APPENDIX D

Geotechnical Study

Prepared by:

Geotech Professionals, Inc

GPI GEOTECHNICAL PROFESSIONALS INC

December 6, 2016
(Revised April 2, 2018)

AvalonBay Communities, Inc.
11111 Santa Monica Boulevard, Suite 850
Los Angeles, California 90025

Attention: Mr. Amil Gupta

Subject: Revised Geotechnical Feasibility Investigation
AvalonBay Monrovia
825 S. Myrtle Avenue
Monrovia, California
GPI Project No. 2775.IR

Dear Mr. Gupta:

In accordance with your request, this letter present the results of our geotechnical feasibility investigation for the subject project. The site location is shown on the Site Location Map, Figure 1. The report was revised to reflect proposed revisions to the project as described below

We understand that our evaluation of the site is desired prior to the purchase of the property by AvalonBay Communities, Inc. The primary purpose of our review is to determine whether any significant geotechnical conditions ("fatal flaws") are present at the site that may impact the development of a mixed-use building. This letter is not intended to be a design level document and should not be submitted to any regulatory agency.

We provided geotechnical services for the project at 700 S. Myrtle Avenue. The conditions at the subject site are very similar to the site across the street.

PROJECT DESCRIPTION

Our understanding of the project conditions and requirements is as follows:

Based on information provided by you, we understand that a wrap type apartment/retail development is proposed. The apartment portion of the project has been revised to include 5-stories. The parking structure will now be 6-stories (5-elevated decks) in height. Wood framed apartments will be constructed adjacent to a concrete parking structure. The structures will be constructed at-grade. Retail space is proposed at the ground level along Myrtle Avenue.

Based on our experience with similar projects, we have assumed maximum wall loads for the apartments of 5 to 6 kips per lineal foot. For the parking structure, maximum column loads of approximately 500 to 600 kips have been assumed. Finish grades are expected to correspond approximately to existing grades.

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The site surface is currently covered with multiple buildings, asphalt pavements, concrete pavements, flatwork, and landscape areas.

SCOPE OF WORK

Our scope of work included limited subsurface exploration, engineering evaluations, and preparation of this feasibility-level geotechnical letter report.

We performed 4 cone penetration tests (CPT's) to evaluate subsurface conditions at the site. The approximate locations of the CPT's are shown on the Site Plan, Figure 2. The CPT's were advanced to a depth of approximately 50 feet below existing grades. Logs of the CPT's are presented in the Appendix.

SUBSURFACE CONDITIONS

The subsurface conditions encountered during our field investigation, consisted of interbedded layers of sands, silty sands, sandy silts, clayey silts, and silty clays in the upper 50± feet. While difficult to distinguish in CPT's, man-made fills appear to extend approximately 2 to 5 feet below existing grades. The sandy soils range from loose to very dense. The fine-grained soils are typically hard. Detailed descriptions of the materials as interpreted for the CPT's are shown on the Logs of CPT's in the Appendix.

Groundwater was not encountered during our investigation. Based on the Seismic Hazard Zone Report (Reference 3), groundwater is anticipated to be deeper than 100 feet.

OBSERVATIONS AND FINDINGS

Based on the review of the available documents and our field investigation, we offer the following.

1. The site is not located in a Special Studies Fault Zone. There are no known active faults crossing or trending towards the site. The site is located approximately 1 mile from a Special Studies Fault Zone (Reference 2). The Special Studies Fault Zone includes the Sierra Madre Fault Zone.

2. The site is not located in a Seismic Hazard Zone for liquefaction according to the Seismic Hazard Zone Map (Reference 2).

3. Based on a review of aerial photos, the site is currently occupied by multiple commercial structures. Foundation elements and undocumented fills associated with the building may exist below the footprint of the structures.

CONCLUSIONS AND PRELIMINARY RECOMMENDATIONS

Based on our observations and findings, subsurface investigation, and experience in the area, we conclude the following:

1. There is a potential that the proposed site development will be subjected to moderate ground motion during its life. Based on published information (Reference 1), the site could be subjected to a peak horizontal ground acceleration of 0.87g. This acceleration has a 2 percent chance of being exceeded in 50 years.

2. Based on the results of our CPT's and deep ground water, the subsurface soils do not exhibit any potential for liquefaction. In addition, with the ground motions presented above, seismically-induced dry settlement of the on-site soils is anticipated to be within tolerable limits. We estimate that the dry seismic settlement of the ground surface will be less than 3/4 of an inch should the site be subjected to a design earthquake.

3. Our interpretation of the CPT data suggests that the site consists of predominately sandy soils. These soil types suggest that stormwater infiltration on-site is feasible. Percolation testing will need to be performed prior to any design of a system to determine specific infiltration rates.

4. We assume that seismic design of the proposed development will be in accordance with the 2016 California Building Code (CBC) criteria. For the 2016 CBC, Site Class D may be used. The remaining seismic code values can be determined by the Project Structural Engineer using the value above and the pertinent internet websites and tables from the building code. The seismic design method should be determined by the Project Structural Engineer.

