August 9, 2017
4088-1

Ms. Fangzhou Song
c/o KSS Management
22000 Rolling Hills Road
Saratoga, California 95070

RE: GEOTECHNICAL INVESTIGATION
THREE-STORY MIXED-USE BUILDING
3585 EL CAMINO REAL
PALO ALTO, CALIFORNIA

Dear Ms. Song:

In accordance with your request, we have performed a geotechnical investigation for the proposed three-story mixed-use building to be constructed at 3585 El Camino Real in Palo Alto, California. The accompanying report summarizes the results of our field exploration, laboratory testing and engineering analysis, and presents geotechnical recommendations for the proposed building.

We refer you to the text of our report for specific recommendations.

Thank you for the opportunity to work with you on this project. If you have any questions or comments about the findings or recommendations from our investigation, please call.

Very truly yours,

ROMIG ENGINEERS, INC.

Payum Vossoughi, E.I.T.

Coleman K. Ng, P.E.

Copies: Addressee (2)
Joseph Bellamo Architects (4)
Attn: Mr. Joseph Bellamo & Ms. Pratima Shah

CKN:PV:dr

Material For Fill

All on-site soil containing less than 3 percent organic material by weight (ASTM D2974) may be suitable for use as structural fill. Structural fill should not contain rocks or pieces larger than 6 inches in greatest dimension and no more than 15 percent larger than 2.5 inches. Imported, non-expansive fill should have a plasticity index no greater than 15, should be predominately granular, and should have sufficient binder so as not to slough or cave into foundation excavations or utility trenches. Our representative should approve proposed import materials prior to their delivery to the site.

Temporary Slopes and Excavations

The contractor should be responsible for the design and construction of all temporary slopes and any required shoring. Shoring and bracing should be provided in accordance with all applicable local, state and federal safety regulations, including the current OSHA excavation and trench safety standards.

Because of the potential for variation of the on-site soils, field modification of temporary cut slopes and shoring may be required. Unstable materials encountered on slopes during and after excavation should be trimmed off even if this requires cutting the slopes back to a flatter inclination.

Protection of the structures near excavations and trenches should also be the responsibility of the contractor. In our experience, a preconstruction survey is generally performed to document existing conditions prior to construction, with intermittent monitoring of the structures during construction.

Finished Slopes

We recommend that finished slopes be cut or filled to an inclination preferably no steeper than 2.5:1 (horizontal:vertical). Exposed slopes may be subject to minor sloughing and erosion that could require periodic maintenance. We recommend that all slopes and soil surfaces disturbed during construction be planted to with erosion-resistant vegetation.

Surface Drainage

Finished grades should be designed to prevent ponding of water and to direct surface water runoff away from foundations, and edges of slabs and pavements, and toward suitable collection and discharge facilities. Slopes of at least 2 percent are recommended for flatwork and pavement areas with 5 percent preferred in landscape areas within 8 feet of the structures, where possible.

At a minimum, splash blocks should be provided at the discharge ends of roof downspouts to carry water away from perimeter foundations. Preferably, roof downspout water should be collected in a closed pipe system that is routed to a storm drain system or other suitable location.

Drainage facilities should be observed to verify that they are adequate and that no adjustments need to be made, especially during the first two years following construction. We recommend preparing an as-built plan showing the locations of surface and subsurface drain lines and clean-outs. The drainage facilities should be periodically checked to verify that they are continuing to function properly. It is likely the drainage facilities will need to be periodically cleaned of silt/debris that may build up in the lines.

FUTURE SERVICES

Plan Review

Romig Engineers should review the completed grading and foundation plans for conformance with the recommendations contained in this report. We should be provided with these plans as soon as possible upon completion in order to limit the potential for delays in the permitting process that might otherwise be attributed to our review process. In addition, it should be noted that many of the local building and planning departments now require "clean" geotechnical plan review letters prior to acceptance of plans for their final review. Since our plan reviews typically result in recommendations for modification of the plans, our generation of a "clean" review letter often requires two iterations. At a minimum, we recommend the following note be added to the plans:

"Earthwork, slab subgrade and non-expansive fill preparation, foundation and grade beam construction, pier drilling, void form placement, pavement construction, utility trench backfilling, site drainage and grading should be performed in accordance with the geotechnical report prepared by Romig Engineers, Inc., dated August 9, 2017. Romig Engineers should be notified at least 48 hours in advance of any earthwork or foundation construction and should observe and test during earthwork and foundation construction as recommended in the geotechnical report."

Construction Observation and Testing

The earthwork and foundation phases of construction should be observed and tested by us to 1) establish that subsurface conditions are compatible with those used in the analysis and design; 2) observe compliance with the design concepts, specifications and recommendations; and 3) allow design changes in the event that subsurface conditions differ from those anticipated. The recommendations in this report are based on a limited amount of subsurface exploration. The nature and extent of variation across the site may not become evident until construction. If variations are exposed during construction, it will be necessary to reevaluate our recommendations.

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REFERENCES

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California Geological Survey, 2011, Probabilistic Seismic Hazards Mapping Ground Motion Page, http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp/

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APPENDIX A

FIELD INVESTIGATION

The soils encountered during drilling were logged by our representative and samples were obtained at depths appropriate to the investigation. The samples were taken to our laboratory where they were evaluated and classified in accordance with the Unified Soil Classification System. The logs of our borings, and a summary of the soil classification system used on the logs (Figure A-1), are attached.

Several tests were performed in the field during drilling. The standard penetration test resistance was determined by dropping a 140-pound hammer through a 30-inch free fall and recording the blows required to drive the 2-inch (outside diameter) sampler 18 inches. The standard penetration test (SPT) resistance is the number of blows required to drive the sampler the last 12 inches and is recorded on the boring logs at the appropriate depths. Soil samples were also collected using 2.5- and 3.0-inch O.D. drive samplers. The blow counts shown on the logs for these larger samplers do not represent SPT values and have not been corrected in any way.

The location of the borings were established by pacing using preliminary site plan prepared by Joseph Bellomo Architects, dated March 23, 2017, and should be considered accurate only to the degree implied by the method used.

The boring logs and related information depict our interpretation of subsurface conditions only at the specific location and time indicated. Subsurface conditions and ground water levels at other locations may differ from conditions at the locations where sampling was conducted. The passage of time may also result in changes in the subsurface conditions.

APPENDIX B

LABORATORY TESTS

Samples from subsurface exploration were selected for tests to help evaluate the physical and engineering properties of the soils that were encountered. The tests that were performed are briefly described below.

The natural moisture content was determined in accordance with ASTM D2216 on nearly all of the soil samples recovered from the borings. This test determines the moisture content, representative of field conditions, at the time the samples were collected. The results are presented on the boring logs at the appropriate sample depths.

The Atterberg Limits were determined on one sample of soil in accordance with ASTM D4318. The Atterberg limits are the moisture content within which the soil is workable or plastic. The results of this test are presented in Figure B-1 and on the log of Boring EB-2 at the appropriate sample depth.

The amount of silt and clay-sized material present was determined on three samples of soil in accordance with ASTM D422. The results of these tests are presented on the boring logs at the appropriate sample depths.