TERRA ASSOCIATES, Inc.
Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

March 28, 2023
Project No. T-8264

Mr. Derek Cheshire
Long View Bella, LLC
7615 East Mercer Way
Mercer Island, Washington 98040

Subject: Response to City of Mercer Island Comments
Cheshire Short Plat
7615 East Mercer Way
Mercer Island, Washington

References:
1. Geotechnical Report, Cheshire Short Plat, 7615 East Mercer Way, Mercer Island, Washington, Project No. T-8264, prepared by Terra Associates, Inc., dated May 12, 2020, 4th revision dated March 3, 2023
2. Geotechnical Engineering Addendum, Cheshire Short Plat, 7615 East Mercer Way, Mercer Island, Washington, Project No. T-8264, prepared by Terra Associates, Inc., dated August 13, 2021
3. Geotechnical Peer Review Comments, prepared by City of Mercer Island, dated January 5, 2023

Dear Mr. Cheshire:

As requested, we have reviewed the referenced comments from the City of Mercer Island regarding the project site. The following is our response to the geotechnical comments.

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Please verify whether the SPT values on the boring logs are normalized standardized SPT values i.e. (N1)60. The geotechnical report did not indicate as such. (See Section 4.4.2 of FHWA reference to determine normalized standardized SPT values from the raw field data). After determining the normalized standardized values, then the equivalent clean sand correction can be applied and Figure 4-19 in the Appendix C of the March 3, 2023 geotechnical report can be used to determine the residual strength ratio.

In determining the residual strength from the residual strength ratio, the geotechnical engineer incorrectly used total overburden pressure, not effective overburden pressure in the calculations presented in Appendix C. Using effective overburden pressure will reduce the residual strengths of the layers below the groundwater.

Please revise residual strength calculations and associated stability and deformation analyses.

The geotechnical engineer also used averaging of subsurface conditions between borings B-1 and B-2. Please provide justification for this averaging. B-1 is off property while B-2 is on the property. B-1 indicates better soil conditions than B-2 and may unconservatively skew the residual strength calculations and in turn, the results of the stability and deformation analyses.

Response

The SPT values on the boring logs are normalized standardized SPT values.

The overburden pressures have been revised to reflect the effective overburden pressure.

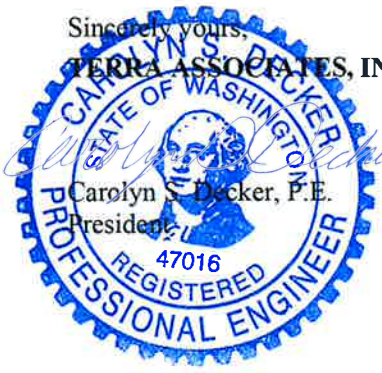
The residual strengths have been revised and are included in the revised geotechnical report.

Averaging of soil parameters is a common way engineers use the limited subsurface information to assign soil properties to a layer of material. The subsurface exploration logs are used to prepare a soil profile that will connect common soil types between the various exploration locations. Once the soil types have been connected, the information from the subsurface explorations (density, moisture, texture, etc.) are used to determine the soil properties associated with the soil layer. By averaging between the two borings completed onsite, we are using the limited information to prepare reasonable soil properties that are in line with the overall soil profile and are not based on a single moment in the formation.

While the soil conditions in Test Boring B-2 indicate soils lower in strength, it is overly conservative to base an entire soil layer on a single boring if the soil types are consistent with other subsurface explorations. The upper approximately 14 feet of Test Boring B-2 and approximately 12 feet in Test Boring B-1 consist of silty SAND with gravel and therefore it is acceptable to use the information from both borings to prepare soil parameters for the single layer in the profile.

We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.



3-28-2023

Carolyn S. Decker, P.E.
President