5. Remedial grading will likely be required within building footprint but must be confirmed after design level explorations are completed. Significant remedial grading is not anticipated at this time. Any undocumented fills or debris buried from the current commercial structure that is present and encountered during demolition will need to be removed. A representative from GPI should be present during demolition to confirm the depth of foundation elements.

6. The natural soils encountered at the site are considered relatively competent for the support of the proposed development. Grading will be required to remove and recompact the materials within the upper 5 to 7 feet to remove undocumented fills, compressible natural soils and to provide uniform support where foundation supported structures will be located. Based on the CPT's and our experience in the area, remedial grading may not be needed below foundations in areas where cuts exceed 6 to 7 feet. In those locations, support of footings on undisturbed, native soils is anticipated.

7. The proposed development is expected to be supported on spread footings bearing on engineered fill soils. An allowable net bearing capacity on the order of 4000 to 5000 pounds per square foot (psf) is anticipated. Total static settlement (column loads of approximately 500 to 600 kips) is anticipated to be less than 1-inch.

8. In general, we did not find evidence of extraordinary geotechnical constraints that have or will significantly impact the development of the project site. However, additional exploratory borings, laboratory testing, and analyses should be performed in order to provide final geotechnical recommendations.

LIMITATIONS

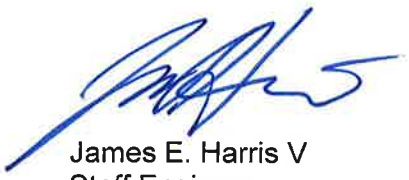
The geotechnical investigation reported herein was performed for the exclusive use by AvalonBay Communities, Inc. and their consultants, in evaluating the feasibility of constructing the proposed improvements. This report should not be used for evaluating the feasibility of developing the site for other uses or for the detailed design of the proposed project, because this report does not contain sufficient or appropriate information for such use.

Soil deposits may vary in type, strength, and many other important properties between points of exploration due to non-uniformity of the geologic formations or to man-made cut and fill operations. While we cannot evaluate the consistency of the properties of materials in areas not explored, the conclusions drawn in this report are based on the assumption that the data obtained in the field is reasonably representative of field conditions and are conducive to interpolation and extrapolation.

As noted previously, additional geotechnical investigations will be needed for design and construction. Furthermore, our recommendations were developed with the assumption that a proper level of field observation and construction review will be provided by a qualified geotechnical consulting firm during grading, excavation, and foundation construction. If design- and construction-phase geotechnical services are performed by others they must accept full responsibility for all geotechnical aspects of the project.

Our investigation and evaluations were performed using generally accepted engineering approaches and principles available at this time and the degree of care and skill ordinarily exercised under similar circumstances by reputable Geotechnical Engineers practicing in this area. No other representation, either expressed or implied, is included or intended in our report.

Respectfully submitted,
Geotechnical Professionals Inc.



James E. Harris V
Staff Engineer

James E. Harris, G.E.
Principal

APR 0 2 2018

JEHV/JEH:js

Enclosures: Reference
Site Location Map - Figure 1
Site Plan - Figure 2
Appendix - Logs of CPTs

