



July 20, 2021

MB5018D

TO: Andrew Yang
Senior Engineer
Public Works Department
CITY OF MILLBRAE
400 E. Millbrae Avenue
Millbrae, California 94030

SUBJECT: **Third Supplemental Geotechnical Peer Review**
RE: Panoutsopoulos; Lot Split and Rezoning
1002 Crestview Drive and Larkspur Drive

At your request, we have completed a third supplemental geotechnical peer review of the Tentative Parcel Map Application using:

- Atlas Technical Consultants LLC (Atlas), Inc., Response to Supplemental Geotechnical Peer Review, APN 021-210-290 & 280 (letter report) dated June 15, 2021;
- Geosphere Consultants, Inc., Response to Supplemental Geotechnical Peer Review, APN 021-210-290 & 280 (letter report) dated June 22, 2020; and
- Geosphere Consultants, Inc., Geotechnical Engineering Update Study (letter report) dated December 31, 2019.

DISCUSSION

Please see our previous peer review letters for a complete description of the site, and proposed development.

The purpose of this third supplemental peer review letter is to provide the City of Millbrae (the City) with our peer review comments regarding the Geotechnical Consultants' (Atlas) supplemental slope stability analysis submittal for the proposed soil nail retaining wall, dated June 15, 2021.

GEOTECHNICAL EVALUATIONS

The Geotechnical Consultant has modified their slope stability analysis of the retaining wall by extending their cross section 20 feet further upslope, and re-analyzed the seismic stability to evaluate if more critical hypothetical failure surfaces were encountered, and if so, what are the impacts to the soil nail retaining wall loading. According to the Geotechnical Consultant, hypothetical deeper failure surfaces were encountered which necessitated increasing the soil nail lengths to 45 feet in order to mitigate the resulting greater forces.

CONCLUSIONS AND RECOMMENDED ACTIONS

The proposed site development is constrained by violent ground shaking, very steep slopes that are prone to landsliding, undocumented fill that was not placed in accordance with present standards and is prone to landsliding, seismically induced landsliding, and potentially unstable cuts during construction.

The Geotechnical Consultant has completed a site investigation in general conformance with prevailing standards of practice for hillside developments. The Geotechnical Consultant has also satisfactorily addressed our remaining concerns, and it appears that they have adequately analyzed the seismic stability of the proposed retaining wall, and provided the necessary stabilizing reinforcements to achieve an industry accepted factor of safety with 6 inches of anticipated deformation.

Given the above, **we recommend geotechnical approval of the proposed Lot Split and Rezoning.**

We also recommend that the following conditions be attached to geotechnical approval of future building permit applications:

1. **Geotechnical Plan Review** - The applicant's geotechnical consultant should review and approve all geotechnical aspects of the project building plans (i.e., site preparation and grading, temporary cutslope, and design parameters for retaining walls) 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, for review by the City Engineer and Geotechnical Peer Reviewer, along with other documents for building permit plan-check.

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, temporary cutslopes, soil nail testing and installation and wall drainage.

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 (as-built) project approval.

LIMITATIONS

This third supplemental 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 an independent review the referenced geotechnical report to determine the adequacy of the liquefaction hazard evaluation and any associated mitigation measures. 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



Craig Stewart
Senior Engineering Geologist



David T. Schrier
Principal Geotechnical Engineer
GE 2334

CS:DTS:st

COTTON, SHIRES AND ASSOCIATES, INC.