SOIL AND FOUNDATION INVESTIGATION

PROPOSED COMMERCIAL BUILDING
at
800 Franklin Street
Oakland, California

Job No. 8864-S1

FRANK LEE & ASSOCIATES

TABLE OF CONTENTS

FRANK LEE & ASSOCIATES

GEOTECHNICAL CONSULTANTS
10 KOOTENAI COURT, FREMONT, CALIFORNIA 94539
(415) 657-7782

June 13, 1988
Job No. 8864-S1

Mr. Bill Louie
800 Franklin Street
Oakland, California 94607

SUBJECT: SOIL AND FOUNDATION INVESTIGATION
Proposed Commercial Building
800 Franklin Street
Oakland, California

Dear Mr. Louie:

We have enclosed with this letter three copies of our Soil and Foundation Investigation of the subject property located at 800 Franklin Street in Oakland, California. This study was completed in accordance with your authorization. The accompanying report presents our opinion that the site is suited for the proposed construction provided the recommendations contained therein are incorporated into the development plans, specifications, and construction. This report should not be interpreted to be a geotechnical or geologic investigation of the site.

Please do not hesitate to call us if you have any questions or if we can be of any other service. Thank you.

Very truly yours,

FRANK LEE & ASSOCIATES

Frank Lee
Professional Engineer 34975

REGISTERED PROFESSIONAL ENGINEER
FRANK TZONG-HWAI LEE
C 34975
CIVIL
STATE OF CALIFORNIA

Frank Lee 6/13/88
Exp 9/30/91

Copies: Addressee (3)

FILE

FRANK LEE & ASSOCIATES
GEOTECHNICAL CONSULTANTS
10 KOOTENAI COURT, FREMONT, CALIFORNIA 94539
(415) 657-7782

SOIL AND FOUNDATION INVESTIGATION

800 FRANKLIN STREET

OAKLAND, CALIFORNIA

INTRODUCTION

This report presents our findings, conclusions, and recommendations regarding our Soil and Foundation Investigation for the subject site at 800 Franklin Street in Oakland, California. The scope of our work included a site soil reconnaissance; the drilling, inspection and logging of borings to investigate subsurface soil conditions; recovery of selected soil samples from the borings for laboratory testing; soil engineering analysis of the data gathered during the investigation; and preparation of this report, including a summary of our findings, conclusions, and recommendations. The data obtained and the analyses performed were for the purpose of investigating the strength characteristics of the soil at the site as a basis for making site grading and foundation design recommendations.

SITE DESCRIPTION

The project site consists of a rectangularly-shaped lot of approximately 0.1 acre, located at the eastern corner of Franklin Street and 8th Street in Oakland, California, as shown on the Site Vicinity Map, Plate 1. Elevation at the site is approximately 35 feet mean sea level (MSL). The site is presently occupied by an operative gasoline station. Original draninage at the site was to the southwest; drainage at the developed site is to the northwest and southwest toward the streets and a storm drain located near the intersection of Franklin and 8th Streets. The site is bounded by 8th Street to the southwest, Franklin Street to the northwest, and by commercial properties to the northeast and southeast.

PROPOSED DEVELOPMENT

It is our understanding that you intend to construct a three-story commercial building on the subject site. We also understand that the proposed development will involve minimal cut and fill, and that the existing gasoline station will be removed as part of the development.

FIELD INVESTIGATION

A soil exploration field investigation was performed at the site on May 3, 1988 under the direction of the Soil Engineer. The investigation consisted of a surface site reconnaissance, and the drilling, sampling and logging of four exploratory test borings to a maximum depth of 28-1/2 feet at the approximate locations shown on the Generalized Site Plan, Plate 2. A truck-mounted drill rig equipped with continuous-flight augers was employed to drill the test borings. Relatively undisturbed soil samples were taken at selected depths from the borings with a California Modified soil sampler using 2-1/2-inch ID brass liners. The samples were sealed in the field and returned to the laboratory. Upon completion of our investigation at the site, the borings were loosely backfilled with native materials (and in one case partially with cement grout), and the surface restored with cement patch.

