



GEOLOGY AND SOILS REPORT APPROVAL LETTER

May 22, 2018

LOG # 99371-01
SOILS/GEOLOGY FILE - 2
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TRACT: Norton Tract (MR 14-73)
BLOCK: D
LOT(S): 18-21
LOCATION: 457, 461, 465, & 467 W. Del Norte Street

<u>CURRENT REFERENCE</u> <u>REPORT/LETTER(S)</u>	<u>REPORT</u> <u>No.</u>	<u>DATE OF</u> <u>DOCUMENT</u>	<u>PREPARED BY</u>
Addendum Report	IC 16086-C	03/20/2018	Irvine Geotechnical
<u>PREVIOUS REFERENCE</u> <u>REPORT/LETTER(S)</u>	<u>REPORT</u> <u>No.</u>	<u>DATE OF</u> <u>DOCUMENT</u>	<u>PREPARED BY</u>
Dept. Review Letter	99371	08/25/2017	LADBS
Geology/Soils Report	IC 16086-C	09/06/2016	Irvine Geotechnical
Laboratory Test Report	SL16.2240	08/22/2016	Soil Labworks LLC

The Grading Division of the Department of Building and Safety has reviewed the referenced report that provides recommendations for the proposed three-story residences and detached carports. Retaining walls ranging up to 20 feet in height are proposed to provide level setback areas to the residences. The subject site consists of four consecutive lots. Each lot will be developed with a residence. A slope descends to the northeast about 85 feet in height to the subjacent properties at gradients of about 1½:1 to 3½:1 (H:V). Subsurface exploration performed by the consultant consisted eight test pits on the descending slope to a maximum depth of 8 feet. The earth materials at the subsurface exploration locations consist of up to 8 feet of uncertified fill underlain by soil and sandstone and shale bedrock. Geologic structure observed by the consultant consists of northeasterly dipping bedding between 50 and 85 degrees. The consultants recommend to support the proposed structures on conventional and/or drilled-pile foundations bearing on competent bedrock.

Engineering analyses provided by Irvine Geotechnical is based on laboratory testing performed by Soil Labworks LLC. Irvine Geotechnical is accepting responsibility for use of the data in accordance to Code section 91.7008.5 of LABC.

The site is located in a designated seismically induced landslide hazard zone as shown on the Seismic Hazard Zones map issued by the State of California. The above report/s include/s an acceptable seismic slope stability analysis and the requirements of the 2017 City of Los Angeles Building Code have been satisfied.

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

(Note: Numbers in parenthesis () refer to applicable sections of the 2017 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. Conformance with the Zoning Code Section 12.21 C8, which limits the heights and number of retaining walls, will be determined during structural plan check.
2. An on-site storm water infiltration system at the subject site shall not be implemented, as recommended.
3. Approval shall be obtained from the Department of Public Works, Bureau of Engineering, Development Services and Permits Program for the proposed removal of support and/or retaining of slopes adjoining to public way (3307.3.2).

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4. The geologist and soils engineer shall review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans that clearly indicates the geologist and soils engineer have reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports (7006.1).
5. All recommendations of the reports that are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.
6. 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 (7006.1). Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit.
7. A grading permit shall be obtained for all structural fill and retaining wall backfill (106.1.2).
8. All graded, brushed or bare slopes shall be planted with low-water consumption, native-type plant varieties to protect slopes against erosion (7012).
9. All new graded slopes shall be no steeper than 2H:1V (7010.2 & 7011.2).
10. All existing nonconforming wood retaining walls shall be removed and the slope shall be trimmed to a gradient no steeper than 2:1 (H:V), as recommended.
11. All existing slopes which are steeper than 2:1 (H:V) shall be trimmed to a gradient no steeper than 2:1 (H:V), as recommended.
12. Prior to the issuance of any permit, an accurate volume determination shall be made and included in the final plans, with regard to the amount of earth material to be exported from the site. For grading involving import or export of more than 1000 cubic yards of earth materials within the grading hillside area, approval is required by the Board of Building and Safety. Application for approval of the haul route must be filed with the Board of Building and Safety Commission Office. Processing time for application is approximately 8 weeks to hearing plus 10-day appeal period.
13. 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. Placement of gravel in lieu of compacted fill is only allowed if complying with LAMC Section 91.7011.3.

