It is possible that retaining walls will form the building interiors at the subterranean garage level. Where this occurs, very special consideration should be given to waterproofing of the walls to prevent damage to the interior of the house or garage. Unless dampness is acceptable on exterior wall faces, waterproofing should also be incorporated into exterior retaining wall design. Although the project architect is the party who should provide actual waterproofing details, it is suggested the waterproofing consist of a multi-layered system such as an initial generously applied layer of hot-mopped asphalt over which a layer of construction felt could be applied, then thoroughly mopped again with hot asphalt. In the case of all retaining walls, it is suggested that a layer of 10-mil Visqueen be placed as a finish layer. The multi-layered system should be covered with protective foam-board, or similar, to prevent damage during the backfilling operation.

Even though groundwater is not expected to be a significant problem at this site, extreme care should be exercised in sealing walls against water and water vapor migration. Where retaining walls are planned against interior space, continuity should be provided between the aforementioned wall moisture proofing on the back of the retaining wall and the moisture barrier typically placed under slab areas. This waterproofing is necessary to prevent the foundation concrete acting as a wick through which moisture migrates to the interior space despite wall moisture proofing.

Excavation

Excavation should be in accordance with all applicable requirements of the State of California Construction and General Industry Safety Order, the Occupational Safety and Health Act of 1970, the Construction Safety Act, and all other public agencies have jurisdiction. Construction specifications should clearly establish the responsibilities of the contractor for construction safety in accordance with CAL/OSHA requirements.

Temporary excavations on the order of about 12 feet in depth may be required to construct the proposed subterranean garage walls. Temporary excavation for construction purposes may be made vertically in the onsite clayey surface soil to a maximum height of 5 feet without shoring or bracing, provided no surcharge loads or adjacent structures are located within a horizontal distance equal to the depth of excavation. All cuts made in the onsite fill soil and sandy natural soil should be trimmed to an inclination of 1 horizontal to 1 vertical.

If sloping cut is limited by the property boundary or in areas where excavation will remove lateral support of the adjacent structures or walls, excavation should be braced or shored in accordance with good construction practice and all applicable safety ordinances and codes.

Shoring may consist of cantilevered or braced soldier piles with timber or other lagging placed between the piles as excavations are made to ensure stability of the exposed soils. Cantilevered shoring should be used where deflections of the excavations are not critical. Shoring system may be integrated as a part of permanent structure. In that case, the shoring system should be designed using the equivalent fluid pressure for the permanent wall.

The cantilevered soldier pile and lagging would include the following construction methods.

1. Prior to any excavations, soldier piles must be drilled and constructed to the designed depths below the proposed foundation depth along the limits of the proposed excavation.

2. Pile reinforcement could either be steel I-beam or cage of steel re-bar.

3. The drilled holes should be filled with a lean mix or concrete as soon as they are excavated and reinforcement is in place.

4. Vertical excavation may be made along the line of soldier piles in vertical increments not exceeding 5 feet. Inspection of the exposed soils at the time of excavation will verify or allow revisions to these requirements.

5. As the vertical excavations are made, wood or other lagging shall be placed between the soldier piles to provide support for the vertical exposed soils. Wood lagging must be pressure treated for contact with the soils if the lagging is to remain after construction of the retaining walls.

6. Voids between the lagging and the bank should be filled with wash sand or slurry to provide full contact of the shoring system and bank.

For design of cantilevered shoring, it is recommended that an equivalent fluid pressure of 35 pounds per cubic foot be utilized in design.

Your attention is directed to the fact that slightly silty to clean sands were encountered below depths of 25 to 30 feet in the test borings. Depending upon the moisture conditions of the soil at the time of excavation, caving may occur in the zone of slightly silty to clean during pile installation.

The braced shoring system may be comprised of braced sheetpile walls, braced soldier pile system or other system approved by the geotechnical engineer. A trapezoidal distribution of lateral earth pressure would be appropriate where shoring is to be restrained by bracing. The lateral earth pressure to be used for design of braced shoring is 32H where H is the depth of excavation in feet.

In addition to the above lateral earth pressure, the shoring shall also be designed to additionally support the surcharge loading from adjacent structure or vehicle. The geotechnical engineer should review the proposed shoring system. The lateral earth pressure distribution diagrams for the cantilevered and braced shoring are shown on Plate 4.

For design of the soldier piles, an allowable lateral bearing value of the soils below the excavated level is recommended to be 500 pounds per square foot per foot of depth up to a maximum of 3000 pounds per square foot.

The portion of soldier piles below the plane of excavation may be employed to resist the downward loads. The downward capacity may be determined using a frictional resistance of 400 pounds per square foot. The minimum depth of embedment for shoring piles is 5 feet below the bottom of the footing excavation.

Shoring installation shall be continuously observed and approved by the Soils engineer. Careful examination of the soils by the Soils Engineer during cutting of the banks is mandatory to verify the conditions or to make such recommendations as are pertinent if different conditions are encountered.

Monitoring of the movements of the shoring system and of the ground surface behind the shoring is recommended in areas where adjacent structures and/or utilities may be affected by the excavation. The monitoring may consist of survey points and/or inclinometers behind the shoring. This monitoring should be started before the actual excavation has begun and should continue until the excavation has been substantially backfilled.

Excavated surfaces should be kept moist but not saturated to retard raveling and sloughing during construction. Water should not be allowed to pond on the top of the excavation nor flow towards it.

No excavation shall be made during unfavorable weather. It is recommended that the excavated banks be entirely covered with plastic sheets when threatened by rains. When the excavation is interrupted by rain, operations shall not be resumed until the Soils Engineer indicates that conditions will permit satisfactory results.

It should be understood that the contractor shall supervise and direct the work and he shall be responsible for all construction means, methods, techniques, sequences and procedures. The contractor will be solely and completely responsible for conditions at the job site, including safety of all persons and property during the performance of the work. Periodic or continuous inspection by Hu Associates, Inc. is not intended to include verification of dimensions or review of the adequacy of the contractor's safety measures in, on or near the construction site.

Post Grading Considerations

Site Drainage

The provision and maintenance of adequate site drainage and moisture protection of supporting soil is an important design consideration. Foundation recommendations presented herein assume proper site drainage will be established and maintained.

To enhance future site performance, positive drainage devices such as sloping sidewalks, graded swales, and/or area drains should be provided around the building to collect and direct all water away from the structure. Neither rain nor excess irrigation water should be allowed to collect or pond on the property. Where slabs or pavement are not feasible adjacent to the buildings, the ground surface should be provided with a minimum gradient of about one percent away from the structures. All drainage should ultimately be directed to street or other designated area.

Water should be transported off the site in approved drainage devices or unobstructed swales. Unpaved drainage swales should have a gradient of at least one percent. Swales or drainage paths through lawn areas should be provided with a gradient of at least one percent. Where necessary, drainage paths could be shortened by use of area drains and collector pipes.

Planters adjacent to buildings should be avoided insofar as possible. Planting areas at grade should be provided with good positive drainage. Wherever possible, exposed soil areas should be above adjacent paved grades. Planters should not be depressed below adjacent paved grades unless provisions for drainage, such as catch basins and pipe drains are made. Adequate drainage gradient, devices and curbing should be provided to prevent runoff from adjacent pavement or walks into planting areas. Consideration should be given to irrigation methods that will promote uniformity of moisture in planters and beneath adjacent concrete "flat-work". Over-watering and under-watering of landscape areas must be avoided.

All roof and wall surface drainage should be collected and conducted by a non-erosive device to the streets or to a designated area.

Trench Backfill

It is our opinion that utility trench and/or structural backfill consisting of the on-site material types could be best placed by mechanical compaction to a minimum of 90 percent of the laboratory maximum density. Density testing, along with probing, should be performed by the project soils engineer, or his representative, to verify proper compaction.

If utility contractors indicate that it is undesirable to use compaction equipment in close proximity to a buried conduit, we would recommend the utilization of lightweight mechanical equipment and/or bedding of conduit with clean granular material prior to initiating mechanical compaction procedures. Other methods of utility trench compaction may also be appropriate as approved by the project geotechnical consultant at the time of construction.

Where utility trenches are proposed parallel to building footings (interior and/or exterior trenches), the bottom of the trench should not extend below a 1 horizontal to 1 vertical plane project downward from the outside bottom edge of the adjacent footing. Where this condition occurs, the adjacent footing should be deepened.

Plan Review

In order to prevent misinterpretation of this report by other consultants it is recommended that the Soils Engineer be provided the opportunity to review the final grading and foundation plans. The Soils Engineer will also determine whether any change in concept may have had any effect on the validity of the Soils Engineer's recommendations, and whether those recommendations have, in fact, been implemented in the design and specifications.

If the Soils Engineer is not accorded the privilege of making this recommended review, he can assume no responsibility for misinterpretation or misapplication of his recommendations or for their validity in the event changes have been made in the original design concept without this prior review.

Geotechnical Inspection

All rough grading of the property must be performed under engineering supervision of the geotechnical consultants. Rough grading includes, but is not limited to, site preparation, cleaning, over-excavation, and fill placement.

The geotechnical consultant should inspect all foundation excavations. Inspections should be made prior to installation of concrete forms and reinforcing steel to verify or modify, if necessary, conclusions and recommendations in this report.

Inspections of the finish grading, utility or other trench backfill, retaining wall backfill, or other earthwork completed for the subject project should also be performed by the geotechnical consultant.

If any of these inspections to verify site geotechnical conditions are not performed by the geotechnical consultant, liability for the safety and stability of the project is limited only to the actual portions of the project approved by the geotechnical consultant.

INVESTIGATION LIMITATIONS

The conclusions and recommendations contained in this report are based on the data obtained from the test boring at the dates and locations indicated in the logs and the site plan. It is assumed that the soil conditions at the other areas do not deviate significantly from those disclosed in the test boring. If any variations, or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the present time, this office should be notified so as to consider the need for modifications.

No responsibility for construction compliance with the design concepts, specifications, or recommendations is assumed unless an on-site review by a representative of this office is performed during the course of construction that pertains to the specific areas covered by the recommendations contained herein.

This report has been compiled for the exclusive use by Metro Real Estates & Development or its authorized agent. It shall not be transferred to any other party or to any other project without the consent and/or thorough review of this office.

The findings of this report are valid as of the present date. However, changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of one year without such a review.

Final approval of plans and reports by all consultants, and issuance of any building and grading permits, rests with the controlling agencies. As the circumstances that control the decision process are clearly beyond the control of this facility, we cannot assume any responsibility for the success of obtaining proper authorizations, nor for the costs involved.

This report is issued with the understanding that it is the responsibility of the owner, or the proper representative thereof, to insure that the information and recommendations contained herein are called to the attention of all parties interested in the project and that the necessary steps are taken to see that the contractors and subcontractors carry out such recommendations in the field.

