new asphalt driveway will be setback slightly further from the top of steep slope than the existing asphalt roadway. Based on discussions with the project architect, we understand that the new roadway section has been designed to support the planned traffic and fire truck loads that the pavement may experience. In our opinion, the proposed asphalt paved roadway near the east-facing slope should not adversely impact the existing slope stability conditions within this area and should support the planned loads provided our recommendations in our previous evaluations are followed. To minimize potential impacts to the steep slope area, we recommend that a guardrail be constructed along the downhill eastern shoulder of the roadway. Due to undocumented fill soils being encountered along the eastern side of the roadway and along the top of the steep east-facing slope, there is a potential for shallow sloughing events to occur within this area. We recommend that the roadway and the area between the roadway and the slope be monitored regularly for any signs of instability, and corrective actions promptly taken should any such signs be observed. Under no circumstances should water generated on the roadway surface be allowed to flow over the steep slope area.

Based on review of the plans, it appears that stormwater generated within the proposed development is to be captured and tighlined to flow into a new 8-inch HDPE pipe that descends the steep west-facing bluff face down near the toe of the bluff along the railroad tracks. It appears that the proposed HDPE pipe system has been designed in general accordance with our recommendations.

As recommended in our previous evaluations, we recommended that any proposed structures be located a minimum of 75-feet from the top of the steep west-facing slope and 50-feet from the top of the steep east-facing slope. A light structure setback of 50-feet from the top of the steep west-facing slope was also recommended. Based on review of the provided plans, it appears that the proposed site structures will be located further back from the steep slopes than the recommended minimum setbacks. It also appears that

grading within the site will be minimal and will generally be located outside of the proposed setback areas. However, the proposed access driveway within the eastern portion of the property will be located within the setback area. Provided our recommendations presented in our previous evaluations are followed during construction, it is our opinion that the proposed grading activities associated with the roadway construction should not adversely impact the existing slope stability conditions within this area. It is also our opinion that the proposed grading activities throughout the remaining portions of the site should not adversely impact the existing site stability conditions, provided our recommendations presented in our previous evaluations are followed during construction.

### **CLOSURE**

We recommend that NGA be retained to provide monitoring and consultation services during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities comply with contract plans and specifications.

We trust this memorandum should satisfy your needs at this time. Please contact us if you have any questions or require additional services.

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