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SOILS REPORT APPROVAL LETTER

April 20, 2015

LOG # 87802
SOILS/GEOLOGY FILE - 2
LIQ

Equity Residential
26880 Aliso Viejo Parkway, Suite 200
Aliso Viejo, CA 92656

TRACT: ORD'S SURVEY (M R 53-66/73)
BLOCK: 8
LOT(S): A, 7-8
LOCATION: 350 S. Hill St.

<u>CURRENT REFERENCE</u> <u>REPORT/LETTER(S)</u>	<u>REPORT</u> <u>No.</u>	<u>DATE(S) OF</u> <u>DOCUMENT</u>	<u>PREPARED BY</u>
Soils Report	10705.003	03/12/2015	Leighton & Associates, Inc

The Grading Division of the Department of Building and Safety has reviewed the referenced report providing recommendations for the proposed 33-story building over 3-level subterranean parking structure.

The earth materials at the subsurface exploration locations consist of up to 5-10 feet of uncertified fill underlain by dense to very dense sand with gravel and cobbles and siltstone bedrock assigned to the San Fernando Formation.

The consultants recommend to support the proposed structure on mat-type and / or drilled piles foundations bearing on competent bedrock.

The site is located in a designated liquefaction hazard zone as shown on the "Seismic Hazard Zones" map issued by the State of California. The Liquefaction study included as a part of the report demonstrates that the site does not possess a liquefaction potential. This satisfies the requirement of the 2014 Los Angeles City Building Code Section 1802.2.7.

The referenced report is acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis () refer to applicable sections of the 2014 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. The soils engineer shall review and approve the detailed plans prior to issuance of any permit. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans included the recommendations

- contained in his report. (7006.1)
2. All recommendations of the report which are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.
 3. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans. Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit. (7006.1)
 4. A grading permit shall be obtained for all structural fill and retaining wall backfill. (106.1.2)
 5. All man-made fill shall be compacted to a minimum 90 percent of the maximum dry density of the fill material per the latest version of ASTM D 1557. Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density (D1556). Placement of gravel in lieu of compacted fill is allowed only if complying with Section 91.7011.3 of the Code. (7011.3)
 6. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill. (1809.2)
 7. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction. (7013.12)
 8. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the State Construction Safety Orders enforced by the State Division of Industrial Safety. (3301.1)
 9. Temporary excavations that remove lateral support to the public way, adjacent property, or adjacent structures shall be supported by shoring. Note: Lateral support shall be considered to be removed when the excavation extends below a plane projected downward at an angle of 45 degrees from the bottom of a footing of an existing structure, from the edge of the public way or an adjacent property. (3307.3.1)
 10. Prior to the issuance of any permit which authorizes an excavation where the excavation is to be of a greater depth than are the walls or foundation of any adjoining building or structure and located closer to the property line than the depth of the excavation, the owner of the subject site shall provide the Department with evidence that the adjacent property owner has been given a 30-day written notice of such intent to make an excavation. (3307.1)
 11. The soils engineer shall review and approve the shoring plans prior to issuance of the permit. (3307.3.2)
 12. Prior to the issuance of the permits, the soils engineer and/or the structural designer shall evaluate the surcharge loads used in the report calculations for the design of the retaining walls and shoring. If the surcharge loads used in the calculations do not conform to the actual surcharge loads, the soil engineer shall submit a supplementary report with revised recommendations to the Department for approval.
 13. Shoring shall be designed for the lateral earth pressures specified in the section titled "Temporary Shoring" starting on page 19 of the referenced report; all surcharge loads shall be included into the design.
 14. Shoring shall be designed for a maximum lateral deflection of 1 inch, provided there are no structures within a 1:1 plane projected up from the base of the excavation. Where a structure is within a 1:1 plane projected up from the base of the excavation, shoring shall be designed for a

maximum lateral deflection of ½ inch, or to a lower deflection determined by the consultant that does not present any potential hazard to the adjacent structure.