The test borings used for subsurface exploration were backfilled with reasonable effort to restore the areas to their original condition. As with any backfill, some consolidation and subsidence of the backfill soils may result in time, causing some depression of the boring area and possibly a potentially hazardous condition. The client and/or owner of the property are advised to periodically examine the boring areas, and if necessary, backfill any resulting depressions. Hu Associates, Inc. shall not be liable for any resulting injury or damage.

The report is subject to review by controlling public agencies having jurisdiction.

Respectfully submitted,
HU ASSOCIATES, INC.

Chenlun Lee
RCE 64661
Expiration Date 6-30-07
CL/REH/ps

REGISTERED PROFESSIONAL ENGINEER
CHENLUN LEE
NO. 64661
Exp. _____
CIVIL
STATE OF CALIFORNIA

Richard E. Hu, Ph.D.
RCE 29285, RGE 2240
Expiration Date 3-31-09

REGISTERED PROFESSIONAL ENGINEER
RICHARD E. HU
No. 2240
Exp. _____
GEOTECHNICAL
STATE OF CALIFORNIA

TABLE ONE - SUMMARY OF SOIL LIQUEFACTION AND SETTLEMENT EVALUATION

BORING NO. 1

Design Earthquake Magnitude = 6.7
Maximum Ground Acceleration = 0.47 g
Historic Highest Groundwater = 20.0 feet bgs
Current Groundwater Level = 39.0 feet bgs

Depth (feet) D	Layer (feet)	Thickness (feet) H	Soil Type	Wet Density pcf γ	Total Over-burden Pressure psf σ_{vo}	Effective Over-burden Pressure psf σ_{vo}'	Number of Blow (SPT) N_m	Over-burden Factor Eq (9) C_N	N-Value Correction factor Table (2) $^*C_EC_BC_S$	C_R	Normalized N-value Eq (10) $(N_1)_{60}$	Fines Content (<74μ) %	Fines Content Factor Eq (6) α	Adjusted N-value Eq (7) β	Corrected SPT Eq (5) $(N1)_{60CS}$	Depth Reduction Coefficient Eq (2) r_d	Cyclic Resistance Ratio Eq (4) $CRR_{7.5}$	Cyclic Stress Ratio Eq (1) CSR	Magnitude Scaling Factor Eq(2) pg152 MSF	Factor of Safety Eq.24	Clay Content (<5μ) %	Remarks	Volumetric Strain %	Settlement (inch)
11	9-15	6	sand	114.8	1752.0	1752.0	22	1.10	1.44	0.85	29.6	18.9	3.4	1.1	35.1	0.97	N/A	0.298	1.328	N/A	8.3	above HGW	N/A	N/A
16	15-19	4	silt	120.4	2233.6	2233.6	19	0.97	1.44	0.95	25.3	77.5	5.0	1.2	35.4	0.96	N/A	0.294	1.328	N/A	37.4	above HGW	N/A	N/A
21	19-24	5	sand	136.3	2915.1	2665.5	30	0.89	1.44	0.95	36.6	13.4	2.0	1.0	40.0	0.95	N/A	0.318	1.328	non-liquef	2.9		N/A	N/A
26	24-29	5	silt	130.5	3567.6	3006.0	21	0.84	1.44	0.95	24.1	81.1	5.0	1.2	33.9	0.94	N/A	0.341	1.328	non-liquef	35.5	CC>15%	N/A	N/A
31	29-34	5	sand	134.3	4239.1	3365.5	71	0.79	1.44	1.0	81.1	4.7	0.0	1.0	81.1	0.92	N/A	0.355	1.328	non-liquef			N/A	N/A
36	34-39	5	sand	137.5	4926.6	3741.0	50	0.75	1.44	1.0	54.1	5.4	0.0	1.0	54.3	0.88	N/A	0.354	1.328	non-liquef			N/A	N/A
41	39-45	6	sand	126.0	5682.6	4122.6	50	0.72	1.44	1.0	51.6	2.9	0.0	1.0	51.6	0.84	N/A	0.354	1.328	non-liquef			N/A	N/A
46	45-50	5	sand	128.9	6327.1	4455.1	26	0.69	1.44	1.0	25.8	49.0	5.0	1.2	36.0	0.80	N/A	0.347	1.328	non-liquef	11.4		N/A	N/A
51	50-51	1	silt	130.0	6457.1	4522.7	25	0.68	1.44	1.0	24.6	54.6	5.0	1.2	34.5	0.76	N/A	0.331	1.328	non-liquef	14.9		N/A	N/A
																							Total	0.00

* C_E=1.2, C_B=1.0, C_S=1.2

"non-liquef" : if CC>15% or $(N1)_{60CS}$ >=30

REFERENCE:

1. "Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils", Technical Report NCEER-97-0022, December 31, 1997
2. "Recommended Procedures for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California" by Southern California Earthquake Center, University of Southern California.
3. Kohji Tokimatsu and Seed, H.B., 1987, "Evaluation of Settlements in Sands Due to Earthquake Shaking", Journal of the Geotechnical Engineering Division,

TABLE TWO - SUMMARY OF SOIL LIQUEFACTION AND SETTLEMENT EVALUATION

BORING NO. 2

Design Earthquake Magnitude = 6.7
Maximum Ground Acceleration = 0.47 g
Historic Highest Groundwater = 20.0 feet bgs
Current Groundwater Level = 38.0 feet bgs

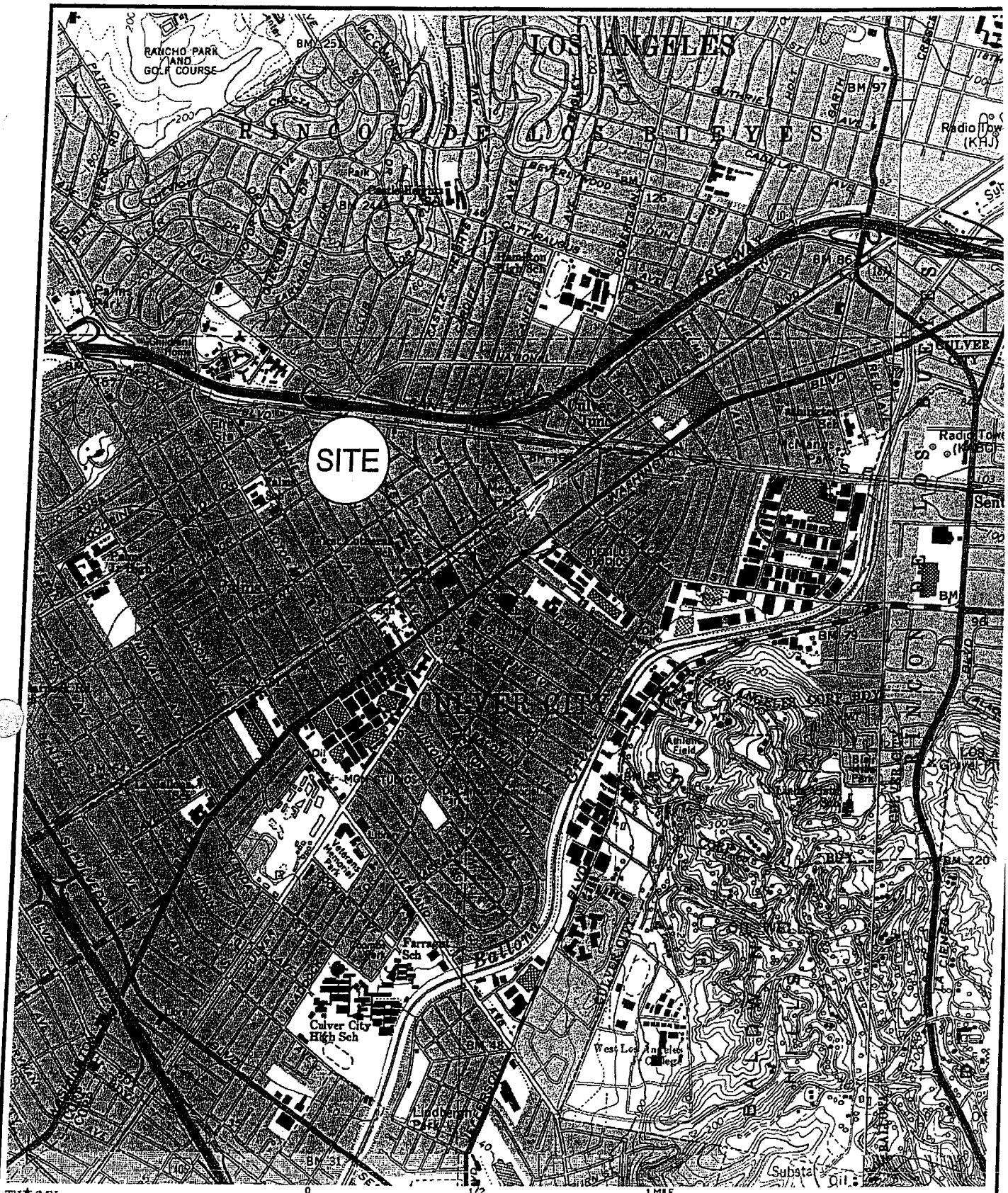
Depth (feet) D	Layer (feet)	Thickness (feet) H	Soil Type	Wet Density pcf γ	Total Over-burden Pressure psf σ_{vo}	Effective Over-burden Pressure psf σ_{vo}'	Number of Blow (SPT) N_m	Over-burden Factor Eq (9) C_N	N-Value Correction factor Table (2) *$C_E C_B C_S$	N-Value Correction factor Table (2) C_R	Normalized N-value Eq (10) $(N_1)_{60}$	Fines Content (<74μ) %	Fines Content Factor Eq (6) α	Adjusted N-value Eq (7) β	Corrected SPT Eq (5) $(N1)_{60CS}$	Depth Reduction Coefficient Eq (2) r_d	Cyclic Resistance Ratio Eq (4) $CRR_{7.5}$	Cyclic Stress Ratio Eq (1) CSR	Magnitude Scaling Factor Eq(2) pg152 MSF	Factor of Safety Eq.24	Clay Content (<5μ) %	Remarks	Volumetric Strain %	Settlement (inch)
11	10-14	4	silt	122.3	1780.6	1780.6	21	1.09	1.44	0.85	28.0	59.5	5.0	1.2	38.6	0.97	N/A	0.298	1.328	N/A	19.8	above HGW	N/A	N/A
16	14-19	5	silt	122.3	2392.1	2392.1	12	0.94	1.44	0.95	15.4	59.2	5.0	1.2	23.5	0.96	0.260	0.294	1.328	N/A	21.2	above HGW	N/A	N/A
21	19-25	6	silt	132.5	3187.1	2875.1	21	0.86	1.44	0.95	24.6	55.6	5.0	1.2	34.6	0.95	N/A	0.322	1.328	non-liquef	11.7		N/A	N/A
26	25-29	4	sand	131.6	3713.5	3151.9	32	0.82	1.44	0.95	35.9	40.9	5.0	1.2	48.0	0.94	N/A	0.338	1.328	non-liquef	12.1		N/A	N/A
31	29-35	6	sand	129.7	4491.7	3555.7	50	0.77	1.44	1.0	55.5	3.3	0.0	1.0	55.5	0.92	N/A	0.356	1.328	non-liquef			N/A	N/A
36	35-39	4	sand	133.6	5026.1	3840.5	46	0.74	1.44	1.0	49.2	5.0	0.0	1.0	49.2	0.88	N/A	0.352	1.328	non-liquef			N/A	N/A
41	39-44	5	sand	131.7	5684.6	4187.0	32	0.71	1.44	1.0	32.8	1.8	0.0	1.0	32.8	0.84	N/A	0.349	1.328	non-liquef			N/A	N/A
46	44-49	5	sand	131.1	6340.1	4530.5	29	0.68	1.44	1.0	28.5	2.7	0.0	1.0	28.5	0.80	0.358	0.342	1.328	1.39			N/A	N/A
51	49-51	2	sand	127.6	6595.3	4660.9	31	0.67	1.44	1.0	30.1	2.1	0.0	1.0	30.1	0.76	N/A	0.328	1.328	non-liquef			N/A	N/A
																							Total	0.00