SITE SOIL CONDITIONS

Soil beneath the site consisted mainly of medium dense, brown silty fine sand that was generally moist. This silty fine sand extended to the bottom of the deepest boring at a depth

of 28-1/2 feet. Backfill consisting of silty sand and sandy silt around the existing gasline tanks was encountered in Boring B-3 to an estimated depth of 15-1/2 feet, and backfill consisting of silt and sandy clay in the vicinity of an underground tank removal excavation was encountered in Boring B-4 to a minimum depth of 6 feet. The materials encountered in the borings are described in detail on the Boring Logs, Appendix A.

GROUND WATER

Free ground water was encountered in Boring B-3 at approximately 28 feet deep. No free ground water was encountered during the drilling of the other borings. Ground water conditions generally fluctuate seasonally and annually, but they are not expected to approach the ground surface close enough to be a concern for foundation design or performance of the building.

SEISMICITY

As with most of the San Francisco Bay Area, the proposed site is in a region of high seismic activity dominated by continued movement on the San Andreas fault. Our review of

geologic maps indicates that the site is located approximately 4 miles southwest of the Hayward fault, considered an active member of the San Andreas fault system.

The site is not located within a State of California Special Studies Zone. Such zones were delineated by the State Geologist along active earthquake faults. This investigation, however, did not involve evaluation of conditions or potential hazards relative to fault location, activity or seismic capability, or other geologic hazards.

LABORATORY INVESTIGATION

A laboratory testing program was performed to investigate the physical and engineering properties of the soil at the site. A majority of the relatively undisturbed soil samples were tested by the Soil Engineer to determine their moisture contents and dry densities. One direct shear test was performed on a selected sample. The results of the laboratory testing are presented in Table A.

FILE

CONCLUSIONS AND RECOMMENDATIONS

General

1. The project site is suitable for the proposed development provided the recommendations set forth in this report are incorporated into the design considerations, and project plans and specifications. The existing site organic-free soil are suitable to be used for engineered fill.

Grading

2. The placement of fill and control of grading operations at the site shall be done in accordance with the recommendations of this report.

3. FRANK LEE & ASSOCIATES must perform the necessary inspection services during construction of this project to ensure uniformity with the conditions upon which these recommendations are based. FRANK LEE & ASSOCIATES shall be notified at least 2 (two) days before any grading begins at the site to coordinate work in the field with the contractor.

4. Any existing structures shall be removed prior to any

grading operations. This includes such things as concrete blocks, foundations, asphalt, utilities, pipelines, and tanks. The underground tanks must be properly closed or removed in accordance with the requirements of the local Fire Department and other appropriate authorities. The above objects shall be accurately located on the grading plans to assist the Field Engineer in establishing proper control over their removal or relocation.

5. All organic surface material and debris, including grass, weeds or trees, shall be stripped prior to any grading operations from all areas that are to receive engineered fill (the exact depth of required stripping should be determined in the field). These organically contaminated soils may be stockpiled for later use in landscaping.

6. Depressions left by the removal of any surface and subsurface structures shall be cleaned of all debris, and backfilled with compacted engineered fill. The material shall be placed in lifts not exceeding 8 inches in uncompacted thickness, and compacted to a minimum degree of compaction of 90 percent as determined by ASTM D1557-70. The upper 6 inches of subgrade soils beneath pavements shall be compacted to a minimum of 95 percent. This operation must be

conducted under the observation of FRANK LEE & ASSOCIATES.

7. After removing all the surface and subsurface structures, and after stripping off the organically contaminated surficial soil, the areas that will receive fill shall be ripped by machine to an average depth of at least 8 inches and thoroughly stripped of roots, vegetation, and other deleterious matter.

8. Following the structure removal, stripping, and ripping operations, the native soil, wherever engineered fill will be placed, shall be properly compacted. The surficial loose silty sand at the site in areas that will or may affect the proposed structure shall be excavated to a minimum depth of 2 feet (as determined by the field engineer) and recompacted before placement of engineered fill or construction. The foundation recommendations given below are based upon this condition.

