



April 7, 2021
Z6021

TO: Ashley James
Associate Planner
CITY OF BERKELEY
1947 Center Street, 2nd floor
Berkeley, California 94704

SUBJECT: **Geotechnical Peer Review – Liquefaction Zone**
RE: Metz, New Parking Garage “TheLAB”
ZP2021-0043
2213 Fourth Street

At your request, we have completed a geotechnical peer review of the proposed use permit application at the subject property using:

- Final Report (report) prepared by Rockridge Geotechnical, Inc., dated March 4, 2021;
- Preliminary Geotechnical Investigation (report) prepared by Treadwell & Rollo, Inc., dated May 23, 2008; and
- Seismic Hazards Evaluation (report) prepared by Rockridge Geotechnical, Inc., dated January 28, 2021.

In addition, we have reviewed pertinent technical maps and reports from our office files. We’ve also reviewed the preliminary architectural plans dated January 29, 2021.

DISCUSSION

We understand the applicant proposes to demolish four existing structures and merge neighboring parcels, to construct a new three to four story parking structure termed TheLAB at the project site. The subject site is located within a liquefaction hazard zone as mapped by the California Geological Survey. According to the State’s Seismic Hazards Mapping Act, a qualifying project in this zone must be supported by a site-specific geotechnical investigation (report) addressing the mapped hazard.

The purpose of this geotechnical peer review is to determine whether the referenced 2021 Final Report is consistent with State criteria for project approval with respect to liquefaction hazards. When site seismic hazards are confirmed to exist, the State requires that a minimum level of mitigation for a project be performed to reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy. Our geotechnical peer review does not include evaluation of detailed construction plans and is not intended to address all geotechnical aspects of proposed project design.

SITE CONDITIONS AND GEOTECHNICAL EVALUATIONS

The Project Geotechnical Consultant (Rockridge Geotechnical) has reviewed the results of prior investigations completed by their firm and others at the site and in the site vicinity, and also advanced a current subsurface exploration program at the site which included two Cone Penetration Tests (CPT), two geotechnical borings, and one dynamic penetrometer test. The recent subsurface exploration extended to a maximum depth of 82 feet below the ground surface. Groundwater was measured during subsurface exploration at a depth of approximately 9 feet to 19 feet below the ground surface; however, the Consultant notes that groundwater levels may not have been able to stabilize given the low permeability soils encountered. Nearby well measurements, taken during relatively dry years, reviewed by the Project Geotechnical Consultant indicate a groundwater level of approximately 9 to 10 feet below grade. Consequently, the Project Geotechnical Consultants concludes that a historic high groundwater of 7 feet is appropriate for use in analysis and design. The Project Geotechnical Consultant identified surficial artificial fill they anticipate to be approximately 2 to 4 feet blanketing the site. This fill may be locally deep and is underlain by native alluvium consisting of stiff to hard clay with sand and medium dense to very dense clayey sands.

The California Geological Survey (CGS) has mapped the historic high groundwater at depths of approximately 3 feet or less below the ground surface at the subject site. As previously mentioned, the site is located within a liquefaction hazard zone of required investigation delineated by the CGS. The Project Geotechnical Consultant concludes that the site has a potential for cyclic softening with a total estimated settlement of approximately 0.5 inch and differential of 0.25 inch across a horizontal distance of 30 feet. They also conclude that the risk of lateral spreading is nil and the risk of cyclic densification and liquefaction is low. The Consultant completed Atterberg limits testing of a sample of soil collected at a depth of 4 feet below the ground surface, resulting in a Plasticity Index of 13 percent.

CONCLUSIONS AND RECOMMENDATIONS

The subject property is constrained by artificial fill, shallow groundwater, the potential for cyclic softening, and strong seismic ground shaking. Based on our review of the referenced Final Report dated March 4, 2021, it appears that the potential liquefaction hazard has been satisfactorily investigated and addressed by the Project Geotechnical Consultant. We conclude that the subsurface investigation has satisfactorily fulfilled State investigation requirements in the mapped liquefaction hazard zone. The Project Geotechnical Consultant should be retained through the design and construction phases of the project to ensure their recommendations are properly incorporated. We recommend geotechnical approval of the subject land use permit application with the following conditions attached:

1. **Geotechnical Plan Review** - The applicant's geotechnical consultant should review and approve all geotechnical aspects of the final project building and grading plans (i.e., site preparation and grading, shoring design, site surface and subsurface drainage improvements including site runoff discharge, and design parameters for foundations) to ensure that their recommendations have been properly incorporated.

The results of the plan review should be summarized by the Geotechnical Consultant in a letter and submitted to the City Engineer for review and approval prior to issuance of building permits.

2. **Geotechnical Construction Inspections** - The Geotechnical Consultant should inspect, test (as needed), and approve all geotechnical aspects of the project construction. The inspections should include, but not necessarily be limited to: site preparation and grading, site surface and subsurface drainage improvements, and excavations for foundations and other improvements prior to the placement of steel and concrete.

The results of these inspections and the as-built conditions of the project should be described by the geotechnical consultant in a letter and submitted to the City Engineer for review prior to final (granting of occupancy) project approval.

LIMITATIONS

This geotechnical peer review has been performed to provide technical advice to assist the City with its discretionary permit decisions. Our services have been limited to review of the documents previously identified. Our opinions and conclusions are made in accordance with generally accepted principles and practices of the geotechnical profession. This warranty is in lieu of all other warranties, either expressed or implied.

Respectfully submitted,

**COTTON, SHIRES AND ASSOCIATES, INC.
CITY GEOTECHNICAL CONSULTANT**



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