GSS ENGINEERING, INC.
GEOTECHNICAL / ENVIRONMENTAL CONSULTANTS

July 10, 2020
GSS-2364-2

Ashai Design Consulting Corporation
15900 Hawthorne Blvd., Ste. 300
Lawndale, California 90260

SUBJECT: **RESPONSE TO CITY REVIEW LETTER**
Proposed Mixed-Use Development
24631 Via Valmonte
Torrance, California

REFERENCE: **1. "Preliminary Soil and Geology Investigation Report", dated January 3, 2017, prepared by GSS Engineering, Inc.**

Gentlemen:

The following information is submitted in response to the City Review Sheet dated June 19, 2019. A copy of the review sheet is attached to the end of this response report.

Item 1

Grading will be performed at the site. The soil volume of the grading is a part of a grading plan and will be responded by the Project Civil Engineer.

Item 2

Please consider the extensive fault investigation report of January 2016 by Geocon Engineers (Solana Studies) for a development at an adjacent site at some 30 feet to the south of our subject site. They reached the conclusions that the site was clear of a fault trace and that the Palos Verdes Fault line was situated at some 350 feet to the northeast. The two sites are in such close proximity that the same conclusions may be considered appropriate for both sites in this case.

The foundations recommendations are provided in the referenced report. It was recommended that all foundations be founded into undisturbed bedrock at the site. It is our opinion that the proposed foundations will satisfy the 'Foundation Criteria' comments (Page 4 of the geologic report) provided they are founded into competent undisturbed bedrock and followed the soil report recommendations.

Item 3

Loose to medium dense soils are not necessary to have liquefaction hazard. Earthquake-induced liquefaction is a phenomenon in which loose to medium dense saturated cohesionless soils undergo extreme losses in shear strength due to earthquake shaking. The liquefaction potential is directly related to the groundwater conditions at the site as well as to the characteristics of the underlying soil deposits. Groundwater conditions should also be considered in liquefaction analyses.

The site is not located in the area as delineated by the State Geologist to have potential of soil liquefaction during strong earthquakes. In reviewing the soil investigation report of 2017 by Geocon Engineers (Solana Studies), no groundwater was encountered in their test borings to a maximum depth of 120.5 feet.

As no groundwater is anticipated to be encountered within 50 feet below the ground surface at the site, the potential of soil liquefaction at the site is considered low.

Item 4

Excavation should be in accordance with all applicable requirements of the State of California Construction and General Industry Safety Order, the Occupational Safety and Health Act of 1970, the Construction Safety Act, and all other public agencies have jurisdiction. Construction specifications should clearly establish the responsibilities of the contractor for construction safety in accordance with CAL/OSHA requirements.

A diligent search for septic tanks, cesspools or underground lines should be performed by owner or contractor prior to excavation.

In areas where excavation will remove lateral support of adjacent structures or public way, shoring or bracing shall be provided prior to excavation. Shoring with lagging shall be implemented in accordance with good construction practice and all applicable safety ordinances and codes. Shoring may be braced or cantilevered. The contractor should be responsible for the safety of the temporary shoring system.

For design of cantilevered shoring, it is recommended that an equivalent fluid pressure of 32 pounds per cubic foot be utilized in design. A trapezoidal distribution of lateral earth pressure would be appropriate where shoring is to be restrained by bracing. The lateral earth pressure to be used for design of braced shoring is 26H where H is the depth of excavation in feet.

In addition to the above lateral earth pressure, the shoring shall also be designed to additionally support the surcharge loading of adjacent structures or traffic load. The geotechnical engineer should review the proposed shoring system.

The portion of soldier piles below the plane of excavation and embedded into bedrock may be employed to resist the downward loads. The downward capacity may be determined using a frictional resistance of 400 pounds per square foot for that portion of pile in contact with competent undisturbed bedrock. The minimum depth of embankment for shoring piles is 10 feet below the bottom of the excavation level. An allowable lateral bearing value of the bedrock below the excavated level is recommended to be 350 pounds per square foot per foot of depth up to a maximum of 3000 pounds per square foot. For isolated piles, the recommended lateral bearing values may be increased by 100 percent. Point of fixity can be assumed at a depth of 5 feet below the bottom of excavation level, or 3 feet into the bedrock, whichever is greater..