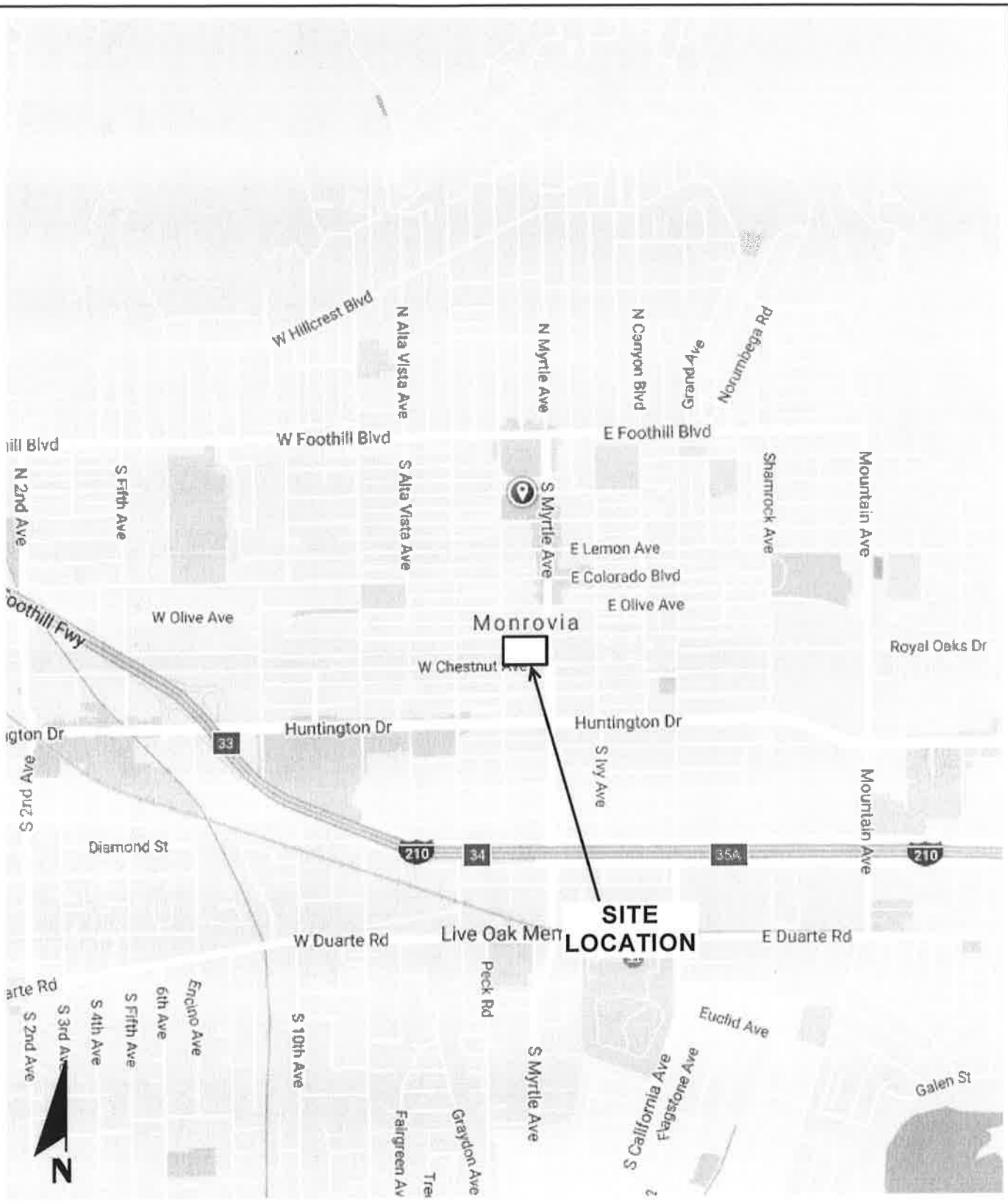
Distribution: Addressee (via email)

REFERENCE

1. United States Geological Survey, "Seismic Design Map", Website Address: http://earthquake.usgs.gov/designmaps/us/application.php

2. California Department of Conservation, Division of Mines and Geology (1998), "Seismic Hazard Zone Map, Mount Wilson Quadrangle".

3. California Department of Conservation, Division of Mines and Geology (1998), "Seismic Hazard Zone Report for the Mount Wilson 7.5-Minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report 030".



BASE MAP REPRODUCED FROM GOOGLE MAPS ©. 2016

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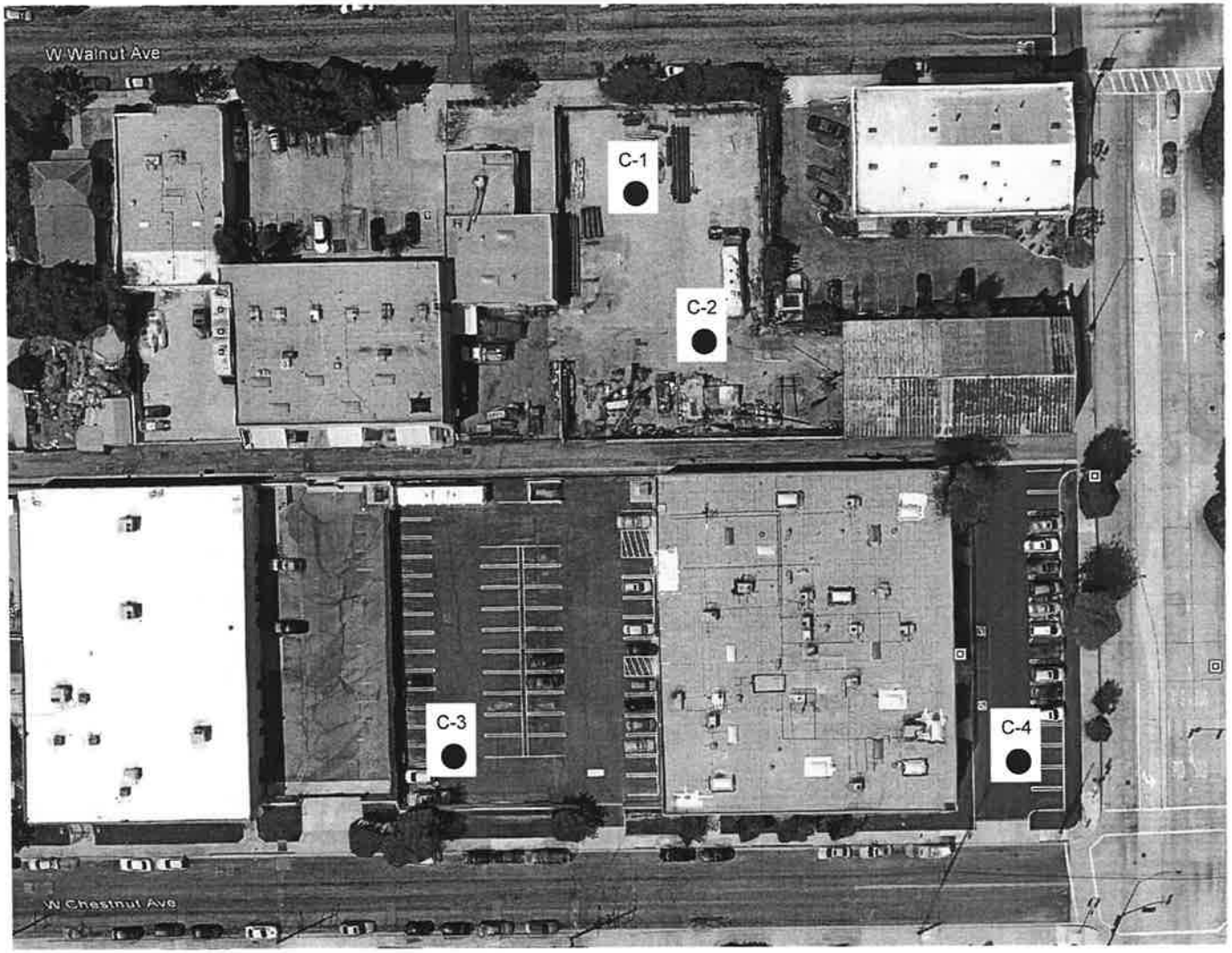
AVALONBAY - MONROVIA

