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Job No. 2370.4.3

Pacific Private Money
c/o Arterberry Design
Attention: Millard Arterberry
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Supplemental Report
Soil Engineering Consultation
and Response to Review Comments
Planned Residences
52 and 54 Fremont Road
San Rafael, California

This report summarizes our response to peer review comments from Miller Pacific Engineering Group (MPEG) concerning proposed renovations to an existing residence at 54 Fremont Road and the construction of a new residence at 52 Fremont Road in San Rafael, California. MPEG comments are summarized in their letter report dated January 25, 2021. We performed a soil investigation for a proposed residence at 52 Fremont Road, and the results were presented in our report dated June 5, 2019. A geotechnical evaluation of the property located at 54 Freemont Road was performed by GeoEngineering, Inc., and the results were presented in their report dated July 17, 2007.

In MPEG's letter, they made comments with respect to the above-referenced geotechnical report. Our response to those comments is summarized below. Our responses are summarized in a format corresponding to their comments.

Response to Comment #1: Our soil report was prepared for the lower portion of the property (52 Fremont Road). It has recently come to our attention that the existing residence located at 54 Fremont Road will be remodeled. We concur with MPEG that a new or updated soil report should be performed to provide foundation recommendations for the existing structure. Based on our previous site visits and observations of the existing foundations, new foundations may be warranted.

Response to Comment #2: We have been provided with a copy of the soil report performed for the upper lot at 54 Fremont Road by GeoEngineering Inc. dated July 17, 2007 and have reviewed the test boring logs. During our subsurface investigation, we encountered sandstone at a depth of about 10 feet in Test Pit 2. However, GeoEngineering indicates bedrock was encountered at 19 feet below the existing ground surface during their exploration. We note

that GeoEngineering's logs indicate that as soon as the test boring blow counts approach 50 blows per foot, the soil description changes to bedrock. The bedrock encountered at the site consists of the Franciscan Complex. This rock group includes numerous dissimilar rock types juxtaposed together in a highly complex manner with various engineering properties. MPEG also indicates planned excavations for the new structure will consist of retained cuts up to about 20 feet below the existing grade. Our investigation included excavation to depths of about 10 feet below the existing ground surface. To help clear any discrepancy between the subsurface conditions and explore to the planned depth of excavation, we propose to drill an additional test boring along the upslope portion of the proposed house in the vicinity of the planned excavation and within close proximity to Test Pit 2 and GeoEngineering's Test Boring D. We are currently preparing a supplemental proposal to perform such work.

Response to Comment #3: We concur with MPGE because the existing residence on the property will be remodeled and reused for occupancy. Debris flow hazard needs to be reevaluated so as to help provide protection to the existing residence as well as the proposed new residence. Such recommendations could be provided in a separate consultation letter once supplemental subsurface exploration has been performed.

Response to Comment #4: We concur with MPEG, as indicated as such in our original report. However, all temporary slopes, shoring and the stability of improvements during construction is solely the responsibility of the contractor. However, we can provide recommendation for permanent tie-backs and Cal-OSHA soil type once our supplemental investigation has been performed.

Response to Comment #5: The updated seismic design criteria per the 2019 California Building Code (CBC) is as follows:

2019 CBC Ground Motion Parameters

Soil Site Class	C

Mapped Spectral Response Accelerations:

S_S	1.500g
S_1	0.600g

Design Spectral Response Accelerations:

S_{DS}	1.200g
S_{D1}	0.560g

Response to Comment #6: There is no intent for our recommendations to apply a creep soil pressure to retaining walls. Additional creep soil pressures should be applied where fills are planned behind retaining walls, as described in our original report.

Response to Comment #7: We would consider utility trench shoring temporary excavations and should be addressed by the appropriate contractor. Backfill recommendations should be performed as recommended by the project civil engineer and/or City of San Rafael standards.

Response to Comment #8: Minimum pavement sections were never requested and are not included in our scope of work. However, we judge that the following criteria could be used for planning purposes. Driveway and parking area pavements can consist of 2½ inches of asphalt over 8 and 6 inches respectively, of aggregate base. Such pavements should be suitable for auto and pickup truck traffic. Heavy truck and trash pickup (dumpster) traffic could reduce the useful life of such pavement sections, cause premature distress and increase maintenance. Longer pavement life and lower maintenance can be achieved by thickening the driveway section to 3 inches of asphalt and about 10 to 14 inches of aggregate base where heavier traffic loads are anticipated. Thickened sections or concrete slabs should be considered at dumpster lift points.

The flexible pavement materials should conform to the quality requirements of the Caltrans Standard Specifications, current edition, and the requirements of the County of Marin and/or City of San Rafael.

Prior to subgrade preparation, all underground utilities in the paved areas should be installed and properly backfilled. Subgrade soils should be uniformly moisture conditioned and compacted to at least 95 percent relative compaction[1] and provide a firm and unyielding and recompacting to achieve uniformity. The aggregate base materials should be placed in layers no thicker than 6 inches and compacted to at least 95 percent relative compaction. The aggregate base should also be firm and unyielding.

Response to Comment #9: We have not been provided with grading and foundation plans for the project at this time.

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1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the American Society for Testing and Materials (ASTM) Standard ASTM D1557 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

We trust this provides the information needed at this time. If you have questions or wish to discuss this in more detail, please do not hesitate to contact us.

Yours very truly,

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