* C_E=1.2, C_B=1.0, C_S=1.2

"non-liquef" : if CC>15% or $(N1)_{60CS}$ >=30

REFERENCE:

1. "Proceeding of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils", Technical Report NCEER-97-0022, December 31, 1997
2. "Recommended Procedures for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California" by Southern California Earthquake Center, University of Southern California.
3. Kohji Tokimatsu and Seed, H.B., 1987, "Evaluation of Settlements in Sands Due to Earthquake Shaking", Journal of the Geotechnical Engineering Division,



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VICINITY MAP	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1	PLATE 1

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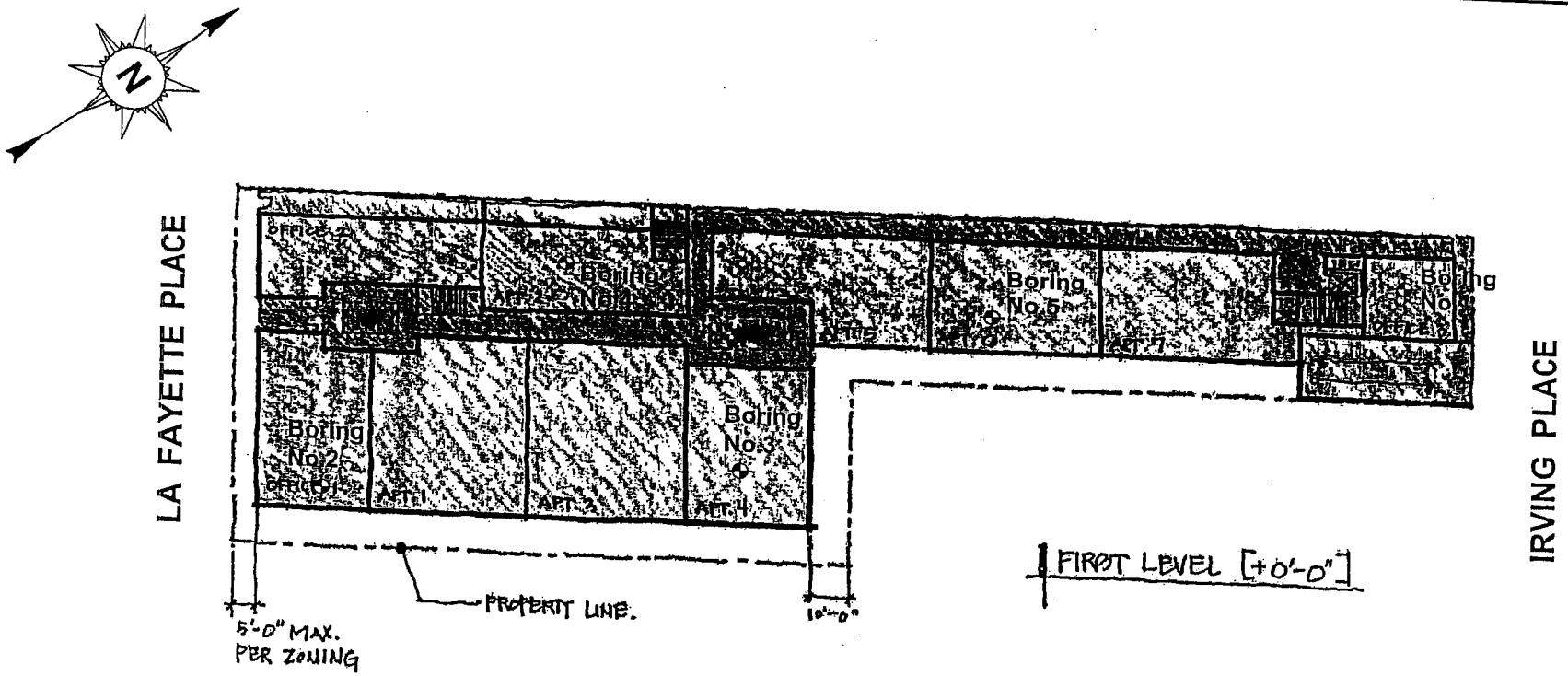


REFERENCE: "Site Plan" prepared by JS Egan Design, dated October 18, 2006.

PLOT PLAN AND BORING LOCATION

HU ASSOCIATES, INC.
Geotechnical / Environmental Engineering Consultants

SCALE	1" = 30'	PROJECT NO.	HA-5887-1

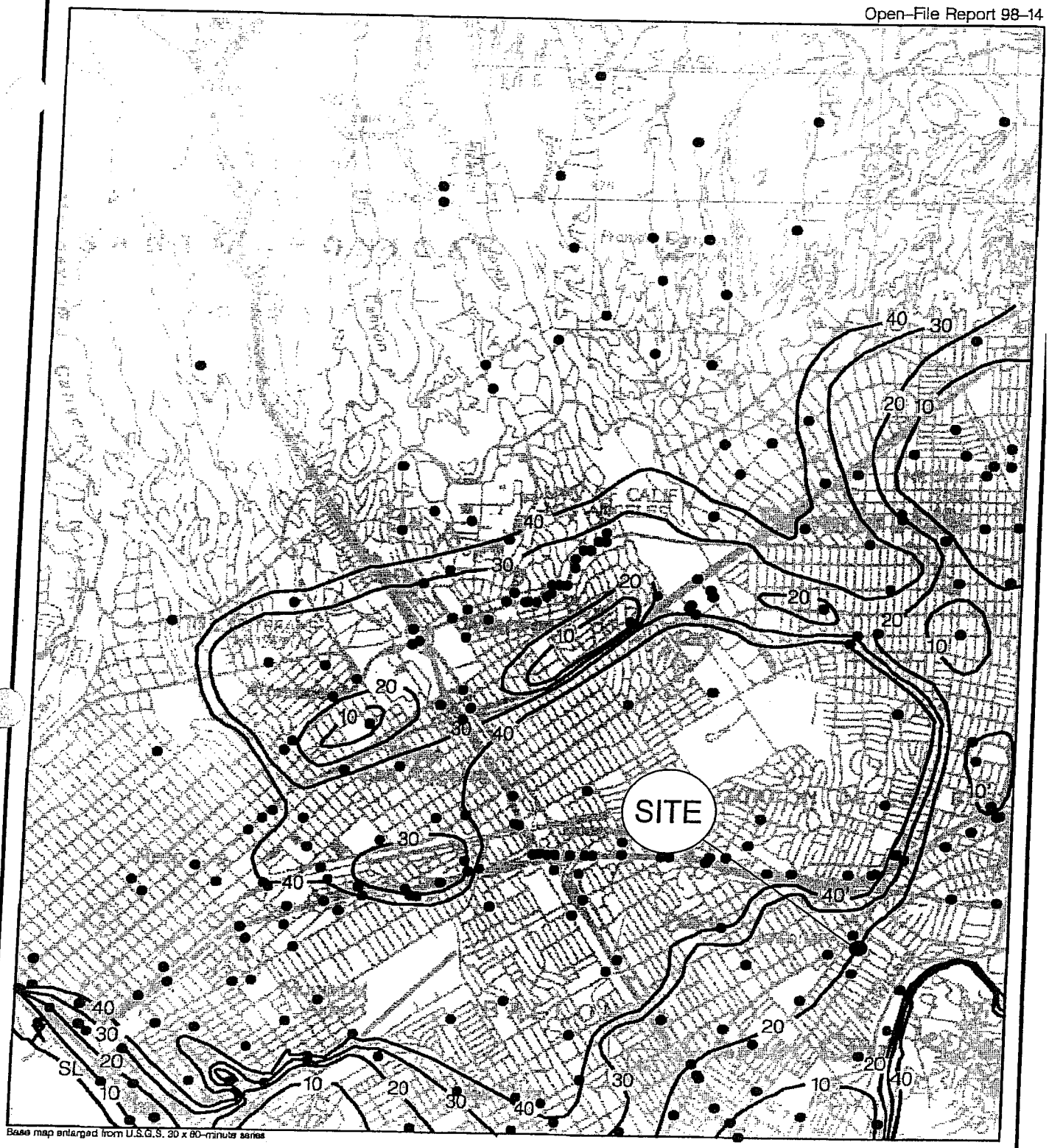


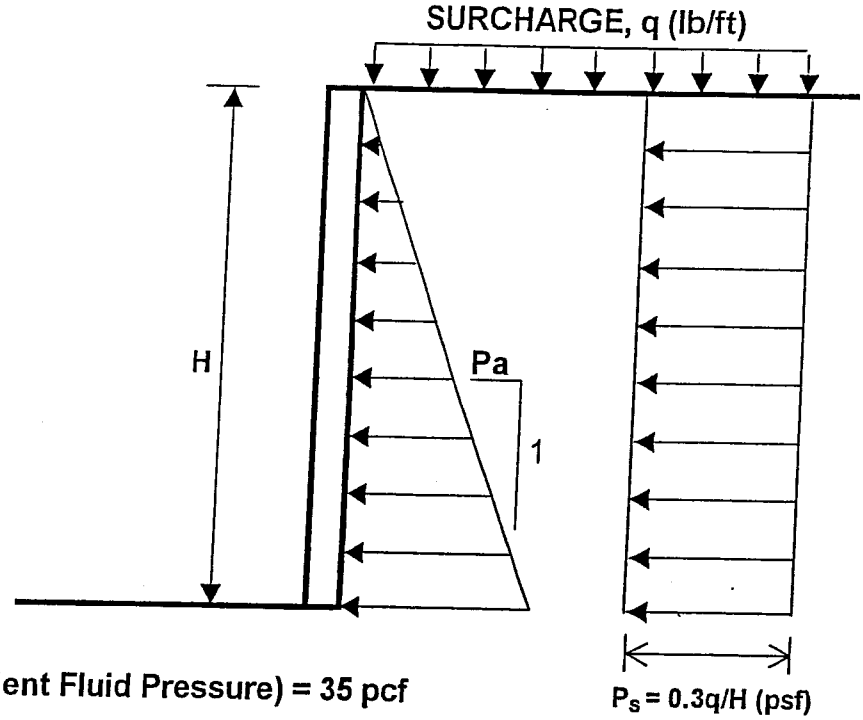
Plate 1.2 Historically Highest Ground Water Contours and Borehole Log Data Locations, Beverly Hills Quadrangle.