Subgrade Preparation

9. All engineered fill, whether native or imported soil, shall be placed in uniform horizontal lifts of not more than 8 inches in uncompacted thickness and shall be compacted to

not less than 90 percent relative compaction in accordance with the ASTM D1557-70 procedure. Before compaction begins, the fill shall be brought to approximate optimum moisture content that will permit proper compaction by either aerating the material if it is too wet, or spraying the material with water if it is too dry. Each lift shall be thoroughly mixed before compaction to assure a uniform distribution of water content. When fill material includes rocks, nesting of rocks shall not be permitted, and all voids must be carefully filled and properly compacted. No rocks larger than 4 inches in diameter shall be used for the top two feet of fill.

10. Imported soil materials shall be a soil or soil-rock mixture which is free from organic matter or other deleterious substances and have a plasticity index less than 12. The fill material shall not contain rocks or lumps over 6 inches in greatest dimension, and not more than 15 percent larger than 2-1/2 inches. All borrow must be approved by FRANK LEE & ASSOCIATES before being brought to the site.

Treatment After Completion of Grading

11. After grading is completed and the Field Engineer has finished his observation of the work, no further excavation

or filling shall be done except with the approval of and under the observation of the Field Engineer.

12. It shall be the responsibility of the Grading Contractor to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

13. Underground utility trenches shall be backfilled with compacted engineered fill. If on-site soil is used, the material shall be placed in lifts not exceeding 8 inches in uncompacted thickness and compacted to a minimum of 90 percent relative compaction by mechanical means only.

Foundation Recommendations

14. The three-story structure should be supported by a continuous perimeter footing a minimum of 24 inches in depth below the lowest grade and 18 inches in width with interior footings. The spacing of the footings will depend upon the structural loads transmitted to them. The foundation may be designed for an allowable bearing pressure of 2500 psf for dead plus live loads. This value may be increased by 1/3 to include short-term seismic and wind effects. The footing

shall be reinforced with a minimum of four #4 bars, two near the top and two near the bottom of the footing.

15. Masonry bricks or cinder blocks cannot withstand movement and shall not be used for the foundation walls. The foundation walls shall be constructed of heavy reinforced concrete to protect the structure from cracking due to differential heaving.

16. "Oversizing" and "mushrooming" shall not be allowed during the pouring of concrete for the footings.

17. FRANK LEE & ASSOCIATES shall inspect all the excavations for the foundation prior to the pouring of the concrete.

18. We do not anticipate appreciable settlement; however, slight settlement shall be considered in the design of the foundation. We estimate the total settlement of the perimeter foundation should not exceed 1 inch.

Resistance to Lateral Forces

19. Spread footing foundations resist lateral earthquake forces through a combination of friction and passive earth

pressure. For design purposes, it is recommended that a coefficient of friction of 0.30 be assumed between the base of the footing and the underlying soil. In addition, a passive equivalent fluid pressure of 300 pcf can be assumed to act against the embedded portion of the footing. These design parameters assume that the footings will bear on and against native soil or compacted imported materials.

Slab-on-Grade Construction

20. Where slabs-on-grade are to be constructed, we recommend that the slabs be supported on a minimum of 12 inches of compacted, non-expansive structural fill. Preparation of the natural subgrade soil and placement of the structural fill materials shall be performed in accordance with the preceding recommendations under "Grading". Prior to final construction of the slabs, the subgrade surface shall be compacted to provide a smooth, firm surface for slab support. Slab subgrades should not be allowed to dry and all surface shrinkage cracks should be sealed by soaking prior to slab construction. Slab reinforcing shall be provided in accordance with the anticipated use and loading of the slab, as designed by the Structural Engineer. If the slabs are to be subjected to heavy loading, a subgrade modulus for the on-

site soil and fill materials of 150 pounds per cubic inch is considered applicable for design.