Monitoring of the movements of the shoring system and of the ground surface behind the shoring is recommended in areas where adjacent structures and/or utilities may be affected by the excavation. The monitoring may consist of survey points and/or inclinometers behind the

shoring. This monitoring should be started before the actual excavation has begun and should continue until the excavation has been substantially backfilled.

It is recommended that a licensed surveyor be retained to establish monuments on the shoring, the surrounding ground, and within the adjacent street prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) engineer and soils engineer for review and evaluation. It is also recommended that structural survey be performed on adjacent buildings prior to excavation for record purpose.

It is difficult to accurately predict the amount of deflection of a shored embankment. It should be realized that some deflection would occur. The maximum allowable deflection at the top of the shored embankment is 0.5 inches. If greater deflection occurs during construction, additional bracing may be necessary to minimize settlement of adjacent structures and utilities in adjacent streets and alleys. If it is desired to reduce the deflection, a greater active pressure could be used in the shoring design. Where internal bracing is used, the rakers should be tightly wedged to minimize deflection. The proper installation of the raker braces and the wedging will be critical to the performance of the shoring.

Shoring installation shall be continuously observed and approved by the Soils engineer. Careful examination of the soils by the Soils Engineer during cutting of the banks is mandatory to verify the conditions or to make such recommendations as are pertinent if different conditions are encountered.

For purposes of this report the term of "temporary" shall refer to those excavations that remain unsupported for a period of time not to exceed 30 days.

No excavation shall be made during unfavorable weather. It is recommended that the excavated banks be entirely covered with plastic sheets when threatened by rains. When the excavation is interrupted by rain, operations shall not be resumed until the Soils Engineer indicates that conditions will permit satisfactory results.

Item 5

The referenced soil report does not include BMPs or Stormwater Mitigation Measures.

If you have any further questions regarding this response report or we can be of further assistance, please do not hesitate to contact this office.

Respectfully submitted,
GSS ENGINEERING, INC.

REGISTERED PROFESSIONAL ENGINEER ALLEN LEE No. 2781 EXP. 06-30-21 GEOTECHNICAL STATE OF CALIFORNIA

Allen Lee, GE
Principle Engineer

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PROFESSIONAL GEOLOGIST RAY A. EASTMAN CERTIFIED ENGINEERING GEOLOGIST NO. 423 STATE OF CALIFORNIA

Preliminary Soil & Geotechnical Investigation

1) Page 2 "Cut approximately 10 to 15 feet in height and fill approximately 10 feet in depth will be required for constructing the building pad.
   - Air Quality indicated no grading. How much soil will cut & (A) moved on-site, (B) move off-site & (C) imported? Will need to revise Traffic, Air Quality and Green House Gas study to factor in and prepare Noise and Vibration study to address this.

2) Page 4 Surface rupture.
   - How does the study compare to General Plan related sections? Check Solana studies: believe they found some evidence fault as on this site. Also, due to Palos Verdes Fault lines indicated proximity (Ray Eastman letter dated 12/16/16 pages 2-3) with a max probable movement magnitude of 7.3 with expansive soils would likely require some incorporation of special footing designs and additional construction work that should be discussed in Air Quality and Noise studies.
   - Discuss "Foundation Criteria" comments from Eastman letter (page 4) with Building & Grading.

3) Page 5 "Soil Liquefaction" multiple test pits and boring identify loose to medium dense soils beyond eight feet. One was cancelled due to "severe caving."
   - Is it still your opinion that potential for soil liquefaction is consider low?

4) Page 6 Add shoring/casing, special footing design and piles method into Air Quality and Noise studies.

5) Page 6 Verify if "Conclusions and Recommendations" items are BMPs or Mitigation Measures.