

May 2, 2018
File No. 14-206.200

Mr. Mark Lu
New Horizon Real Estate Development
8744 126th Avenue NE
Kirkland, WA 98033

**Subject: Additional Geotechnical Recommendations and Plan Review
Proposed Single-Family Residences
8375, 8379, 8383 East Mercer Way, Mercer Island, Washington**

Dear Mr. Lu,

As requested, this letter is prepared to respond to the City of Mercer Island permit review comments, and to provide additional geotechnical recommendations/opinions for the above project. Our response and additional recommendations/opinions are limited to the geotechnical aspects of the review comments and project:

1. STEEP SLOPE IN THE EASTERN PORTION OF THE SITE

The topographic survey map indicated that several slope areas in the eastern portion of the site are steep slopes (40% or greater). Based on the site soil conditions at the site, presence of roadway and driveway, and other landscape features, it is our opinion the steep slopes are caused by grading of the roadway and driveway, and should be considered man-made steep slopes (artificially created cut slopes). As such, it is our opinion that these slope areas do not meet the definition of “Steep Slopes” per MICC 19.16.

2. ROCKERY DESIGN

We understand that rockeries will be used to retain the cuts up to 8 feet in height. All rockeries should be constructed in accordance with the King County Roadway standards. In general, rockeries should be inclined no steeper than 1H:4V. The base of the rockery should be keyed in at least 1 foot below the lowest adjacent grade. The backslope above the rockery should be graded no steeper than 2.5H:1V. The rockery should be backfilled with at least 6 inches of 2- to

4-inch crushed rock (quarry spalls) to promote the drainage and to reduce the potential of piping of backfill. A layer of filter fabric, such as Mirafi 140N or approved equivalent, should also be placed between quarry spalls and backfill.

Drainage should be provided behind the base of the rockeries. The drain pipe should consist of 4-inch diameter perforated PVC pipes, embedded in drain rock and wrapped with filter fabric, and sloped to a storm drain or appropriate outlet.

Rocks should be placed so that the contact seam between two adjacent rocks is not above or below the vertical contact seam for the upper and lower courses (i.e. each rock should overlap at least two different rocks in the course below). The long axis of each rock should be placed perpendicular to the face of the rockery. The rock surfaces between individual courses should be relatively flat, and should in no case slope downward away from the wall.

The bottom course of rocks should be founded on undisturbed competent native soils or on structural fill placed on the competent native soils. If soft/loose soils are encountered at the rockery foundation level, they should be removed and replaced with compacted structural fill as determined by geotechnical engineer in the field.

Rock quality is critical to rockery wall performance. Many rockery failures occur because of degradation of poor-grade rocks under freeze-thaw and weathering conditions. As a minimum, the rock used should meet the requirements outlined in Section 9.13.7(1) of the 2012 edition of WSDOT/APWA *Standard Specifications*. Rockeries should be considered maintenance items that will require periodic maintenance and repair. Rockeries should be located such that they can be accessed should repairs become necessary.

On-site sandy soil may be re-used as backfill behind the rockeries, provided they can be compacted to a dense condition. If on-site sandy soils cannot be compacted to a dense condition, imported granular material, such as WSDOT Gravel Borrow, should be noted as backfill of fill rockeries. On-site silt and clay soils should not be used as backfill for the rockeries. The soils immediately behind the rockery should be reinforced with Geogrids, such as Mirafi 5XT or better, in 18 inches or less vertical spacing. The geogrids should have a minimum width of 6 feet or equal to the wall height, whichever is greater. PanGEO can provide additional design input if needed.

3. REVIEW OF CIVIL DESIGN PLANS

We reviewed the geotechnical engineering aspects of the current civil design plans for the above-referenced project. The plan sheets we reviewed included plan sheets C0.0 through C8.0 dated April 4, 2018 by Civil Engineering Solutions. In general, based on our review of the current plans, it is our opinion that the civil plans are in general accordance with the geotechnical recommendations presented in our revised geotechnical report dated February 4, 2016.

CLOSURE

We trust that the information outlined in this letter meets your need at this time. Please call if you have any questions.

Sincerely,



5/2/2018

Michael H. Xue, P.E.
Senior Geotechnical Engineer