21. In areas where floor dampness is undesirable, a moisture barrier should be used. One generally effective system for use in areas not subject to heavy vehicle loading is to install a capillary break consisting of 4 inches of free-draining pea gravel beneath the slab. In order to minimize vapor transmission, an impermeable membrane should be placed over the gravel. The membrane should be covered with a 2-inch layer of sand to aid in curing the concrete and to protect the membrane during construction. The sand should be slightly moistened just prior to concrete pouring. The combined thickness of gravel, membrane and sand may be considered as the upper 6 inches of the previously recommended non-expansive fill beneath the slab.

Drainage

22. It is extremely important that strong measures be taken to control and conduct all surface and subsurface waters away from the site so that they do not adversely affect the foundation of the structure, and that all drainage facilities be diligently maintained.

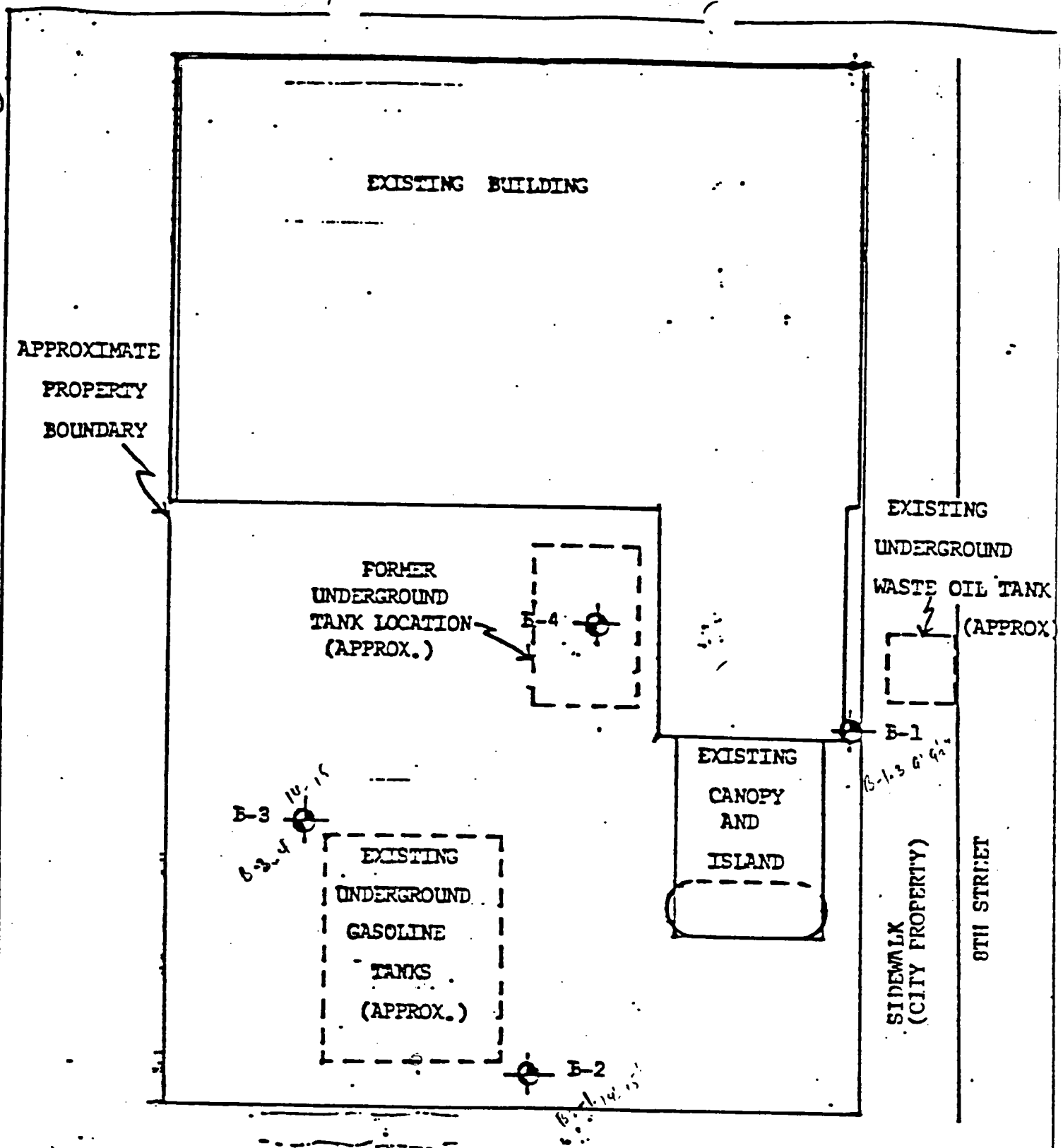
23. Roof drainage downspouts shall be discharged into controlled drainage facilities to keep the water away from the foundation. Hose outlet and watering systems should be arranged for in such a way as to prevent excessive moisture from reaching foundation areas, and to safely dispose of the water into an area equipped with suitable energy-dissipating devices, to prevent adverse erosion.