GPI PROJECT NO. 2775.I | SCALE: 1" = 2000'

SITE LOCATION

FIGURE 1



C-1 ● APPROXIMATE LOCATION AND NUMBER OF EXPLORATORY BORING

EXPLANATION

BASE MAP REPRODUCED FROM GOOGLE EARTH ©. 2016

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SITE PLAN

FIGURE 2

APPENDIX

APPENDIX

CONE PENETRATION TESTS

The subsurface conditions were investigated by performing 4 Cone Penetration Tests (CPT's) at the site. These soundings were advanced to a depth of approximately 50 feet below existing grades. The locations of the CPT's are shown on the Site Plan, Figure 2.

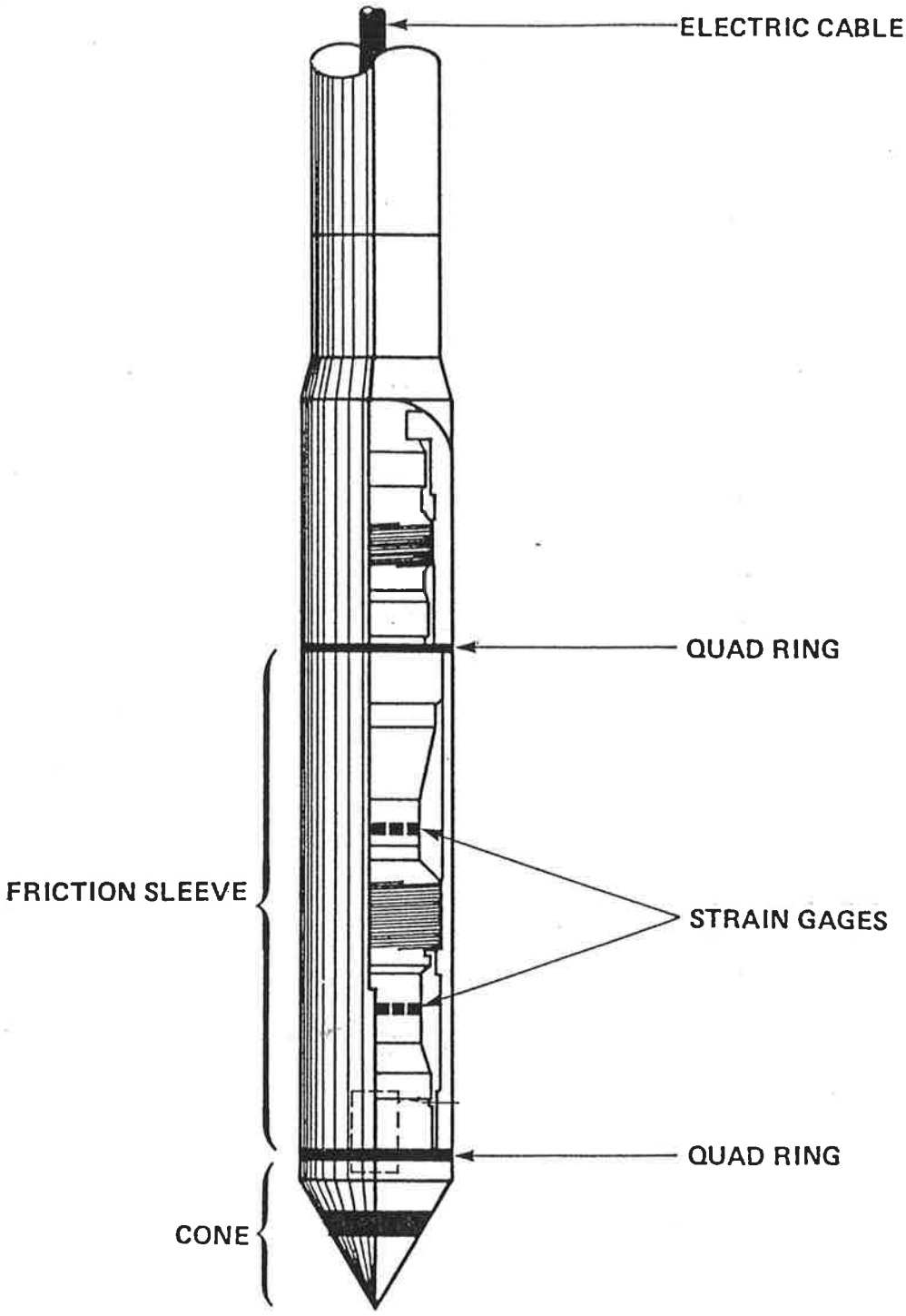
The Cone Penetration Test consists of pushing a cone-tipped probe into the soil deposit while simultaneously recording the cone tip resistance and side friction resistance of the soil to penetration (refer to Figure A-1). The CPT's described in this report were conducted in general accordance with ASTM specifications (ASTM D 5778) using an electric cone penetrometer.