15. A shoring monitoring program shall be implemented to the satisfaction of the soils engineer.
16. In the event that shoring soldier beams/piles are installed using vibrating/driving equipment in the vicinity of existing structures, the following conditions shall be complied with:
 - a. Ground vibrations shall be monitored during shoring installation adjacent to the pile driving operation.
 - b. Peak particle velocities (PPV) for any single axis shall be limited to ½ inch/second.
 - c. Settlement monitoring monuments shall be surveyed: prior to pile driving, daily during the first week of pile driving operations, and weekly thereafter, until completion of pile installation, as recommended.
 - d. In the event any PPV is measured above the specified threshold (½ inch/second) or any settlement is measured/detected, pile driving shall be stopped and corrective actions shall be submitted to the Department for review before resuming pile driving.
17. Foundation for the main structure shall derive entire support from competent bedrock, as recommended and shall be approved by the geologist and soils engineer by inspection.
18. Footings for ancillary structures may be established on engineered fill or competent native soils, as recommended.
19. The proposed structure and subterranean walls shall be designed to resist uplift and hydrostatic pressures that would develop due to the historic high groundwater level conditions or the current groundwater level, whichever is higher, as recommended.
20. Pile caisson and/or isolated foundation ties are required by Code Sections 1809.13 and/or 1810.3.13. Exceptions and modification to this requirement are provided in Information Bulletin P/BC 2014-030.
21. When water over 3 inches in depth is present in drilled pile holes, a concrete mix with a strength of 1000 p.s.i. over the design p.s.i. shall be tremied from the bottom up; an admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included. (1808.8.3)
22. Existing uncertified fill shall not be used for lateral support of deep foundation. (1810.2.1)
23. The seismic design shall be based on a Site Class C as recommended. All other seismic design parameters shall be reviewed by LADBS building plan check.
24. Retaining walls shall be designed for the lateral earth pressures specified in the section titled "Lateral Earth Pressures" starting on page 14 of the referenced report. All surcharge loads shall be included into the design.
25. All retaining walls shall be provided with a standard surface backdrain system and all drainage shall be conducted to the street in an acceptable manner and in a non-erosive device. (7013.11)
26. With the exception of retaining walls designed for hydrostatic pressure, all retaining walls shall be provided with a subdrain system to prevent possible hydrostatic pressure behind the wall. Prior to issuance of any permit, the retaining wall subdrain system recommended in the soil report shall be incorporated into the foundation plan which shall be reviewed and approved by the soils engineer of record. (1805.4)
27. Installation of the subdrain system shall be inspected and approved by the soils engineer of record

- and the City grading/building inspector. (108.9)
28. Basement walls and floors shall be waterproofed/damp-proofed with an L.A. City approved "Below-grade" waterproofing/damp-proofing material with a research report number. (104.2.6)
 29. Prefabricated drainage composites (Miradrain) (Geotextiles) may be only used in addition to traditionally accepted methods of draining retained earth.
 30. Where the ground water table is lowered and maintained at an elevation not less than 6 inches below the bottom of the lowest floor, or where hydrostatic pressures will not occur, the floor and basement walls shall be damp-proofed. Where a hydrostatic pressure condition exists, and the design does not include a ground-water control system, basement walls and floors shall be waterproofed. (1803.5.4, 1805.1.3, 1805.2, 1805.3)
 31. The structure shall be connected to the public sewer system. (P/BC 2014-027)
 32. All roof and pad drainage shall be conducted to the street in an acceptable manner. (7013.10)
 33. An on-site storm water infiltration system at the subject site shall not be implemented, as recommended.
 34. All concentrated drainage shall be conducted in an approved device and disposed of in a manner approved by the LADBS. (7013.10)
 35. Prior to issuance of a permit involving de-watering, clearance shall be obtained from the Department of Public Works and from the California Regional Water Quality Control Board.
201 N. Figueroa Street 3rd Floor, LA (213) 482-7045
320 W. 4th Street, Suite 200 (213) 576-6600 (LARWQB)
 36. The soils engineer shall inspect all excavations to determine that conditions anticipated in the report have been encountered and to provide recommendations for the correction of hazards found during grading. (7008 & 1705.6)
 37. All friction pile or caisson drilling and installation shall be performed under the inspection and approval of the geologist and soils engineer. The geologist shall indicate the distance that friction piles or caissons penetrate into competent [material] bedrock in a written field memorandum. (1803.5.5, 1704.9)
 38. Prior to the pouring of concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. He shall post a notice on the job site for the LADBS Building Inspector and the Contractor stating that the work so inspected meets the conditions of the report, but that no concrete shall be poured until the City Building Inspector has also inspected and approved the footing excavations. A written certification to this effect shall be filed with the Grading Division of the Department upon completion of the work. (108.9 & 7008.2)
 39. Prior to excavation, an initial inspection shall be called with LADBS Inspector at which time sequence of construction, [shoring, ABC slot cuts, underpinning, pile installation,] protection fences and dust and traffic control will be scheduled. (108.9.1)
 40. Installation of shoring, underpinning, slot cutting excavations and/or pile installation shall be performed under the inspection and approval of the soils engineer and deputy grading inspector. (1705.6)
 41. The installation and testing of tie-back anchors shall comply with the recommendations included in

the report or the standard sheets titled "Requirement for Tie-back Earth Anchors", whatever is more restrictive. (Research Report #23835)

42. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. He shall post a notice on the job site for the City Grading Inspector and the Contractor stating that the soil inspected meets the conditions of the report, but that no fill shall be placed until the LADBS Grading Inspector has also inspected and approved the bottom excavations. A written certification to this effect shall be included in the final compaction report filed with the Grading Division of the Department. All fill shall be placed under the inspection and approval of the soils engineer. A compaction report together with the approved soil report and Department approval letter shall be submitted to the Grading Division of the Department upon completion of the compaction. In addition, an Engineer's Certificate of Compliance with the legal description as indicated in the grading permit and the permit number shall be included. (7011.3)



YING LIU
Engineering Geologist Associate II

YL/yl
Log No. 87802
213-482-0480

cc: Applicant
Leighton & Associates, Inc, Project Consultant
LA District Office