24. The final pad grades shall result in a positive gradient away from the foundation in order to provide rapid removal of storm water and to prevent ponding of water adjacent to the foundation or slabs-on-grade. Six inches of soil may be backfilled against the exteriors of the foundation and graded so that it will assist in the removal of the water.

Future Modifications

25. Future modifications of the site should be carefully planned with professional consultation. This is especially true for any construction activity involving water such as swimming pools or landscape irrigation systems.

Job No: 8854-S1



GENERALIZED SITE PLAN

800 FRANKLIN STREET

OAKLAND, CALIFORNIA

Scale: 1" = approx. 10 feet

FILE

FRANK LEE & ASSOCIATES

Job No: 8864L

LABORATORY DATA SHEETS AND CHAIN OF CUSTODY

FILE

FRANK LEE & ASSOCIATES

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

Frank Lee & Associates
10 Kootenai Court
Fremont, CA 94539

Date Sampled: 05/03/88
Date Received: 05/04/88
Date Analyzed: 05/17/88
Date Reported: 06/01/88

Sample Number: 8050173

Sample Description: Soil, B-1-3
Project: #8864, 800 Franklin St., Oakland

VOLATILE ORGANICS by MASS SPECTROMETRY

Analyte	Detection Limit, ug/kg	Sample Results, ug/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chlorodibromomethane	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	500	N.D.
Chloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
Total-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	500	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Method of Analysis: EPA 5030/8240
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

FILE

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

Frank Lee & Associates
10 Kootenai Court
Fremont, CA 94539

Date Sampled: 05/03/88
Date Received: 05/04/88
Date Extracted: 05/31/88
Date Reported: 06/01/88

Project: #8364, 800 Franklin St., Oakland

TOTAL OIL AND GREASE

Sample Number	Sample Description Soil	Detection Limit ppm	Gravimetric Petroleum Oil ppm
8050173	B-1-3	30	N.D.

Method of Analysis: EPA 3550 with trichlorotrifluoroethane and gravimetric determination.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

FILE

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222 • FAX (415) 364-9233

Frank Lee & Associates
10 Kootenai Court
Fremont, CA 94539

Date Sampled: 05/03/88
Date Received: 05/04/88
Date Analyzed: 05/19/88
Date Reported: 06/01/88

Project: #8864, 800 Franklin St., Oakland

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION

Sample Number	Sample Description Soil	Low to Medium Boiling Point Hydrocarbons ppm	Benzene ppm	Toluene ppm	Ethyl Benzene ppm	Xylenes ppm
8050176	B-2-1	N.D.	N.D.	N.D.	-	N.D.
8050177	B-3-4	N.D.	N.D.	N.D.	-	N.D.
Detection Limits:		1.0	0.05	0.1	0.1	0.1

Method of Analysis: EPA 5030 or 3810/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

FILE

Job Name: 800 Franklin Street, Oakland	Job Number: 8864	Sampling Round Number: Soil 1
Sampler(s): Diane Barclay Diane Barclay		