● Borehole Site

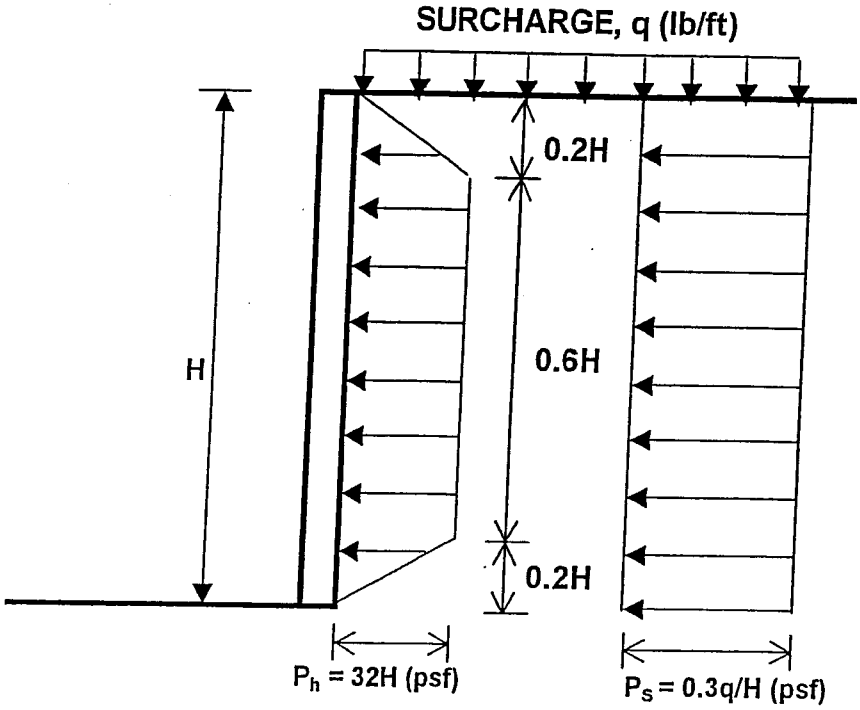
30 Depth to ground water in feet

HISTORICAL HIGHEST GROUNDWATER	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	**PROJECT No.** HA-5887-1	**PLATE** 3

CANTILEVERED SHORING



BRACED SHORING



* P_s (Surcharge Load by Adjacent Structure) = 0.3 x q / H (psf)

EARTH PRESSURE DISTRIBUTION	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1	PLATE 4

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APPENDIX

FIELD EXPLORATION AND LABORATORY TESTING

FIELD EXPLORATIONS

The subsurface conditions at the site were explored by excavating five (5) test borings at the locations shown on the Plot Plan, Plate 2. The test borings were excavated by means of an 8-inch diameter hollow stem to depths of 30 to 51 feet below the existing ground surface. The approximate locations of the test borings were determined by tape measurements from the property boundaries. The location of the test borings should be considered accurate only to the degree implied by the method used.

The soils encountered during excavation were logged by the field engineer. The soils are classified in accordance with the Unified Soil Classification System described on Plate A-1. Undisturbed samples of soils were extracted at selected intervals from the test borings in a barrel sampler with tapered cutting shoe. The undisturbed soil retained in 2.5-inch diameter by one-inch rings within the sampler were secured in moisture resistant bags and plastic sample cans as soon as taken to minimize the loss of field moisture while being transported to the laboratory for testing. Standard penetration tests were performed at 5-foot intervals from 11 to 51 feet in Test Boring Nos. 1 and 2. The relative sampler penetration resistance exhibited by the soil types encountered is tabulated in the Blow per Foot column of the Log of Boring. Detailed logs of test borings are presented on Plates A-2 through A-8, Log of Test Boring.

The lines designating the interface between soil materials on the logs of test boring represent approximate boundaries. The transition between materials may be gradual.

LABORATORY TESTING

Moisture-Density

The field moisture content and dry density of the materials encountered were determined by performing tests on selected undisturbed samples to aid in the classification and correlation of the soil and to obtain qualitative information relative to their strengths and compressibility. Only moisture content was determined on disturbed samples to aid in the classification and correlation of the soil. The results of the tests are shown on the Log of Test Boring, Plates A-2 through A-8.

Direct Shear Tests

Direct shear tests were performed on selected undisturbed samples of the on site material to evaluate shear strength and supporting capacity of the foundation materials. Shear tests were made with a direct shear machine of the displacement control type at a displacement rate of approximately 0.005 inches per minute. The samples were soaked in water for at least 24 hours to approximately saturated moisture condition and then sheared under various normal stresses. The ultimate shear strength values determined from the tests are presented on Plates A-9 through A-11, Direct Shear Test.

Consolidation Tests

Consolidation tests were performed on representative undisturbed samples of the natural soils to evaluate the volume changes of soil subjected to increased loads. Deformations of the specimen are recorded at selected intervals. The results of pressure consolidation curves, which are used to estimate the probable magnitude and rate of settlement of the tested soil under applied loads, are presented on Plates A-12 through A-16, Consolidation Test.

Grain Size Analyses

Grain size analyses were performed on portions of the representative bulk samples in accordance with the ASTM D-422 laboratory test procedures. Sieve analyses were performed to determine the gradation of the samples. Hydrometer test methods were utilized to determine the grain size of the minus No. 10 portion of the samples. Results of the sieve analyses appear on Plates A-17 through A-22. Percent of fines content of each soil sample tested are tabulated as follow:

Test Boring No.	Sample Depth (Feet)	Fines Content - % (0.074 mm)	Clay Content-% (<0.005 mm)
1	11	18.9	8.3
1	16	77.5	37.4
1	21	13.4	2.9
1	26	81.1	35.5
1	31	4.7	<1
1	36	5.4	<1
1	41	2.9	<1
1	46	49.0	11.4
1	51	54.6	14.9
2	11	59.5	19.8
2	16	59.2	21.2
2	21	55.6	11.7
2	26	40.9	12.1
2	31	3.3	<1
2	36	5.0	<1
2	41	1.8	<1
2	46	2.7	<1
2	51	2.1	<1

Expansion Tests

Expansion tests were performed on representative samples of the on-site materials in accordance with the Uniform Building Code Standard No. 18-1 to evaluate its volume change with moisture. The results are as follows:

Sample	Classification	Expansion Index	Expansion Potential
B-3 @ 5'	CLAY, very fine sandy, silty, occasional coarse	88	medium

Corrosivity Tests

A representative sample of the site soil was tested for electrical resistivity, pH, sulfate and chloride concentration in order to assess corrosivity effects on underground utilities and concrete foundations. Tests were performed by Environmental Geotechnology Laboratory, Arcadia, California. Results of the tests are summarized below.

Analyte	Test Method (Caltrans)	Result
pH	643	7.73
Resistivity	532	850 ohm-cm
Water Soluble Sulfate	417	0.017 %
Water Soluble Chloride	422	100 ppm

MAJOR DIVISIONS			GROUP SYMBOLS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of material is LARGER than No. 200 sieve size)	GRAVELS (More than 50% of coarse fraction is LARGER than No. 4 sieve size)	CLEAN GRAVELS (Little or no fines)	GW	Well graded gravels and gravel - sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel - sand mixtures, little or no fines
		GRAVELS WITH FINES (Appreciable Amount of fines)	GM	Silty gravels, gravel - sand - silt mixtures
			GC	Clayey gravels, gravel - sand - clay mixtures
	SANDS (More than 50% of coarse fraction is SMALLER than No. 4 sieve size)	CLEAN SANDS (Little or no fines)	SW	Well graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		SANDS WITH FINES (Appreciable Amount of fines)	SM	Silty sands, sand - silt mixtures
			SC	Clayey sands, sand - clay mixtures
FINE GRAINED SOILS (More than 50% of material is SMALLER than No. 200 sieve size)	SILTS AND CLAYS (Liquid limit LESS than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS (Liquid limit GREATER than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat, muck and other highly organic soils

BOUNDARY CLASSIFICATIONS: Soils possessing characteristics of two groups are designated by combinations of group symbols.

Reference: The Unified Soil Classification System, Corps of Engineers, U. S. Army Technical Memorandum No. 3 - 357, Vol 1, March, 1953 (Revised April, 1960)

UNIFIED SOIL CLASSIFICATION SYSTEM

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-1

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NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 1

Elevation: N/A

Depth in Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol					
	16	6.0	98.4			SM		FILL	Asphalt(4") / SAND, very fine to fine, silty occasional coarse	ylw brn dark brown	sl. moist moist	med dense
	26	11.0	111.5			CL		CLAY	very fine to fine sandy, silty occasional rock fragment			very stiff
5	37	9.1	115.8			SM		SAND	very fine to fine, silty, slightly clayey occasional coarse	dark gray brown		very dense
10	40	4.4	115.9						fine to coarse, silty to slightly silty, very gravelly with pebbles, occasional rock fragment		sl. moist to moist	
	22*	6.1										
15	50	7.0	101.4						very fine to fine, silty	gry brn		dense
	19*	20.4				ML		SILT	very fine to fine sandy, very clayey	dark brown	very moist	firm
20	50	4.6	115.5			SW		SAND	fine to coarse, slightly silty, gravelly occasional rock fragment & pebble	drk gry & lt brn	slightly moist	very dense
	30*	3.1										
25	39	15.7	105.7			ML		SILT	very fine to fine sandy, very clayey	greenish gray	very moist	firm
	21*	18.3										
30	50	3.4	113.8			SW		SAND	fine to coarse, sl. silty, gravelly, occ. gravel & pebble	white gry	sl. moist	v dense

Continued on Next Plate

Date Drilled: 3/15/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: 39' bgs

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1 **PLATE** A-2

NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 1 cont'd

Elevation: N/A

Depth In Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol				
	71*	1.7				SW		SAND	fine to coarse, slightly silty, gravelly, occasional pebble & rock fragment	white gray	slightly moist	very dense
35	55	3.0	117.9						fine to coarse, slightly silty, gravelly, w/ gravel & pebble			
	50*	4.3										
40	50	20.0	105.0			SP			fine to medium, slightly silty	white gray	saturated	dense
	50*	20.2										
45	bag	20.1										
	26*	22.8				SM			fine, silty, occasional gravel	lt brn		
50	30	21.8	104.5						fine to medium, silty to slightly silty			
	25*	27.4				ML		SILT	very fine to fine sandy	gray		firm