14. Existing uncertified fill shall not be used for support of footings, concrete slabs or new fill (1809.2, 7011.3).
15. Drainage in conformance with the provisions of the Code shall be maintained during and subsequent to construction (7013.12).
16. Grading shall be scheduled for completion prior to the start of the rainy season, or detailed temporary erosion control plans shall be filed in a manner satisfactory to the Grading Division of the Department and the Department of Public Works, Bureau of Engineering, B-Permit Section, for any grading work in excess of 200 cubic yards (7007.1).

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17. The applicant is advised that the approval of this report does not waive the requirements for excavations contained in the General Safety Orders of the California Department of Industrial Relations (3301.1).
18. 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)
19. Where any excavation, not addressed in the approved reports, would remove lateral support (as defined in 3307.3.1) from a public way, adjacent property or structures, a supplemental report shall be submitted to the Grading Division of the Department containing recommendations for shoring, underpinning, and sequence of construction. Report shall include a plot plan and cross-section(s) showing the construction type, number of stories, and location of adjacent structures, and analysis incorporating all surcharge loads that demonstrate an acceptable factor of safety against failure. (7006.2 & 3307.3.2)
20. Prior to the issuance of any permit that 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).
21. The soils engineer shall review and approve the shoring plans prior to issuance of the permit (3307.3.2).
22. 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.
23. Unsurcharged temporary excavations exposing unsupported geology and/or unsupported bedding planes shall be trimmed back along the lowest unsupported plane or at a 1H:1V slope inclination, whichever is flatter, or shored, as recommended.
24. Unsurcharged temporary excavations over exposing fill and/or soil shall be trimmed back at a gradient not exceeding 1:1, as recommended.

25. Unsurcharged temporary excavations in favorably-oriented bedrock may be cut vertical up to 7 feet. For excavations over 7 feet, the lower 7 feet may be cut vertically and the portion of the excavation above 7 feet shall be trimmed back at a gradient not exceeding 1:1, as recommended.
26. Shoring shall be designed for the lateral earth pressures specified in the section titled "Shoring" starting on page 22 of the 09/06/2016 report; all surcharge loads shall be included into the design. Total lateral load on shoring piles shall be determined by multiplying the recommended EFP by the pile spacing.
27. 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.]
28. A shoring monitoring program shall be implemented to the satisfaction of the soils engineer.
29. All foundations shall derive entire support from competent bedrock, as recommended and approved by the geologist and soils engineer by inspection.
30. Foundations adjacent to a descending slope steeper than 3:1 (horizontal to vertical) in gradient shall be a minimum distance of one-third the vertical height of the slope but need not exceed 40 feet measured horizontally from the footing bottom to the face of the slope (1808.7.2).
31. Buildings adjacent to ascending slopes steeper than 3H:1V in gradient shall be setback from the toe of the slope a level distance measured perpendicular to slope contours equal to one-half the vertical height of the slope, but need not exceed 15 feet (1808.7.1).
32. Pile caisson and/or isolated foundation ties are required by LAMC Sections 91.1809.13 and/or 91.1810.3.13. Exceptions and modification to this requirement are provided in Information Bulletin P/BC 2014-030.
33. Pile and/or caisson shafts shall be designed for a lateral load of 1000 pounds per linear foot of shaft exposed to fill, soil and weathered bedrock per P/BC 2017-050.
34. The design passive pressure shall be neglected for a portion of the pile with a horizontal setback distance less than five feet from fill, soil or weathered bedrock.
35. When water is present in drilled pile holes, the concrete shall be tremied from the bottom up to ensure minimum segregation of the mix and negligible turbulence of the water (1808.8.3).
36. Existing uncertified fill shall not be used for lateral support of deep foundations (1810.2.1).
37. Slabs placed on approved compacted fill shall be at least 3½ inches thick and shall be reinforced with ½-inch diameter (#4) reinforcing bars spaced a maximum of 16 inches on center each way.
38. Concrete floor slabs placed on expansive soil shall be placed on a 4-inch fill of coarse aggregate or on a moisture barrier membrane. The slabs shall be at least 3½ inches thick and shall be reinforced with ½-inch diameter (#4) reinforcing bars spaced a maximum of 16 inches on center each way.
39. 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.
40. Retaining walls shall be designed for the lateral earth pressures specified in the section titled "Retaining Walls" starting on page 2 of the 03/20/2018 report. Note: Where two separate stacked