Well or Sample Number	Date	Time	Comp.	Grab	Sample Container	Analytes Requested / Remarks
B-1-3 (4-9½')	5/3/88			✓	6" brass liner	Total Petroleum Hydrocarbons (heavy oil) EPA 503E, and EPA Method 8240 for volatile organics
B-2-1 (14½-15')	"			✓	"	Total Petroleum Hydrocarbons as gasoline, with BTX
B-3-4 (14½-15')	"			✓	"	Total Petroleum Hydrocarbons as gasoline, with BTX
						Standard turnaround please.
						Send results to:
						Frank Lee & Associates
						10 Kootenai Court
						Fremont, CA 94539

TITLE

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Diane Barclay	5/3/88	7:30 pm	Walter Floyd 5/4/88				

Relinquished by: (Signature)	Received for Laboratory by: (Signature)
Frank Lee 5/4/88	

Future Occupants

26. The recommendations set forth in this report should be presented to all future occupants of the site to ensure their understanding of how they can best maintain the integrity and value of the property.

INVESTIGATION LIMITATIONS

1. This report has been prepared in accordance with generally accepted Soil Engineering practices. The conclusions and recommendations contained in this report have resulted from Soil Engineering analyses based upon our interpretations of the surface and subsurface soil conditions observed in our test borings at the site, and that the soil conditions at the site do not deviate from those observed. No warranty, expressed or implied, is made. If any unusual soil or geologic conditions are encountered during construction, or if the proposed construction will be other than the three-story structure, FRANK LEE & ASSOCIATES shall be notified for supplemental recommendations. This investigation shall not be interpreted as a geotechnical, geologic or environmental report of the site.

2. This report is issued with the understanding that it is the responsibility of the owner or owner's representative to ensure that the contents of this report are called to the attention of Architects and Engineers for the project, and that these recommendations are incorporated into the project plans, specifications, and construction. Moreover, it is the responsibility of the owner to see that the Contractors carry out these recommendations in the field.

3. The findings of this report are valid as of the present time; however, the passing of time will change the conditions of the existing property due to natural processes or the works of man. In addition, legislation or the broadening of knowledge may require other recommendations. Accordingly, the findings of this report may be invalidated, wholly or partly, by changes beyond our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by a Soil Engineer.