End of Test Boring @ 51'

22* indicates SPT blow count

Date Drilled: 3/15/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: 39' bgs

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1 PLATE A-3

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NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 2

Elevation: N/A

Depth in Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol					
						CL		FILL	Asphalt(4") / CLAY, very fine to fine sandy silty	brown	slightly moist	stiff
						CL		CLAY	very fine sandy, silty	dark brown	moist	very stiff
5	30	13.9	117.9									
						SM		SAND	fine to coarse, silty to slightly silty, very gravelly with pebbles, occasional rock fragment	dark gray brown	sl. moist	very dense
10	38	2.4	118.6									
	21*	15.6										
						ML		SILT	very fine to fine sandy, slightly clayey occasional gravel	light brown	moist	firm
15	30	17.8	103.8									
	12*	16.5							very fine to fine sandy, slightly clayey			
20	40	15.5	108.3						very fine to fine sandy, with a layer of 5" sl. silty sand	greenish	moist	
	21*	14.1							very fine to fine sandy, slightly clayey			
25	40	20.3	108.6									
	32*	13.4				SM		SAND	very fine to fine, silty	gry brn		dense
						SW			fine to coarse, slightly silty, gravelly occasional pebble	light gray	slightly moist	
30	36	2.9	100.7						fine to coarse, sl. silty, gravelly, occ. pebble / rock frag			

Continued on Next Plate

Date Drilled: 3/15/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: 38' bgs

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-4

NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 2 cont'd

Elevation: N/A

Depth in Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol					
	50*	2.2				SW		SAND	fine to coarse, slightly silty, gravelly, occasional pebble & rock fragment	light gray	slightly moist	dense
35	75	5.2	111.3						fine to coarse, slightly silty, gravelly, occ. pebble			
	46*	16.7				SP			fine to medium, slightly silty	light brown	very moist	
40	40	18.8	110.9								saturated	
	32*	19.9								light gray		
45	33	17.9	111.2									
	29*	20.3										
50	35	22.0	104.6									
	31*	23.7										

End of Test Boring @ 51'

21* indicates SPT blow count

Date Drilled: 3/15/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: 38' bgs

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants* | PROJECT No. HA-5887-1 | PLATE A-5

NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 3

Elevation: N/A

Depth in Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance Kips/sq.ft.	Confining Pressure Kips/sq.ft.	Unified Classification	Soil Symbol					
						CL		FILL	Asphalt(4")/ CLAY, very fine to fine sandy silty, occasional coarse	brown	slightly moist	stiff
						CL		CLAY	very fine sandy, silty, occasional coarse	dark brown	very moist	stiff to very stiff
5	40	19.4	109.1									
						SM		SAND	very fine to coarse, silty, gravelly, cobbles	brown	moist	very dense
10	35	9.4	118.0						fine to medium, silty, gravelly, occasional pebble			
15	21	21.6	103.6			ML		SILT	very fine sandy, slightly clayey	light brown	very moist	firm
20	30	28.7	91.9						very fine sandy, very clayey	drk brn		
						SW		SAND	fine to coarse, slightly silty, gravelly	drk gray brown	moist	very dense
						ML		SILT	very fine sandy, slightly clayey	greenish gray	very moist	firm
25	30	17.6	111.0									
30	35	4.9	100.5			SP		SAND	fine to medium, sl. silty, occasional gravel & pebble	lt gry brn	sl. moist	dense

End of Test Boring @ 30'

Date Drilled: 3/16/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: not encountered

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-6

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NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 4

Elevation: N/A

Depth in Feet	Blow per Foot	Field Molsture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol					
						CL		FILL	Asphalt(4")/ CLAY, very fine sandy, silty	dark brown	slightly moist	stiff
						CL		CLAY	very fine sandy, silty		moist	stiff
5	40	9.5	125.8						very fine sandy, silty, occasional coarse			to very stiff
						SM		SAND	very fine to fine, silty, occasional gravel & pebble	brown	slightly moist to moist	dense
10	40	6.0	112.1									
15	35	7.3	109.7						very fine to medium, silty, occasional coarse	gray brown		
						ML		SILT	very fine to fine sandy, slightly clayey	dark brown	moist	firm
20	50	9.4	109.0						very fine to fine sandy, with a layer of 2" sl. silty sand	dark gray brown		
									very fine to fine sandy, clayey			
25	30	23.1	102.3								very moist	
30	40	3.0	107.4			SP		SAND	fine to coarse, slightly silty, gravelly, occ. pebble	wht yl brn	sl. moist	dense

End of Test Boring @ 30'

Date Drilled: 3/16/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: not encountered

LOG OF TEST BORING

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-7

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NOTE: The data presented on this log is a simplification of actual subsurface conditions encountered and applies only at the location of this boring and the date of drilling. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING NO. 5

Elevation: N/A

Depth in Feet	Blow per Foot	Field Moisture % of Dry Weight	Dry Density lbs./cu.ft.	Shear Resistance kips/sq.ft.	Confining Pressure kips/sq.ft.	Unified Classification	Soil Symbol					
						SM		FILL	Asphalt(6")/ SAND, very fine to fine, silty slightly clayey	dark brown	slightly moist	dense
						CL		CLAY	very fine to fine sandy, silty, occasional gravel & rock fragment		moist	very stiff
5	30	13.6	116.9									
						SM		SAND	very fine to fine, silty	brown		very dense
10	25	14.4	111.0									
									very fine to fine, silty to slightly silty	ylw brn		
15	28	27.5	93.0			ML		SILT	very fine to fine sandy, clayey	dark brown	very moist	firm
20	35	10.7	111.7			SW		SAND	fine to coarse, slightly silty, gravelly	drk gry & gry brn	moist	very dense
						ML		SILT	very fine to fine sandy, clayey	gray brown	moist to very moist	firm
25	25	18.9	108.8									
30	37	2.3	103.2			SP		SAND	very fine to medium, sl. silty to clean, occ. gravel	lt ylw brn	sl. moist	dense

End of Test Boring @ 30'

Date Drilled: 3/16/07
Drilling Equipment: 8-inch diameter hollow stem auger
Driving Weight: 140 lbs @ 30-inch drop
Water Depth: not encountered

LOG OF TEST BORING

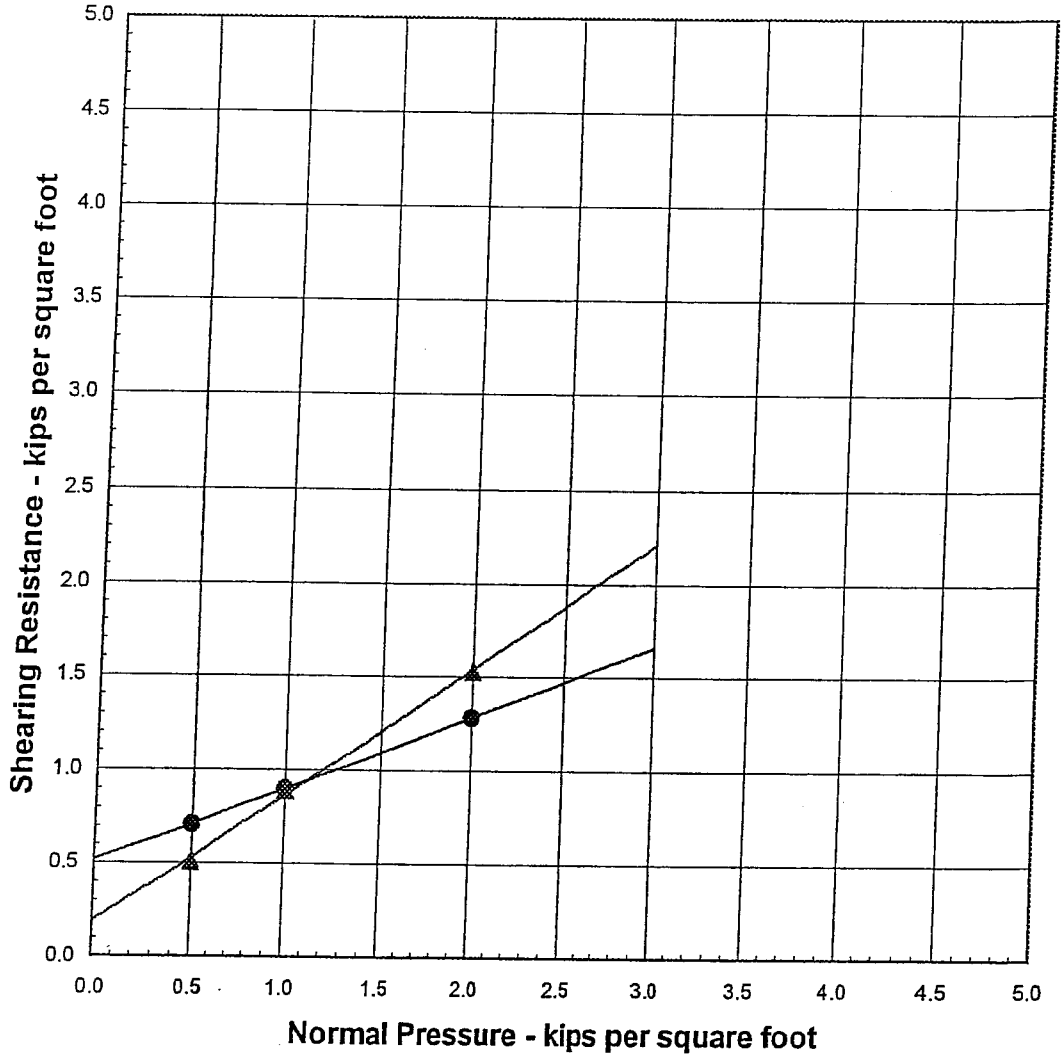
Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-8

177



Samples were tested under saturated and drained conditions.

