



October 12, 2023
ES-8009.02

Earth Solutions NW LLC

Geotechnical Engineering, Construction
Observation/Testing and Environmental Services

Design Built Homes, LLC
11400 Southeast 8th Street, Suite 415
Bellevue, Washington 98004

Attention: Todd Sherman

**Subject: Response to Comments and Geotechnical Update
Lorenzini Short Plat
4719 – 86th Avenue Southeast and 84XX Southeast 47th Street
Mercer Island, Washington**

Greetings, Todd:

In accordance with your request, Earth Solutions NW, LLC (ESNW) has prepared this letter providing a response to comments provided by the City of Mercer Island representatives. The comment from the reviewer is cited, and the ESNW response follows.

City of Mercer Island Comment – The proposed location of the stormwater detention tank shown on Sheet C4 should be reviewed by the geotechnical engineer of record. An assessment of both the potential long-term impacts from the detention system on the stability of the slope given its proximity to the edge of the slope, as well as the potential adverse impacts of future slope movements on the performance of the detention system should be provided.

Following review of the plans, assessment of the detention tank location, and recommendations for alternate detention system location, if applicable, a letter should be provided stating whether the current plans conform to the geotechnical engineer's site development recommendations. An updated statement of risk (MICC19.07.160.B.3) from the geotechnical engineer should also be included in the letter.

ESNW Response – ESNW has reviewed the referenced site plans which include the placement of the subject detention tank and piping.

In the opinion of ESNW, the placement of the detention system as shown is feasible from a geotechnical standpoint. ESNW consulted with the project civil engineer regarding alternative locations for the system. Based on the sizing of the detention system, site elevations relating to grading and other utility installations, and trees that are to be retained, the location on the southern side of the site is the only one feasible.

In ESNW's opinion, the tank will reduce the surcharging on the subject slope; as the system (even when filled with water) will be lighter than the soil which is currently in-place within the footprint of the system.

All pipe joints associated with the subject stormwater system must be sealed such that water cannot exit the system. In addition, the system must be designed in such a manner as to capture any water that may leak from the detention system or accumulate within the limits of the excavation after construction. This can be accomplished by installing a subsurface drainage system within the backfill. The drainage system should be constructed as follows:

- The bottom of the excavation must be sloped to a low point on the upslope side of the excavation.
- A non-woven geotextile, such as Mirafi 140N must be placed over the entirety of the excavation.
- A four-inch diameter, perforated pipe must be placed on the geotextile, at the low point of the excavation, with the perforations facing down.
- The entire excavation must be backfilled with $\frac{3}{4}$ inch clean crushed rock. Alternative sizes of clean crushed rock can be used, but any alternate must be approved by ESNW. The upper one to two feet of the backfill can be native soil or topsoil for landscaping purposes. Non-woven geotextile must be placed over the clean crushed rock prior to placement of the native soil or topsoil.
- The perforated pipe must be extended along the outfall line and be connected to the first downstream storm structure.

The construction of the drainage system should be observed by a representative of ESNW on a near full-time basis.

Erosion control measures must be installed during and immediately following the detention system installation. Permanent erosion control measures should consist of establishment of vegetation such as grass and other ground cover.

In our opinion, the plans conform to ESNW recommendations presented within the referenced documents. Additionally, the proposed alteration/site work would render the development as safe as if it were not located in a geologically hazardous area and do not adversely impact adjacent properties provided the geotechnical recommendations contained within this letter and past documents provided by ESNW are adhered to.

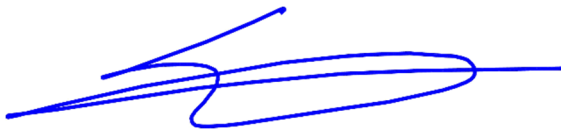
Limitations

The recommendations and conclusions provided in this letter are professional opinions consistent with the level of care and skill that is typical of other members in the profession currently practicing under similar conditions in this area. Our recommendations are based on the information available at the time of this letter preparation. A warranty is not expressed or implied.

We trust this letter meets your current needs. If you have any questions, or if additional information is required, please call.

Sincerely,

EARTH SOLUTIONS NW, LLC



Stephen H. Avril
Project Manager



10/12/2023

Kyle R. Campbell, P.E.
Senior Principal Engineer

References:

- Geotechnical Engineering Study, prepared by ESNW, ES-8009.01, dated February 1, 2022
- Critical Area Consultation, prepared by ESNW, ES-8009.02, dated September 13, 2023
- Site Plan – Lorenzini SP, prepared by D.R. Strong Consulting Engineers, Sheet 1 through 4, dated December 20, 2021