The CPT equipment consists of a cone assembly mounted at the end of a series of hollow sounding rods. A set of hydraulic rams is used to push the cone and rods into the soil while a continuous record of cone and friction resistance versus depth is obtained in both analog and digital form at the ground surface. A specially designed truck is used to transport and house the test equipment and to provide a 30-ton reaction to the thrust of the hydraulic rams.

Standard data obtained during a CPT consists of continuous stratigraphic information with close vertical resolution. Stratigraphic interpretation is based on relationships between cone tip resistance and friction resistance. The calculated friction ratio (CPT friction sleeve resistance divided by cone tip resistance) is used as an indicator of soil type. Granular soils typically have low friction ratios and high cone resistance, while cohesive or organic soils have high friction ratios and low cone resistance. These stratigraphic material categories form the basis for all subsequent calculations which utilize the CPT data.

Computer plots of the reduced CPT data acquired for this investigation are presented in Figures A-2 through A-5 of this appendix. The field testing and computer processing was performed by Kehoe Testing and Engineering under subcontract to Geotechnical Professionals Inc. (GPI). The interpreted soil descriptions were prepared by GPI.

The CPT locations were laid out in the field by measuring from existing site features. Upon completion, the uncaved portions of the CPT holes were backfilled with bentonite granules. Ground surface elevations at the CPT locations were estimated from Google Earth and should be considered very approximate.