	Boring No.	Depth (feet)	UC	Initial Water Content (% of dry wt.)	Final Water Content (% of dry wt.)	Dry Density (lbs / cu.ft.)	Cohesion (lbs / sq. ft.)	Angle of Friction (degrees)
●	1	4	CL	11.0	19.5	111.5	520 ultimate shear strength	21
▲	1	10	SM	4.4	16.9	115.9	190 ultimate shear strength	34

DIRECT SHEAR TEST DATA

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants* | PROJECT No. HA-5887-1 | PLATE A-9

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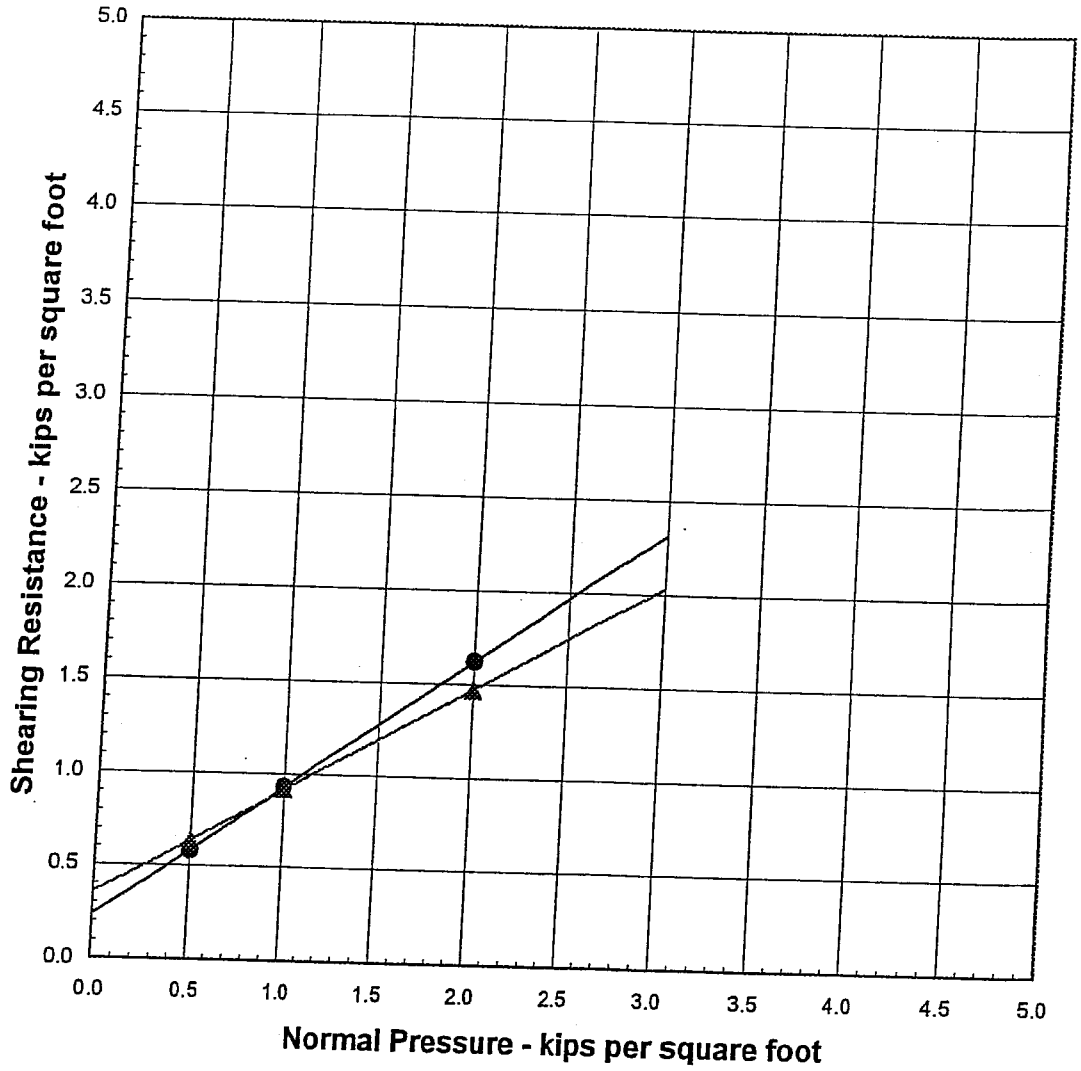


Samples were tested under saturated and drained conditions.

	Boring No.	Depth (feet)	UC	Initial Water Content (% of dry wt.)	Final Water Content (% of dry wt.)	Dry Density (lbs / cu.ft.)	Cohesion (lbs / sq. ft.)	Angle of Friction (degrees)
●	1	15	SM	7.0	25.0	101.4	240 ultimate shear strength	35
▲	2	20	ML	15.5	21.2	108.3	360 ultimate shear strength	29

DIRECT SHEAR TEST DATA

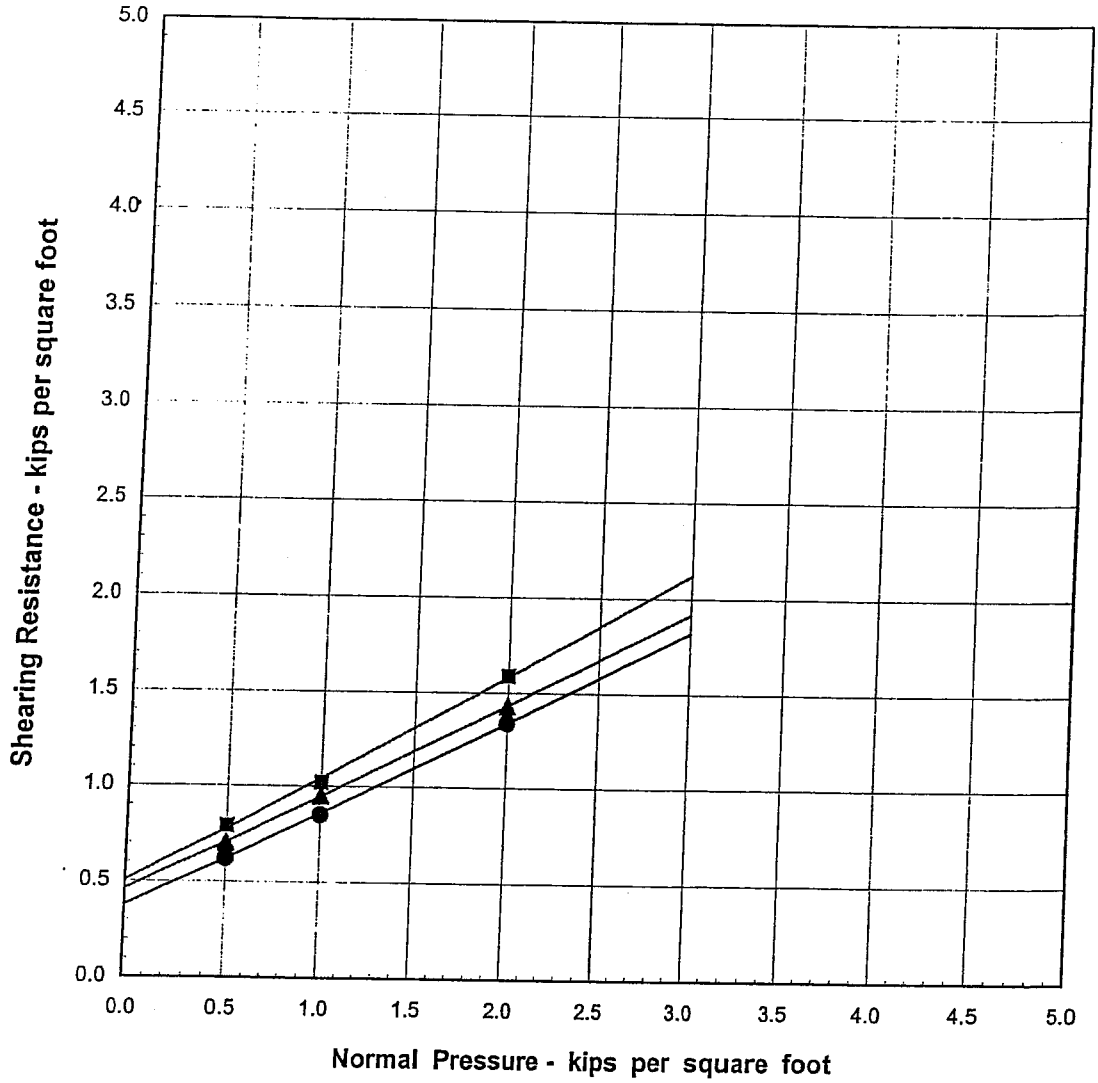
Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-10

179



Samples were tested under saturated and drained conditions.

	Boring No.	Depth (feet)	UC	Initial Water Content (% of dry wt.)	Final Water Content (% of dry wt.)	Dry Density (lbs / cu.ft.)	Cohesion (lbs / sq. ft.)	Angle of Friction (degrees)
●	3	15	ML	21.6	24.6	103.6	380 ultimate shear strength	26
▲	4	20	ML	9.4	21.0	109.0	460 ultimate shear strength	26
■	5	15	CL	27.5	31.0	93.0	510 ultimate shear strength	28

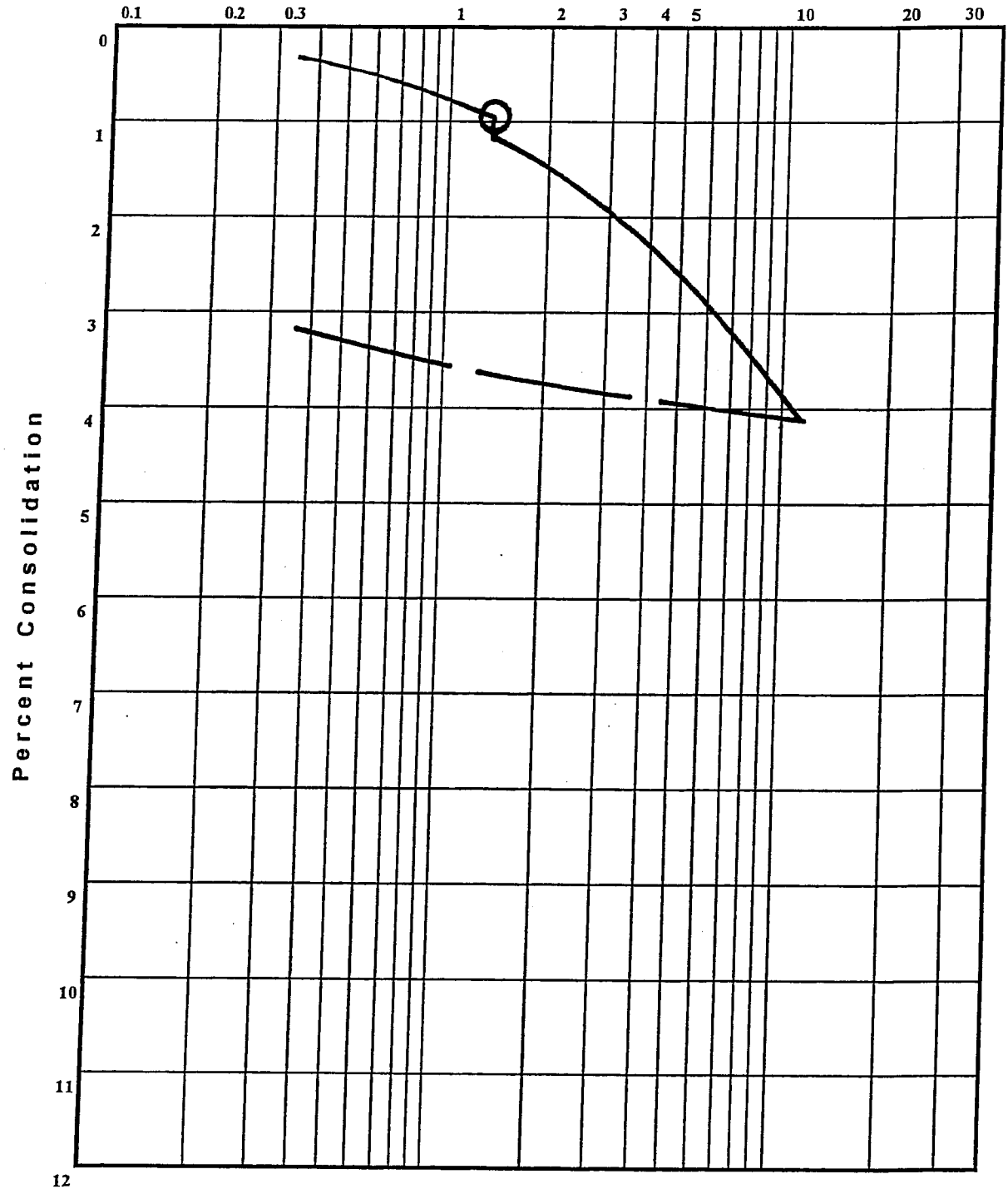
DIRECT SHEAR TEST DATA

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants* | PROJECT No. HA-5887-1 | PLATE A-11

