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February 8, 2006
Project 1899/1EG

Serramonte DC, LLC
Attn: John Hansen, Managing Member
661 Live Oak, Ste. 3
Menlo Park, CA 94025

BY EMAIL [jrh@hansenpsc.com] AND MAIL

CC: Mr. Kris Johnson (Kleinfelder) BY EMAIL [kjjohnson@kleinfelder.com]

SUBJECT: **INITIAL REVIEW COMMENTS**
Geologic and Geotechnical Investigation
Serramonte 200 Project
Daly City, California

Dear Mr. Hansen:

As requested, this letter provides you with engineering geologic and geotechnical peer review comments on the referenced draft report prepared by your project geotechnical consultant, Kleinfelder, Inc.

BACKGROUND

As you know, in 2003 we performed a review of materials available at the time for the planning firm (Thomas Reid Associates) preparing the EIR for the project. We understand that the EIR has since been certified.

More recently, your design team has proceeded ahead with the project design effort. As part of this, Kleinfelder performed a geologic and geotechnical investigation including borings, test pits, laboratory testing, and engineering analysis. You have retained us because you desire review comments from an independent firm regarding geologic and geotechnical aspects of the investigation and project. We understand that our role does not duplicate or replace Kleinfelder's role as the project geologic and geotechnical consultant. We appreciate the cooperation of Kleinfelder's staff in facilitating our review.

In their report, which Kleinfelder stresses is a draft, Kleinfelder recommends that additional subsurface exploration be performed to substantiate the geologic model that plays a critical part in their analysis and formulation of design recommendations. We understand from you that no project plans since those prepared for the EIR are yet available. As a result, Kleinfelder's recommendations and our review comments necessarily remain somewhat preliminary until a detailed project (in particular the wall concept) is fleshed out. Kleinfelder in part structured their report to address comments in our 2003 review for the EIR.

As envisioned in Kleinfelder's report, the project would involve construction of five multi-story, residential condominiums, and associated improvements. Each structure would consist of two parking levels under four residential levels, with a total of 200 living units proposed. It is not

clear whether any of these levels would be underground. The existing site is in an area of deep cut, and the proposed project would involve deepening that cut. Vertical cuts on the order of 60 to 80 feet high are proposed. The conceptual approach considered by Kleinfelder is to construct 25- to 30-foot-high, tiered soil nail or tie-back retaining walls. Each tier would be set back about 5 to 10 feet from the plane of the wall tier below. Monolithic concrete retaining walls are also under consideration.

One of the critical questions is whether the high soil nail walls can be safely constructed without the soil nails or other structures penetrating through the upslope property line. Kleinfelder's report presents analysis indicating that this is possible. A second critical question is whether the potential for offsite landsliding to affect the project has been adequately addressed.

SCOPE OF WORK

As outlined in our peer review proposal, the precise nature of our scope was difficult to predict, since the site conditions were not yet known by Kleinfelder. We provided input and feedback as requested by Kleinfelder during their investigation, with our services including:

- Literature review
- Aerial photographic analysis
- Field reconnaissance
- Limited observation of subsurface exploration
- Field and office meetings with Kleinfelder staff
- Engineering geologic and geotechnical engineering analysis
- Communication with Kleinfelder staff regarding interim review comments
- Preparation of this letter

FINDINGS

We have the following comments at this time:

1. As a general comment, Kleinfelder's report presents an impressive compilation of field and laboratory data, and engineering analysis derived from a multi-faceted investigation. Characterizing and addressing the geologic and geotechnical engineering aspects of a technically challenging project such as this one is a complex task, and our comments are intended to help Kleinfelder strengthen their approach, and are not intended to imply that their work is gravely lacking. Our impression is that foundation, grading, and retaining wall recommendations are fleshed out about as much as they perhaps can be at this stage, in the absence of a specific plan. Additional, more detailed recommendations will be needed for the proposed soil nail walls in particular – currently, there is a lack of detail regarding wall heights, layout, locations, drainage, etc.

2. The report's geologic map shows three landslides: two onsite, and one largely offsite and upslope. This latter landslide is a debris flow which Kleinfelder's report describes as originating on the Chinese cemetery property (shown on Figure 2 of their report). We observed the most recent episode of debris flow landsliding in the field with Kleinfelder personnel, probably within a very few days of its occurrence. Essentially, Kleinfelder attributes this landslide to dumping of fill over time onto the slope, in conjunction with concentration of drainage, and a burst water line. Important Kleinfelder conclusions include that this landslide toes out just upslope of their boring P-2; and that very little or no natural material is involved in this landsliding.