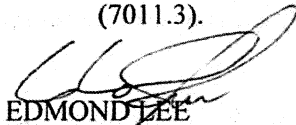
retaining walls (the upper wall surcharges the lower wall) are proposed, the lower of the two walls shall be designed for the combined height of the two walls. All surcharge loads shall be included into the design.

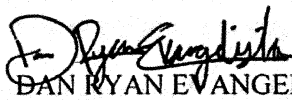
41. Retaining walls higher than 6 feet shall be designed for lateral earth pressure due to earthquake motions as specified on page 3 of the 03/20/2018 report (1803.5.12).

Note: Lateral earth pressure due to earthquake motions shall be in addition to static lateral earth pressures and other surcharge pressures. The height of a stacked retaining wall shall be considered as the summation of the heights of each wall.

42. Basement walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure as specified on page 2 of the 03/20/2018 report (1610.1). All surcharge loads shall be included into the design.
43. Retaining walls at the base of ascending slopes shall be provided with a minimum freeboard of 12 inches, as recommended.
44. The recommended equivalent fluid pressure (EFP) for the proposed retaining wall shall apply from the top of the freeboard to the bottom of the wall footing.
45. All retaining walls shall be provided with a standard surface backdrain system and all drainage shall be conducted in a non-erosive device to the street in an acceptable manner (7013.11).
46. 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 soils report shall be incorporated into the foundation plan which shall be reviewed and approved by the soils engineer of record (1805.4).
47. Installation of the subdrain system shall be inspected and approved by the soils engineer of record and the City grading/building inspector (108.9).
48. Basement walls and floors shall be waterproofed/damp-proofed with an LA City approved "Below-grade" waterproofing/damp-proofing material with a research report number (104.2.6).
49. Prefabricated drainage composites (Miradrain, Geotextiles) may be only used in addition to traditionally accepted methods of draining retained earth.
50. The structure shall be connected to the public sewer system per P/BC 2017-027.
51. All roof, pad, and deck drainage shall be conducted to the street in an acceptable manner in non-erosive devices or other approved location in a manner that is acceptable to the LADBS and the Department of Public Works (7013.10).
52. Sprinkler plans for irrigation shall be submitted and approved by the Mechanical Plan Check Section (7012.3.1).
53. Any recommendations prepared by the geologist and/or the soils engineer for correction of geological hazards found during grading shall be submitted to the Grading Division of the Department for approval prior to use in the field (7008.2, 7008.3).
54. The geologist and 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).

55. 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 bedrock in a written field memorandum. (1803.5.5, 1704.9)
56. Prior to pouring concrete, a representative of the consulting soils engineer shall inspect and approve the footing excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the work inspected meets the conditions of the report. No concrete shall be poured until the LADBS 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)
57. Prior to excavation an initial inspection shall be called with the LADBS Inspector. During the initial inspection, the sequence of construction; shoring; pile installation; protection fences; and, dust and traffic control will be scheduled (108.9.1).
58. Installation of shoring, underpinning, slot cutting excavations and/or pile excavations shall be performed under the inspection and approval of the soils engineer and deputy grading inspector (1705.6).
59. Prior to the placing of compacted fill, a representative of the soils engineer shall inspect and approve the bottom excavations. The representative shall post a notice on the job site for the LADBS Inspector and the Contractor stating that the soil inspected meets the conditions of the report. No fill shall be placed until the LADBS 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).


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