ZEISER KLING Consultants, Inc.

June 12, 2007 PN 95101-27B

Mr. Brad Fowler
City of Dana Point
33282 Golden Lantern
Dana Point, California 92629-1805

Subject: Geotechnical Report Requirements for Headlands Project, Lot Development, Dana Point, California.

Reference: AMEC Earth Environmental Inc., 2007, Geotechnical Report of Rough Grading, Lots 11 Through 31 and 45 Through 57, Tentative Tract 16331, North Strand area, Headlands Project, Dana Point, California, April 16, 2007, JN 5-212-400100.

Dear Mr. Fowler:

In accordance with your request, we have summarized the recommended geotechnical requirements for individual lot development at the Headlands Project. As a point of note, these requirements follow the same criteria normally applied to custom lot development in a typical coastal hillside community. Selected items in the referenced Rough Grading report by AMEC are quoted below for your convenience, but are not intended to replace the necessity for each lot owner and their independent geotechnical consultant to review the geotechnical documentation in full when providing lot specific evaluation and design.

- "...the geotechnical recommendations and rough grading mitigation measures have been implemented to address general geotechnical constraints potentially affecting the project area, without knowledge of the specific plans for improvements on each of the lots... It will, therefore, be necessary for each property owner to engage a qualified geotechnical consultant to evaluate the local geotechnical conditions and to provide appropriate design, construction, and other mitigation measures that are specific to the lot conditions and planned improvements... The Geotechnical Consultant for each lot is responsible for site specific geotechnical review, testing, evaluations and recommendations to address design and construction of planned future improvements on each of the properties."

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- "...layers of high strength polymer grid known as geogrid/geo-fabric have been used to reinforce and construct the fill for the relatively large planter-face MSE retaining walls that are present at the rear of many of the lots. Similar geogrid/geo-fabric reinforcement was also used to construct the slightly steeper lower portion of the slope along the shorefront lots and also other local slope areas where the surface gradient is generally steeper than 2:1 (horizontal:vertical). Although this geogrid/geo-fabric should not typically interfere with construction of proposed residences, proposed subsurface excavations to significant depths in the rear yard could potentially encounter this reinforcement. The Civil Engineer, Structural Engineer, Landscape Architect and/or the Geotechnical Consultant for each lot should provide and require implementation of design measures that do not compromise the existing wall/slope reinforcement. Terracon, the MSE retaining wall designer, has provided recommendations addressing landscaping considerations and other possible residential improvements in the vicinity of the walls in a letter report dated February 1, 2007."

- "On the basis of the compiled information and AMEC's observation and testing during grading operations, no unusual or excessive settlement of the graded pad areas is anticipated. The future total and differential settlement potential for the planned building areas on each lot is anticipated to be less than one-inch. The Geotechnical Consultant for each lot should, therefore, review this information and provide foundation recommendations and/or other design measures that are appropriate for a projected long-term differential settlement potential of at least one-inch. As presented and discussed below, AMEC considers the potential effects of expansive soils to be an overriding concern with regard to possible future ground deformation."

- "The Geotechnical Consultant for each lot should review, test and evaluate the expansion potential and soil moisture conditions as a part of the design and construction process on each property. The expansion potential of the near surface foundation soils is considered a primary design consideration for structure foundation systems, retaining walls, screen walls, flatwork and other appurtenant structures such as pools, spas and fountains. The Geotechnical consultant should use the site specific testing and evaluations for each lot to develop appropriate foundation design and construction measures, including soil moisture control/drainage provisions that are consistent with the soil types present on each lot."

- "The Geotechnical Consultant for each lot should... review, test and evaluate the site specific conditions and provide appropriate recommendations, and design/construction measures to mitigate the potential effects of corrosive soils."

- "The Structural Engineer and Geotechnical Consultant for each lot should evaluate and provide appropriate design measures for any proposed structures or other proposed surcharge loads that are planned or are anticipated within the 'active' zone behind existing and/or proposed retaining walls."