   We are not entirely convinced that the landslide deposits mapped by Kleinfelder in the area including the recent debris flow must toe out upslope of their boring P-2. The

bench on which P-2 was drilled terminates westward at a convex portion of the slope face that can be interpreted as a landslide toe; this is especially anomalous since the site was extensively cut in the 1960's, forming linear benches and planar cut slopes. There is a gap in a long row of very large eucalyptus trees in just this area, suggesting that these trees were taken out by a past episode of landsliding.

3. Apart from the debris flow itself, the topography of the area encompassing the debris flow strongly suggests that previous landsliding has occurred in this area, as evidenced by the presence of a topographic bowl, an arcuate break-in-slope suggesting a transition from landslide scarp to landslide mass, the presence of topographic contour reversals at this transition, and the occurrence of seepage near the eastern margin of the feature, resulting in ponded water east of P-2. The topography suggests that this feature could be on the order of 150 feet across near the upslope property line. Kleinfelder's report points out that whatever landslide movement has occurred since construction of a chainlink fence crossing this slide area has not significantly deflected the fence. It is important that the potential for upslope landsliding be carefully examined and addressed in the project design.

4. The report states that there are no slumps on the site. However, there are landslides on site as well as off-site, described on page 2 as "…numerous shallow fill failures and shallow slip features…", and elsewhere as "erosional washouts." At a site map scale of 1" = 120', sizeable landslides become difficult to portray. In our experience, this small a map scale is largely unusable.

5. The log of TP-3 shows an "ancient landslide" toe. How extensive is this landslide deposit? Is it deep/extensive enough to warrant modeling in the slope stability analysis? Will it be removed entirely by the project grading? How do we know?

6. While the landslides on the existing cut slopes may be removed entirely by the proposed cut, the common shallow landslides described in the text have largely occurred on "bedrock" slopes cut in the 1960's, demonstrating how rapidly these slopes weather. The potential for future shallow landsliding of exposed, weathered cuts and of existing fill must be anticipated, especially since the potential for debris flow landsliding involving these materials has been clearly demonstrated at the site.

7. The limits of existing fill upslope of the site and west of the debris flow are not clearly shown on the geologic map. It is important to establish this, since Kleinfelder points out that unengineered fill upslope of the site mobilized at least once into a debris flow reaching the site.

8. The orientation of bedding will be critical to performance of the high slopes proposed. Certainly, the potential for adverse bedding orientation with respect to slope aspect is always a concern, and Kleinfelder's test pits suggest that bedding at the surface is generally favorable in its orientation. What would the effect be of installing soil nails parallel to stratigraphy in claystone beds? Of fracture sets in various orientations? Currently, there is a lack of information regarding bedding and fracture orientation in the rock mass at depth. The test pits suggest that folding is very limited, which would contrast with regional descriptions of the Merced Formation.

9. In general, the Factors of Safety calculated are marginally acceptable, and depend greatly on the geologic model being accurate (as Kleinfelder points out), and on a lack of continuous clayey seams. Notably, they rely on the presence of the buildings themselves to provide a ballast effect, which in our experience is *not* an appropriate assumption, in part because the cuts/walls would presumably have to be completed

before the structures could be begun. It is especially important for the slopes to be stable since improvements are located close to the toe of the slope. Furthermore, if problems develop, access for equipment will be hindered by the then-constructed buildings.

10. The slope stability analysis considers three soil materials. Does this model adequately address the fill, colluvium, and weathered bedrock upslope of the property line?

11. The slope stability analysis examined a circular failure case. While this may be the appropriate case for the weathered material, the role of claystone beds and fractures may mean a different failure mode should be examined for the deep cuts, and helps highlight the importance of confirming bedding orientation.

12. While the test pits did not reveal any evidence of significant persistent fracture sets or faults, no data is available for the actual rock intervals the soil nails will be relying on. The site location near a right step in the Serra fault may mean that site geology is somewhat more complex than might otherwise be anticipated. The test pit logs indicate that there are at least some small faults and discontinuities.

13. How would the soil nail wall design be adjusted in the field if any of the weak and erodible dune sand intervals described regionally in the Merced Formation are encountered?

14. The report (p. 21) alludes to the potential for "expansive rebound" in association with clayey siltstone found to be "plastic to highly plastic and expansive." Regional engineering geologic maps describe claystone interbeds, where present, in the Merced Fm. as "severely expansive." Is strain softening of these clayey beds through bedding parallel shear a concern after unloading (Hart, 2000), particularly at the base of the cut?