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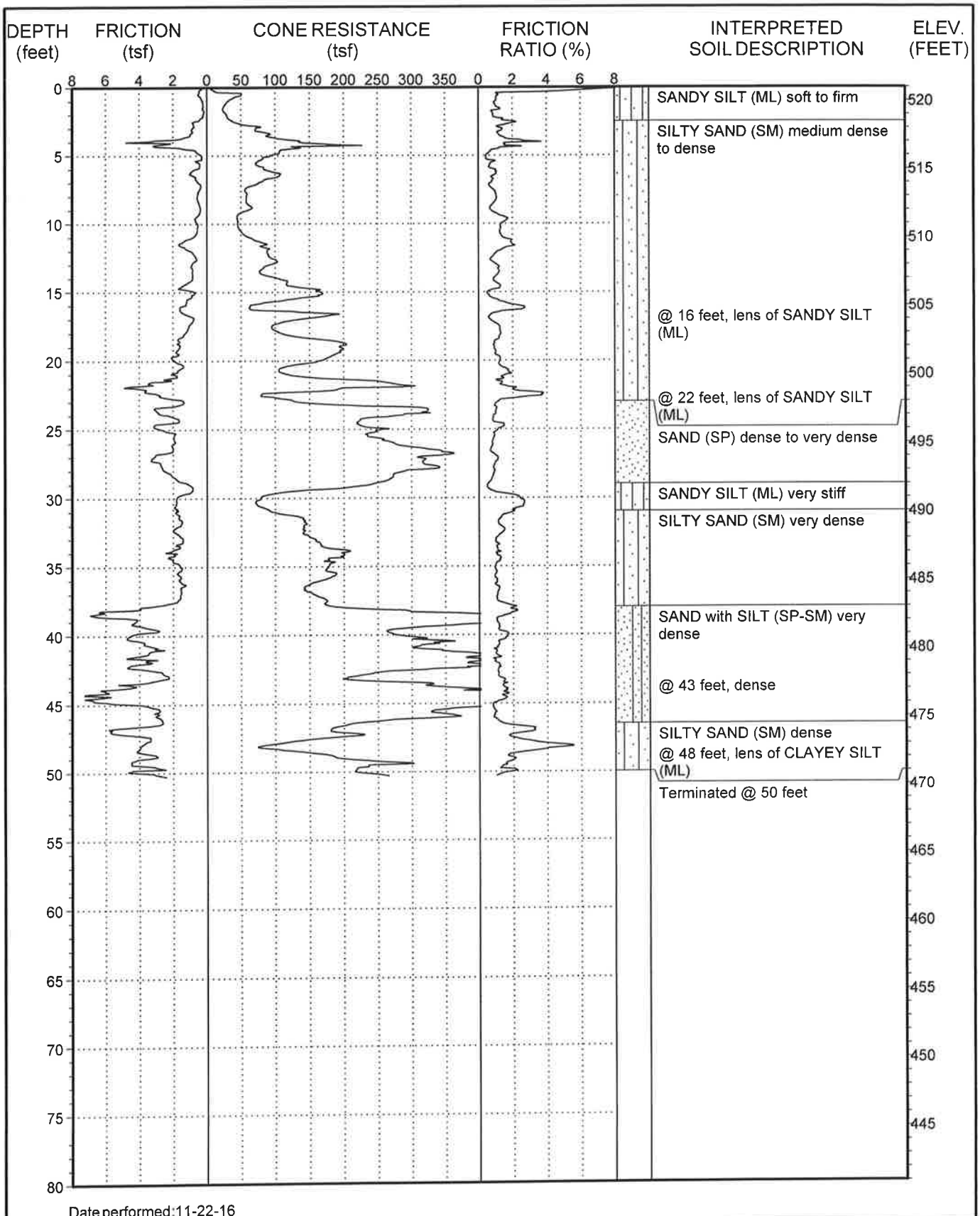
CONE PENETROMETER

FIGURE A-1



Date performed:11-22-16

This summary applies only at the location of this cone penetration test and at the time of the exploration. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The interpreted soil description is derived from the friction ratio and cone resistance and is a simplification of actual conditions encountered.

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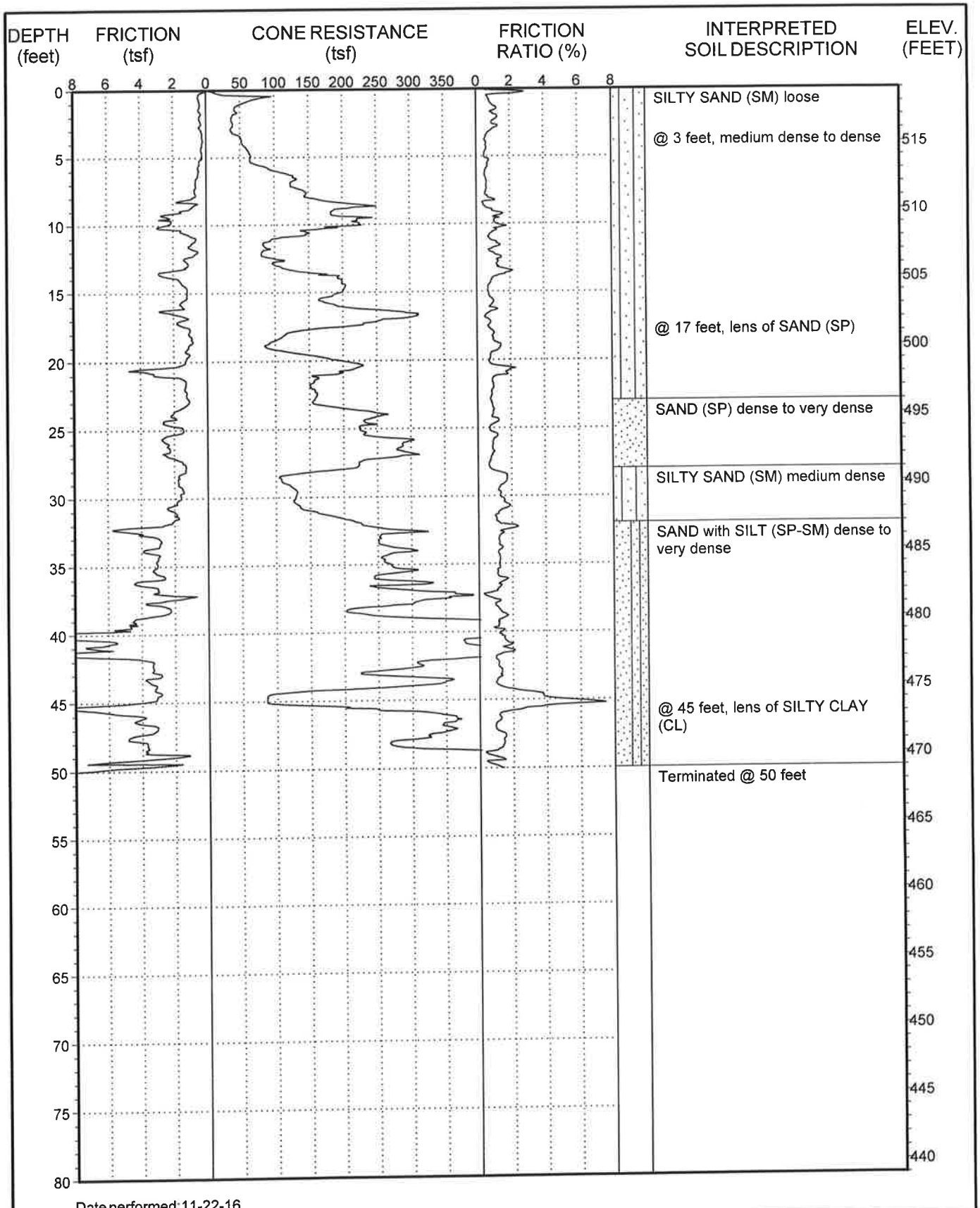
LOG OF CPT NO. C-1

