



Project No. 07091-42-04
September 8, 2014

Project Design Consultants
701 B Street, Suite 800
San Diego, California 92101

Attention: Ms. Camille Passon

Subject: RESPONSE TO GEOTECHNICAL REPORT REVIEW COMMENTS
BRIGHTWATER RANCH
COUNTY OF SAN DIEGO TRACT NO. 5306RPL2
SAN DIEGO COUNTY, CALIFORNIA

- References:
1. *Geotechnical Investigation, Los Coches I, Brightwater Ranch, San Diego County, California*, prepared by Geocon Incorporated, dated October 11, 2005 (Project No. 07091-32-03).
 2. *Updated Geotechnical Report, Brightwater Ranch, County of San Diego Tract No. 5306RPL2, San Diego County, California*, prepared by Geocon Incorporated, dated June 23, 2014 (Project No. 07091-42-04).
 3. *Tentative Map For: County of San Diego Tract No. 5306RPL2 "Los Coches"*, prepared by Project Design Consultants, Sheets 1 through 6 of 6, dated July 10, 2014.

Dear Ms. Passon:

This correspondence has been prepared to respond to comments provided by the County of San Diego, Planning and Development Services, Project Planning Division. The comments along with our responses are presented below.

Comment 1: *Certification of Steeper Slopes Needed: The project includes major slopes up to 50+ feet high with slope inclinations of 1.5 horizontal:1 vertical. Section 87.401 (a) of the Grading Ordinance does not allow average slope of each cut surface resulting in a major slope to be steeper than two horizontal to one vertical exclusive of benches and exclusive of rounding issues unless:*

- (1) *a report is received from a soil engineer certifying that he or she has investigated the property and that in his or her opinion the proposed steeper slope will be stable and will not endanger any public or private property or result in the deposition of debris on any public way or interfere with any existing drainage course.*

Response: Geocon Incorporated has performed a geotechnical investigation at the property, including subsurface exploration, laboratory testing, engineering analyses, and slope stability evaluation.

A review of the referenced report indicates that the proposed cut slopes will expose granitic rock. Cut slopes in rock materials do not lend themselves to conventional slope stability analyses, however, based on experience with similar rock conditions, 1.5:1 cut slopes to the planned heights should possess a factor of safety of at least 1.5 with respect to slope instability if free of adversely oriented joints or fractures. All cut slope excavations should be observed during grading by an engineering geologist to verify that soil and geologic conditions do not differ significantly from those anticipated. In the event that adverse conditions are observed, stabilization recommendations can be provided.

As such, it is our opinion that if the proposed cut slopes are excavated in accordance with our recommendations, the 1.5:1 slopes will be stable and will not endanger public or private property or result in deposition of debris on public ways or interfere with existing drainage courses.

Comment 3: *Drainage Terraces: Section 87.402 of the Grading Ordinance contains requirements for drainage terraces and paving on cut or fill slopes exceeding 40 feet in height. Drainage terraces may only be waived by the County Official after receipt of a report by the soil engineer certifying that he or she has investigated the property and that in the engineer's opinion drainage terraces or paving are unnecessary.*

Response: The use of terrace drains on cut or fill slopes exceeding 40 feet in height is not considered necessary to maintain gross stability of the slopes. Based on past experience with similar projects, properly constructed and maintained terrace drains may reduce slope erosion, particularly on fill slopes. However, improperly maintained terrace drains can result in significant slope erosion and possible slope distress. Terrace drains that are allowed to fill with debris may concentrate surface runoff down the slope face, resulting in deep, extensive erosion. It is therefore recommended that the use of terrace drains planned for cut or fill slopes on the project be kept to a minimum, consistent with the general guidelines provided below:

1. For cut or fill slopes above developed lots, a terrace drain should be provided no higher than 40 feet above the toe of slope or alternatively a lined surface drain may be located along the toe of slope.
2. For cut or fill slopes above streets or non-building areas, terrace drains are not required.
3. All terrace drains should direct the flow of water into storm drains or other suitable drainage facilities. For "daylight" canyon fills, down-drains should be provided at the contact between fill and natural materials, to reduce erosion along the contact.
4. The above recommendations are presented as general guidelines only; other considerations may dictate the design of slope terrace drains. All terrace drains should be sized to accommodate the maximum flow of water anticipated from the drainage area above, under the design rainfall event.
5. It is recommended that terrace drains be constructed at a drainage gradient of at least 2 percent, and steeper, where practical. In addition, a maintenance program should be devised and followed, which clearly designates the persons or agencies responsible for maintaining terrace drains within specific areas.

Based on review of the referenced tentative map and geotechnical investigation report, it is our opinion that these general guidelines have been followed and no additional terrace drainage measures are recommended.

Comment 4: *Grading Plans: Please revise the geotechnical analysis in accordance with the most up to date Grading Plan for the project. Include additional field investigation as necessary to support the Grading Ordinance certification of steeper slopes and removal of drainage terraces if proposed.*

Response: We have reviewed the referenced Tentative Map to check if the plans and details have been prepared in substantial conformance with the recommendations presented in our referenced geotechnical reports.

Based upon our review of the project plans and the information contained within the referenced geotechnical reports, it is the opinion of Geocon Incorporated that the plans and details have been prepared in substantial conformance with recommendations presented in the geotechnical reports.

It should be understood that our review was limited to geotechnical aspects of project development and did not include the review of other details on the referenced plans. Geocon Incorporated has no opinion regarding other details found on the referenced plans, civil or otherwise, that do not directly pertain to geotechnical aspects of site development.

If there are any questions regarding this correspondence, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

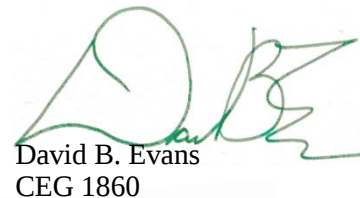
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