Very truly yours,

FRANK LEE & ASSOCIATES

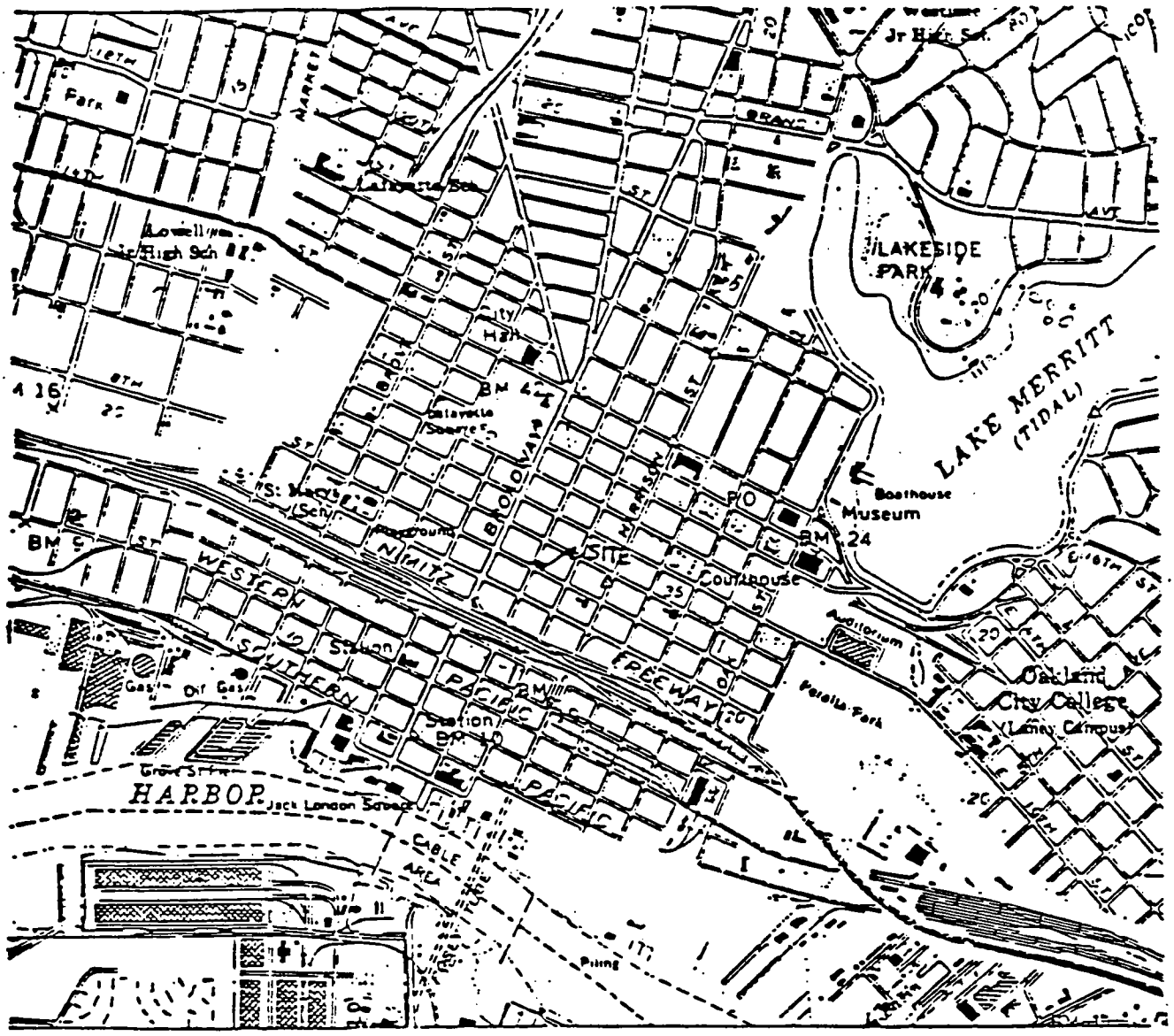
Frank Lee

Frank Lee

Professional Engineer 34975

FILE

Job No: 8864-S1



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SITE VICINITY MAP

800 FRANKLIN STREET

OAKLAND, CALIFORNIA

BASE: A portion of the U.S. Geological Survey Oakland West, California 7-1/2-minute quadrangle, at a scale of 1" = 2000'.

FILE

FRANK LEE & ASSOCIATES

Plate 1

Job No: 8864-S

TABLE A

LABORATORY TEST RESULTS SUMMARY:

MOISTURE, DENSITY, UNCONFINED COMPRESSION, DIRECT SHEAR TESTS

Sample No.	Depth Ft.	In-Place Conditions		Unconfined Compressive Strength k.s.f.	Direct Shear Testing	
		Moisture Content % Dry Wt.	Dry Density p.c.f.		Angle of Internal Friction Degrees	Unit Cohesion p.s.f.
B-1-1	2-2½	10.4	98.8			
B-1-2	5½-6	12.8	106.4			
B-2-2	19½-20	13.7	96.3			
B-3-1	2-2½	11.6	107.0			
B-3-2	6-6½	17.9	102.6			
B-3-3	9½-10	11.8	110.4			
B-3-4	14-14½	13.3	114.2			
B-3-5	19½-20	15.1	108.9			
B-4-1	2-2½	13.1	111.7		34.0	196

FILE

Job No: 8864-S1

APPENDIX A

BORING LOGS AND KEY TO BORING LOGS

BORING LOG B-1

JOB NO: 8854-S1

DATE DRILLED: 5-3-88

JOB NAME: 800 Franklin St., Oakland

SURFACE ELEV.: Approx. 35'

EQUIPMENT: DRILLING 6" cont. flight auger

DATUM: MSL

SAMPLER TYPE	DRIVE WEIGHT - LB	HEIGHT OF FALL - IN
California Modified	140	30

Sample	Blows per ft	Moisture Content %	Dry Unit Weight pcf	Depth in feet	USCS Classification	Description
					SM	Silty fine sand, mottled yellowish-brown and brown, moist, loose.
B-1-1	7	10.4	98.8			Medium dense.
						Color changes to yellowish-brown.
				5		Dense.
B-1-2	45	12.8	106.4			
				10		
						Boring terminated at 10 feet deep. No free ground water encountered.