FIGURE A-2



Date performed: 11-22-16

This summary applies only at the location of this cone penetration test and at the time of the exploration. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The interpreted soil description is derived from the friction ratio and cone resistance and is a simplification of actual conditions encountered.

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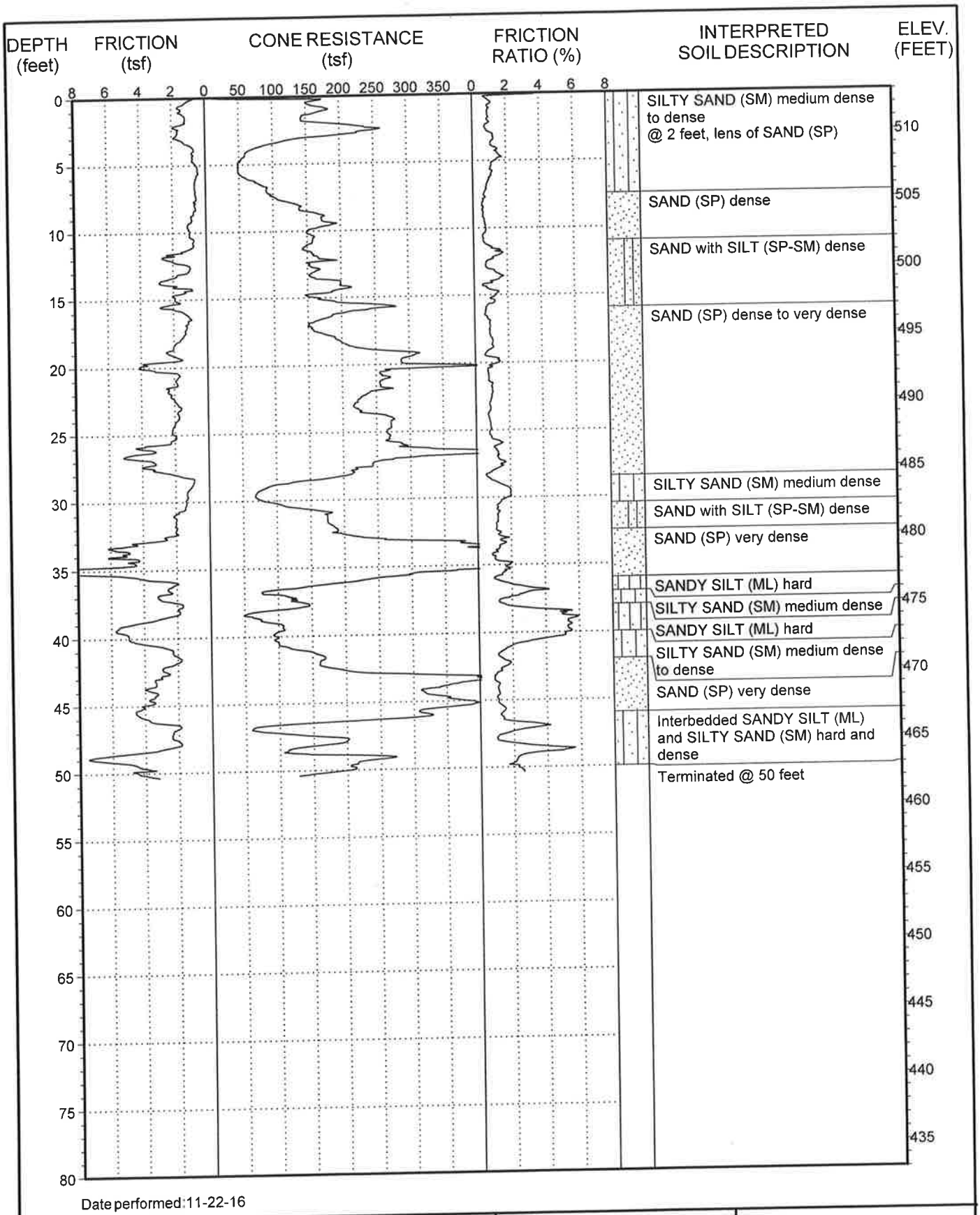
LOG OF CPT NO. C-2

FIGURE A-3



Date performed:11-22-16

This summary applies only at the location of this cone penetration test and at the time of the exploration. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The interpreted soil description is derived from the friction ratio and cone resistance and is a simplification of actual conditions encountered.