180

Normal Load - kips per square foot

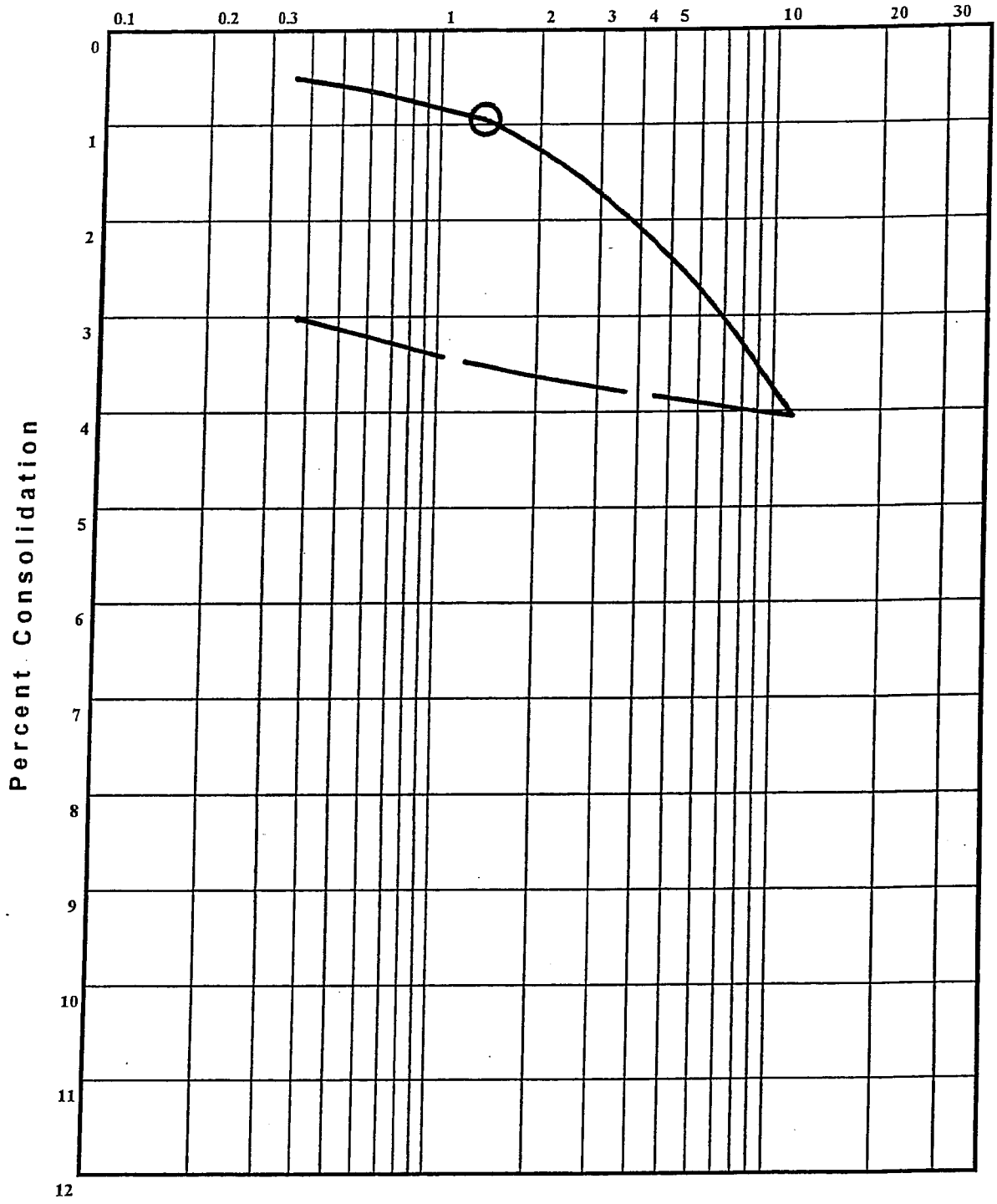


Test Boring No. 1 @ 20.0'

O Water Permitted to Contact Sample

CONSOLIDATION TEST	Proposed Apartment Complex 4043 Irving Place Culver City, California
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1 PLATE A-12

Normal Load - kips per square foot

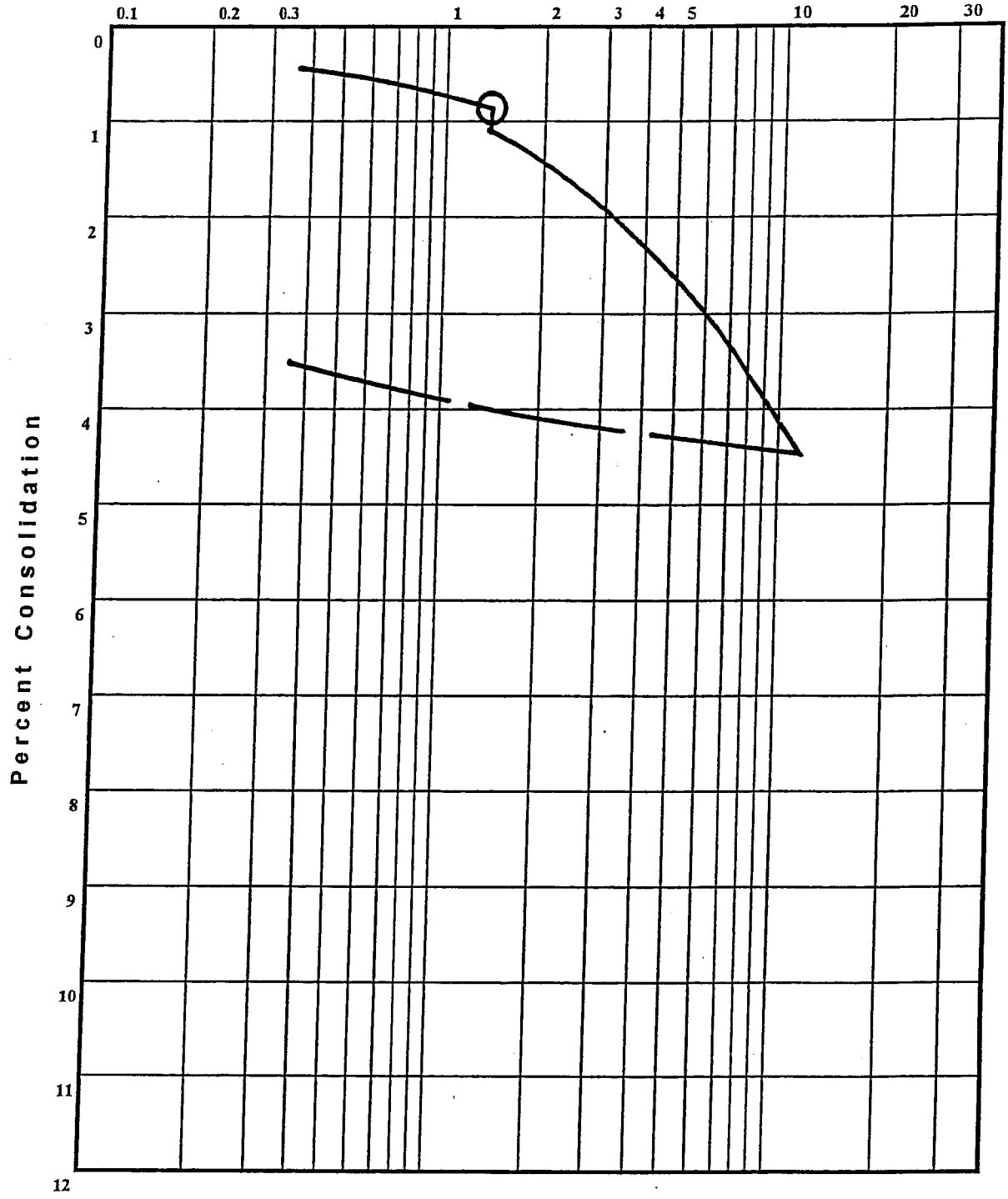


Test Boring No. 2 @ 15.0'

O Water Permitted to Contact Sample

CONSOLIDATION TEST	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1	PLATE A-13