- "Slope foundation setbacks are... recommended to mitigate the potential effects of slope creep on planned improvements on or near the tops of slopes. It should be recognized that all improvements, including screen walls, fences, flatwork, swimming pools, spas, and associated landscaping structures located on or near the tops of slopes are potentially affected by this long term ground deformation...AMEC recommends that structural foundations located on or near the tops of slopes should conform to the minimum UBC requirements of H/3 where H is the height of the slope... the setback should be increased to H/2 where H is less than 30 feet and the minimum setback for slope/wall heights between 30 and 45 fee should be 15 feet. For the case of MSE walls, the height of slope should include the height of the exposed wall face... Actual foundation setback recommendations should be developed by the Geotechnical Consultant for each lot on the basis of site specific review, testing and evaluations of the conditions and proposed improvements on each property."

- "...extensive subsurface drainage systems have been installed... the Civil Engineer and Geotechnical consultant for each lot should provide and require implementation of design measures that do not disrupt or comprise the performance of the existing subsurface drainage systems."

- "...the (compacted fill) material types comprising the fill range from relatively impermeable silts and clays to highly permeable sands. The permeability contrast between these material types has the potential to form local perched groundwater levels along the more permeable layers within the fill, even at relatively shallow depths. The Civil Engineer and Geotechnical Consultant for each lot should, therefore, provide and require implementation of appropriate design measures for subsurface drainage and waterproofing of any planned basements or other subsurface structures."

Geotechnical reports for each lot must be submitted to the city prior to issuance of a grading permit and must conform to current City Grading Code Sections 8.01.420 and 8.01.220. Site specific plans and cross sections should depict the locations of proposed grading, structures, drainage conveyance, erosion control measures, footings and footing setbacks as well as existing structures, utilities, geogrid, walls, geologic contacts/data, subsurface drainage systems, surface drainage, etc.

Complete geotechnical recommendations should be provided for all proposed custom lot improvements (residential structures, pools, spas, decks, retaining walls, screen walls, grading, etc.). The geotechnical engineer should incorporate relevant details from other design professionals necessary to accurately define the proposed project. Such details would include locations/depths of proposed site improvements, definitions of influences on existing and proposed retaining walls, construction sequencing, etc. The referenced Rough Grade report provides locations of the geogrid and geoweb reinforcement for MSE walls and reinforced slopes. Schematic presentation of subsurface drainage systems are also provided in the Rough Grade report. Geotechnical reports for custom lot development should incorporate the locations of geogrid and geoweb reinforcement, as well as subsurface drainage systems (existing and proposed), into design and construction documents. Temporary and permanent stability should be addressed where excavations are proposed, including lateral stability considerations. Site specific expansion index and corrosion testing should be provided in the geotechnical report for each custom lot development.

Third party geotechnical review is recommended for custom lot submittals during the planning phase of development to confirm that site specific conditions are incorporated into the design of the proposed site improvements.

Limitations: Our review is intended to determine if the submitted report(s) comply with City Codes and generally accepted geotechnical practices within the local area. The scope of our services for this third party review has been limited to brief site visits and a review of the referenced documents, as supplied by the City of Dana Point. Re-analysis of reported data and/or calculations and preparation of amended construction or design recommendations are specifically not included within our scope of services. Our review should not be considered as a certification, approval or acceptance of the consultant's work, nor is it meant as an acceptance of liability for final design or construction recommendations made by the geotechnical consultant of record or the project designers or engineers.

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Zeiser Kling Consultants, Inc. appreciates this opportunity to be of continued service to the City of Dana Point on this project. If you have any questions regarding this review, please contact our office.

Sincerely,

ZEISER KLING CONSULTANTS, INC.

Matthew G. Rogers
Principal Geotechnical Engineer
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Expires 12/31/07

Gail T. Cosulich
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C.E.G. 1674
Expires 9/30/07

MGR:GTC:lw

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