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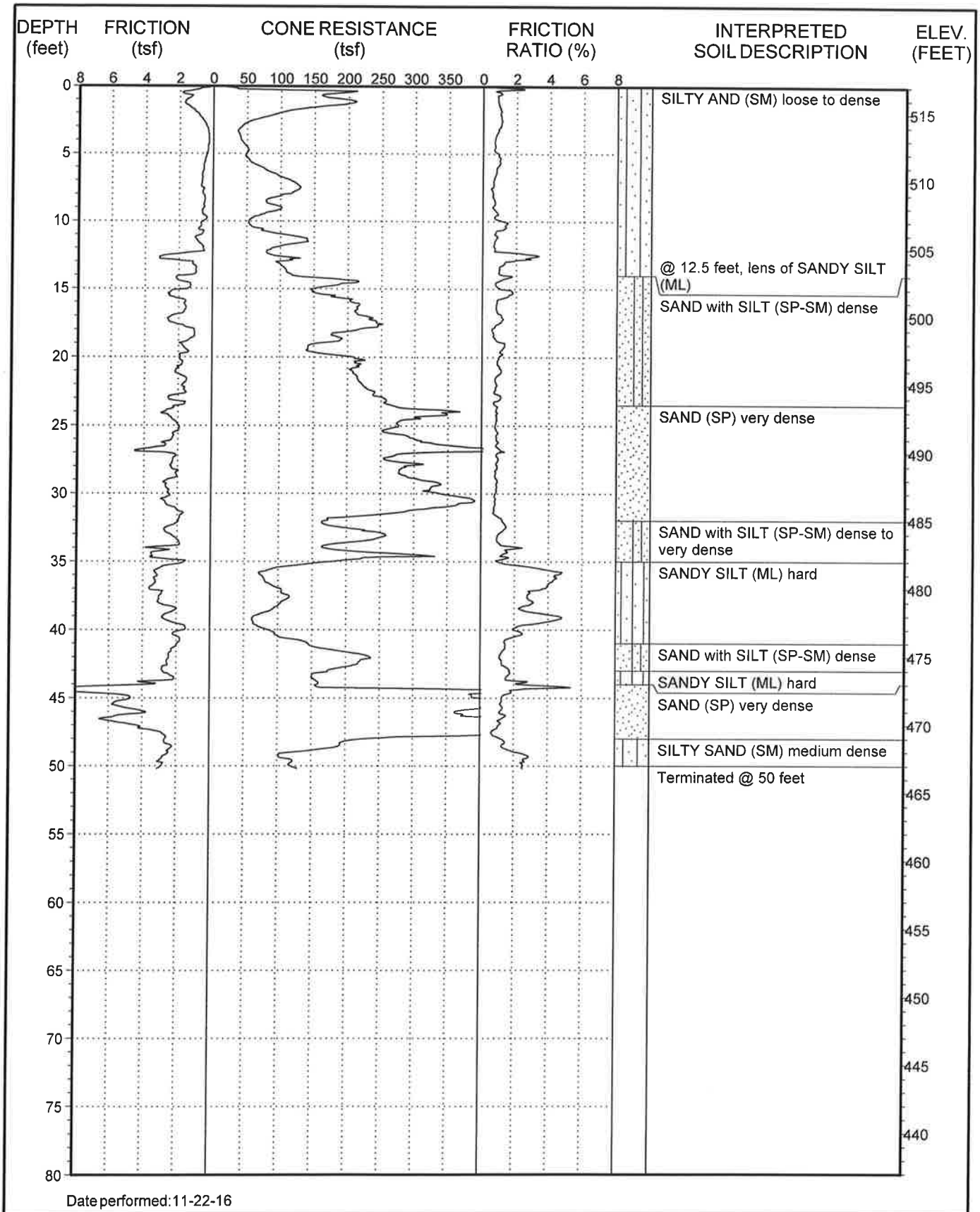
LOG OF CPT NO. C-3

FIGURE A-4



Date performed: 11-22-16

This summary applies only at the location of this cone penetration test and at the time of the exploration. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The interpreted soil description is derived from the friction ratio and cone resistance and is a simplification of actual conditions encountered.

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LOG OF CPT NO. C-4

FIGURE A-5