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May 20, 2011
2248-5A, L-29173

Mr. Scott Pacheco, Associate Planner
City of Orinda
22 Orinda Way
Orinda, CA 94563

RE: Response to Second Round of Geotechnical and Geologic Review Comments
Geologic/Geotechnical Investigation for Tentative Map
Lavenida Lane, Subdivision 9260 (APN 271-120-011)
Orinda, California

Dear Mr. Pacheco:

We have reviewed the comments contained in the May 5, 2011 geotechnical and geologic review letter (second round review comments) prepared for the City of Orinda by Cal Engineering and Geology (CE&G). The CE&G letter contained comments regarding their review of our initial response to review comments contained in our March 31, 2011 letter. Our geotechnical report for the project is dated June 16, 2010 and the report is titled "Geologic/Geotechnical Investigation for Tentative Map, Lavenida Subdivision (APN #271-120-011), Orinda, California."

In their initial review, CE&G identified four items for which they requested clarification. In their second round review, CE&G indicated that Items 1 and 2 have been adequately addressed, but they requested some further clarification on Items 3 and 4.

Further clarification, as requested by CE&G is provided below.

Item 3

CE&G indicated that they feel that the 40 pounds per cubic foot (pcf) active equivalent fluid pressure recommended for temporary shoring piers may be un-conservatively low for the soil and back slope conditions that exist at the site. It is noted that our recommendation was based on the assumption of a short term, temporary loading condition and with the expectation that some increased risk of yielding of the shoring (as compared to a permanent wall installation) would be acceptable for temporary shoring piers. In our subsequent conversation with CE&G, they expressed concern that reduced conservatism for a temporary shoring design on the geotechnical end may be compounded by reduced conservatism in the structural design and installation process. We would agree with CE&G that the overall design and installation process is difficult to control and that a somewhat higher active equivalent fluid pressure would not be unreasonable. We therefore recommend that the active equivalent fluid pressure on temporary shoring piers be increased to 60 pcf.

CE&G also asked for further clarification as to the material into which the temporary shoring piers will be embedded within the passive (support) zone and suggests that considering the temporary nature of the installation

that it may be appropriate to use a lower (less conservative) factor of safety (which would result in a higher passive or resisting pressure) than that considered in our initial design recommendation. The passive zone for temporary shoring piers is recommended to start at the base of the active zone (15 feet). With the exception of TP-1, our exploratory test pits excavated near the uphill property boundary, encountered moderately weathered siltstone and claystone bedrock at depths of 5 feet or less. TP-1, excavated in the toe area of Landslide B, encountered possible landslide debris to the full depth of the pit (approximately 12 feet) and the Harding Lawson boring (HLA-3) drilled in this same area indicates encountering recent landslide debris to a depth of approximately 10 feet, underlain by material described as a combination of weak rock and soil (possible ancient landslide debris) to a depth of approximately 24½ feet. Below 24 ½ feet, HLA-3 encountered material described as Siesta formation bedrock. It is noted that directly upslope of this area on the golf course property, construction records we reviewed indicate that a series of drained keyways were installed during the grading of the golf course. In our opinion the 350 pcf passive pressure projected over two pier diameters and starting at a depth of 15 feet (as recommended in our initial peer review response) is appropriate given the variable nature of the materials that underlie the site. However, during initial excavations and installation of shoring piers in the toe area of Landslide B, it would be appropriate to carefully evaluate the nature of the materials encountered and the contractor should be prepared to modify the temporary shoring design based on the exposed conditions during construction, if necessary.

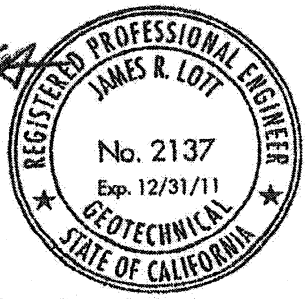
Item 4

CE&G expressed concern that the initially recommended friction angle of 22 degrees within the retained zone for Mechanically Stabilized Earth (MSE) wall design would result in an excessive length of geogrid reinforcement utilizing standard design methodology, which typically either ignores cohesion or limits it to a very low value of 50 pounds per square foot (psf). CE&G suggested for simplified wall design (with zero or limited cohesion) that a friction angle for the retained zone of 27 degrees be considered. For application of standard simplified wall design (assuming zero cohesion) we would agree with CE&G that a design friction angle for the retained zone of 27 degrees would be appropriate. A design friction angle of 27 degrees (with zero cohesion) may also be assumed for the foundation zone with application of standard simplified wall design. However, for modeling of global stability, in our opinion a friction angle of 22 degrees with cohesion of 300 psf would be appropriate for the retained and foundation zone. The reinforced zone will be comprised of imported select granular material. For preliminary MSE wall design purposes this material may be assumed to have a friction angle of 30 degrees.

The opinions and recommendations presented in this letter are made in accordance with generally accepted geotechnical engineering principles and practices. No other warranty, either expressed or implied, is made.

If you have any questions concerning this letter, please call us.

Very truly yours,



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