15. The report recommends evaluating the "final subgrade" when it's exposed for the presence of materials (including clayey siltstone) warranting 5 feet of overexcavation. However, it's unclear at what depth below the subgrade this material would pose a concern, and how one would establish whether it's present or absent. The recommendations should be expanded to clarify questions such as: Is "potholing" recommended to establish whether overexcavation is needed? Is clayey siltstone a concern if it is encountered at 1 foot? 3 feet? 4 feet?

16. Kleinfelder notes that the lateral extent of the clayey siltstone will be very important in performance of the soil nails. As it stands now, in our judgment there is insufficient data to support the conclusion that these bodies are lenticular (see p. 22). We support Kleinfelder's suggestion that additional subsurface information is desirable to confirm the critical assumptions in the geologic model based on the available information. We have discussed with Kleinfelder personnel the possibility of downhole logging large-diameter borings at the site, which would provide an opportunity for direct observation of extensive exposures, gathering bedding orientation data, and gathering fracture orientation data.

17. Are the confining pressures shown on the triaxial shear test plots appropriate for modeling a bedrock material, which is likely overconsolidated? Might the use of a higher confining pressure lead to a more accurate representation of the actual shear strength?

18. The report should explain how the seismic coefficient was selected.

19. The basis for the assumed increases in shear strengths under seismic conditions should be explained. We're aware of literature suggesting both possibilities – that shear strength values should be increased or decreased under seismic conditions.

20. Such a high slope would be expected to deform under seismic shaking conditions. Are any significant effects on the upslope property anticipated? Would a deformation analysis or other approach help to characterize this?

21. (p.2, para 3) says "…foundation types are not known at this time," yet (p.3, para 2) states that mat foundations are anticipated. If mat foundations are anticipated, a commonly-provided value is not given in the report: the modulus of subgrade reaction.

22. The report describes "at least one subdrain" [outfall]. We saw this pipe in the field, however, we are not aware of information confirming what this pipe actually is.

23. (p. 37, Drilled Piers) – It is unclear why the recommendations for drilled piers are preliminary, when the recommendations regarding spread footings are final.

24. The report should discuss whether monitoring is recommended during/after construction (e.g. slope indicator or other geotechnical monitoring, and groundwater level monitoring).

25. (p. 37) – The values used in the report for a frictional coefficient (0.50) and for passive pressure (800 pcf) are relatively high in our experience. What is the basis for these values?

26. The project structural engineer will want to confirm the applicable code(s) for this project; the report references the UBC.

27. Does Kleinfelder recommend installation of post-grout tubes, for use in the event that post grouting proves necessary to achieve satisfactory pull-out strength?

28. Although shoring is typically the responsibility of the contractor, the proposed temporary slope retention system should be submitted by the contractor to Kleinfelder and to the City for review, in part to confirm that support for adjacent properties is maintained.

29. We note that construction of the soil nail walls will be made more difficult in this "top-down" construction method by any unconsolidated surficial soils that will not stand vertically.

30. There appears to be a typo in the reported liquid limit for material in boring P-2 in the interval 73.5 – 75.0 feet; is the liquid limit 41 or 49? The values in the text should match the lab data sheets in the appendix.

Organization comments: - When Kleinfelder prepares a final report, the following comments may assist in organization of the report:

- Material on (p. 24, para 2) would more appropriately belong under the Recommendations section.

- (p. 23, Section 3.5.1.3) – This information is either a repeat of 3.5.1.2 or is supplemental to it. Include the salient data in 3.5.1.2 and delete any duplication.

- (p. 26, Section 3.5.2.3) – This information probably should go before the "Geologic Model."

RECOMMENDATIONS

As more specifics are formulated for the project concept, the above comments should be addressed as appropriate.

We concur with Kleinfelder that additional subsurface data will help to confirm the geologic model so essential to the feasibility of this project. While access may be difficult, large-diameter borings through the interval to be relied upon by the soil nails would provide an opportunity for direct observation of a continuous bedrock exposure. The lateral continuity of the important clayey siltstone beds, and the nature of fracture sets could be investigated as part of this approach.

CLOSURE

We have appreciated the opportunity to provide review comments regarding this challenging site and project. Please feel free to call us if you or project team members have questions or comments regarding our review.

Please call if you have any questions.

Sincerely,

PACIFIC GEOTECHNICAL ENGINEERING

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