FILE

BORING LOG B-2

JOB NO: 8864-S1
DATE DRILLED: 5-3-88

JOB NAME: 800 Franklin Street, Oakland
SURFACE ELEV.: Approx. 35'

EQUIPMENT: DRILLING 6" cont. flight auger
DATUM: MSL

SAMPLER TYPE	DRIVE WEIGHT-LB	HEIGHT OF FALL-IN
California Modified	140	30

Sample	Blows per ft	Moisture Content %	Dry Unit Weight pcf	Depth in feet	USCS Classification	Description
					SM	Silty sand, brown, moist, medium dense.
				5		Color changes to yellowish-brown.
				10		
B-2-1	45			15		Less fines.
B-2-2	50/9"	13.7	96.3	20		Some silt.
						Boring terminated at 20 feet deep. No free ground water encountered

FILE

BORING LOG B-3

JOB NO: 8864-S1 DATE DRILLED: 5-3-88

JOB NAME: 800 Franklin Street, Oakland SURFACE ELEV.: Approx. 35'

EQUIPMENT: DRILLING 6" cont. flight auger DATUM MSL

SAMPLER TYPE	DRIVE WEIGHT - LB	HEIGHT OF FALL - IN
California Modified	140	30

Sample	Blows per ft	Moisture Content %	Dry Unit Weight pcf	Depth in feet	USCS Classification	Description
B-3-1	8	11.6	107.0		SM	Silty sand with some gravel, brown, moist, stiff: baserock.
						Some clay, gray, green and brown: tank backfill?
B-3-2	12	17.9	102.6	5		
					ML	Sandy silt, dark gray, moist, low plasticity, firm to stiff: tank backfill?
B-3-3	50	11.8	110.4	10	SM	Silty fine sand, grayish-green, moist, dense: tank backfill?
						Slight petroleum odor?
B-3-4	45	13.3	114.2	15		Slight petroleum odor?
						End of backfill 15½ feet?
						Color changes to yellowish-brown.
B-3-5	50 6"	15.1	108.9	20		

FILE

BORING LOG B-3 (cont.)

JOB NO.: 8864-S1

JOB NAME: 800 Franklin Street, Oakland

SHEET 2 OF 2

DEPTH 20 TO 28½ FT.

Sample	Blows per ft.	Moisture Content %	Dry Unit Weight p.c.f.	Depth in feet	USCS Classification	
				20		
B-3-6	50/6"			25		Petroleum odor? Partial recovery.
				30		Boring terminated at 28½ feet deep. Free ground water encountered at 28 feet deep. Boring backfilled with cement grout to 23½ feet.

FILE

FRANK LEE & ASSOCIATES

BORING LOG B-4

JOB NO: 8864-S1

DATE DRILLED: 5-3-88

JOB NAME: 800 Franklin Street, Oakland

SURFACE ELEV.: Approx. 35'

EQUIPMENT: DRILLING 6" cont. flight auger

DATUM: MSL

SAMPLER TYPE	DRIVE WEIGHT - LB	HEIGHT OF FALL - IN
California Modified	140	30

Sample	Blows per ft	Moisture Content %	Dry Unit Weight pcf	Depth in feet	USCS Classification	Description
B-4-1	8	13.1	111.7		ML	Silt, brown, moist, low plasticity, soft: artificial fill? Some sand and gravel.
B-4-2	11			5	CL	Sandy clay, mottled light and dark brown, moist, low plasticity; metal objects: artificial fill, old tank removal backfill.
				10		Boring terminated at 6 feet deep due to refusal (obstruction in fill). No free ground water encountered.

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