Normal Load - kips per square foot



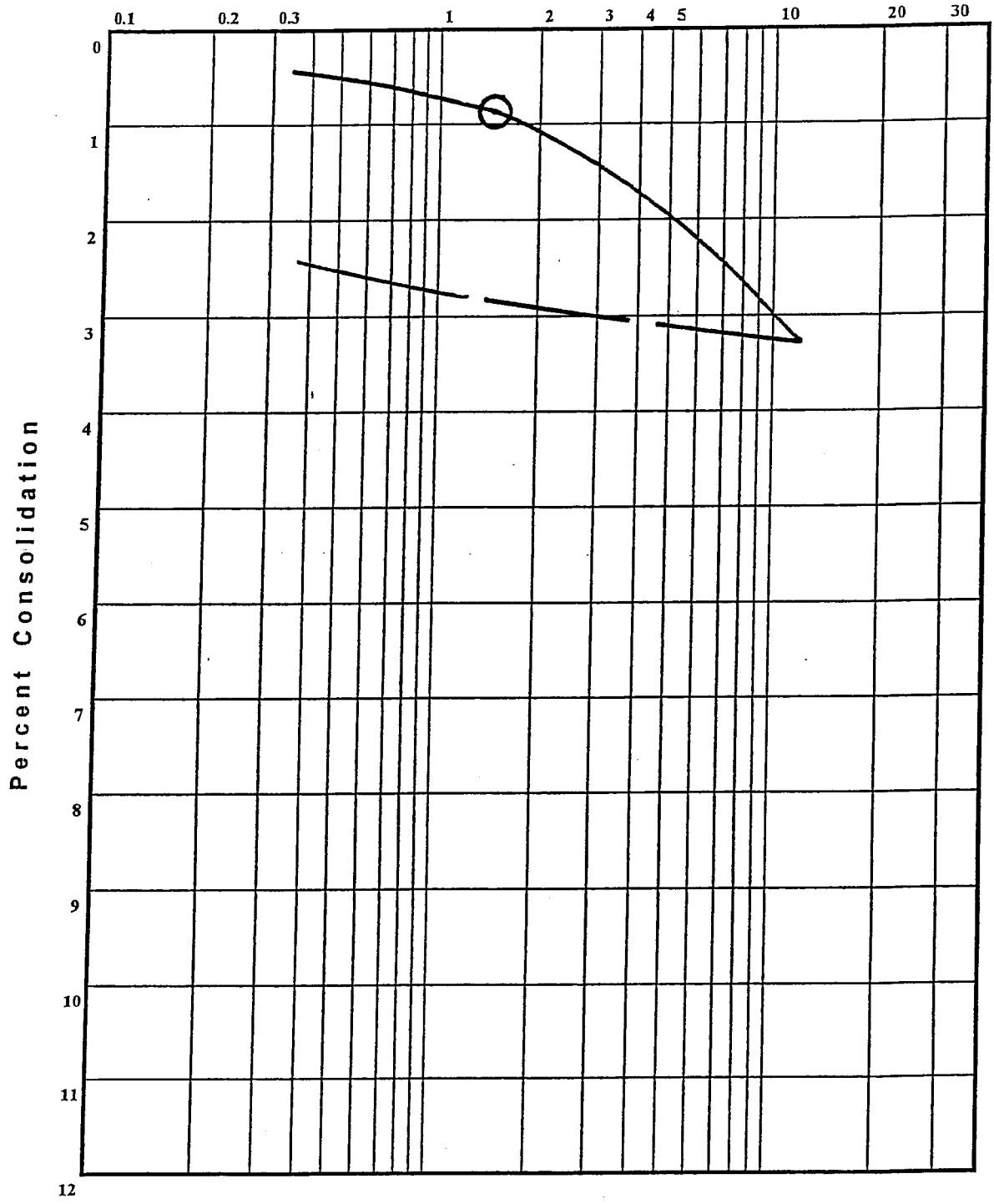
Test Boring No. 3 @ 20.0'

O Water Permitted to Contact Sample

CONSOLIDATION TEST	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1	PLATE A-14

183

Normal Load - kips per square foot



Test Boring No. 4 @ 15.0'

O Water Permitted to Contact Sample

CONSOLIDATION TEST

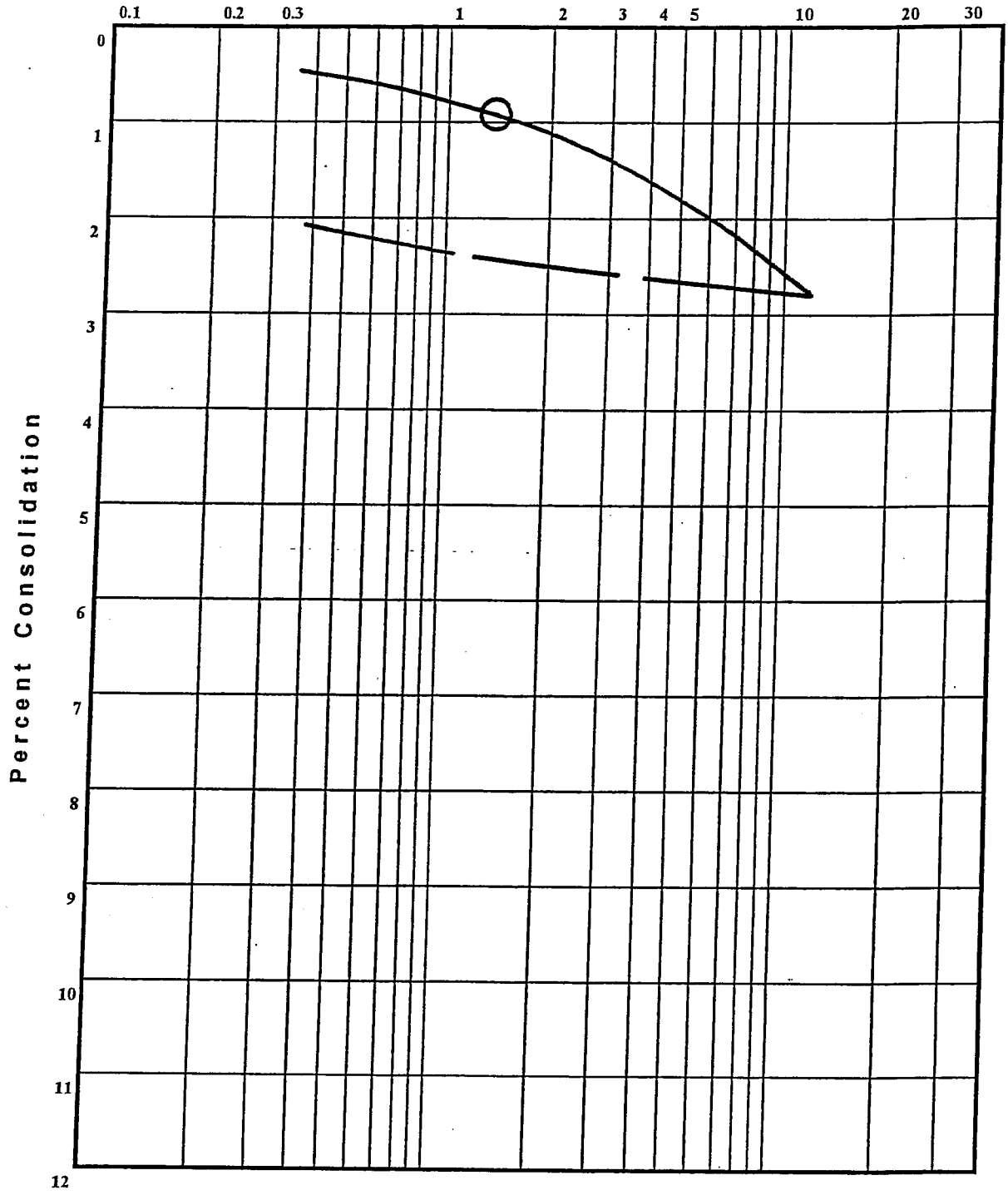
Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT No. HA-5887-1

PLATE A-15

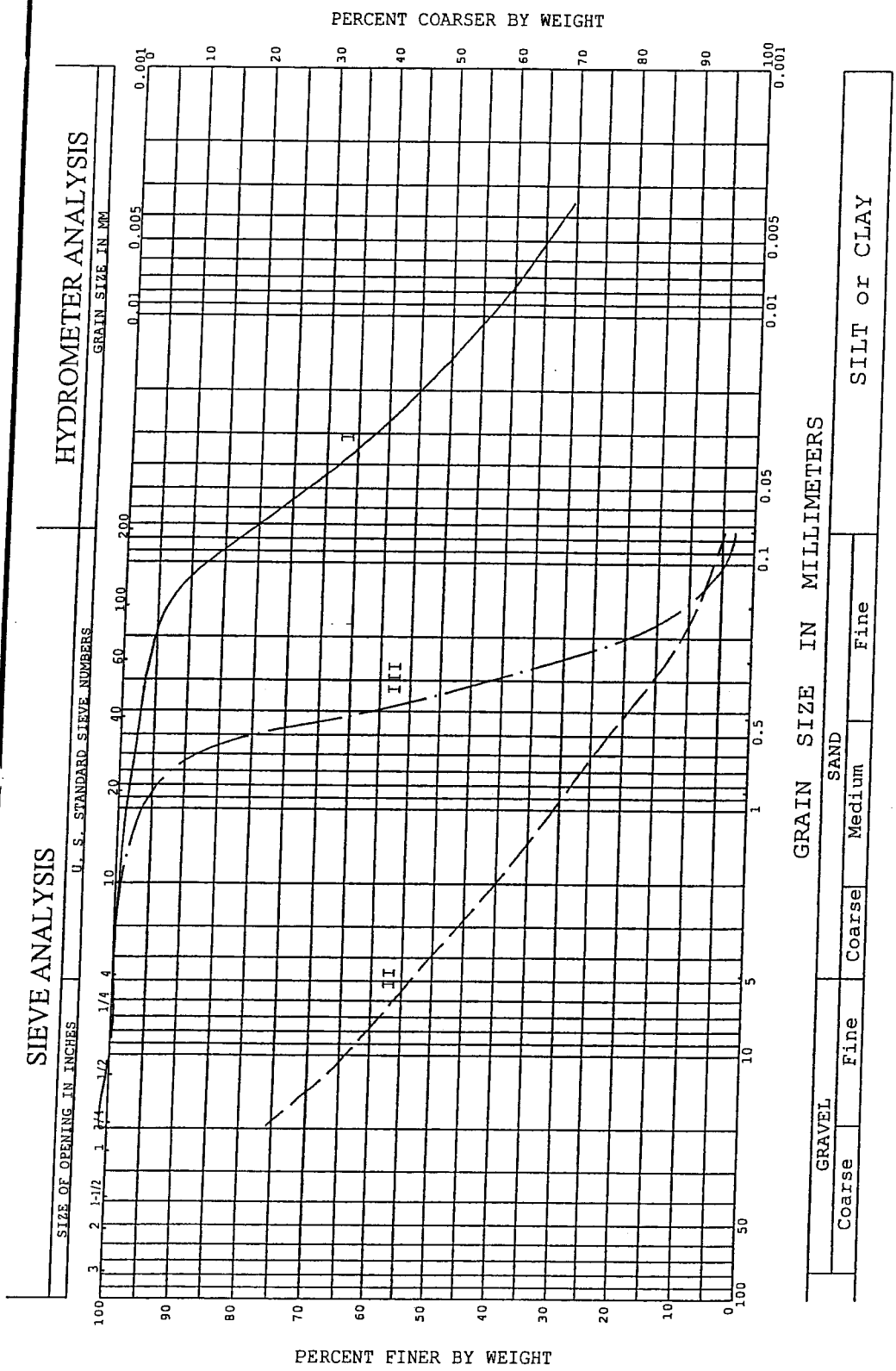
Normal Load - kips per square foot



Test Boring No. 5 @ 20.0'

O Water Permitted to Contact Sample

CONSOLIDATION TEST	Proposed Apartment Complex 4043 Irving Place Culver City, California	
HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*	PROJECT No. HA-5887-1	PLATE A-16



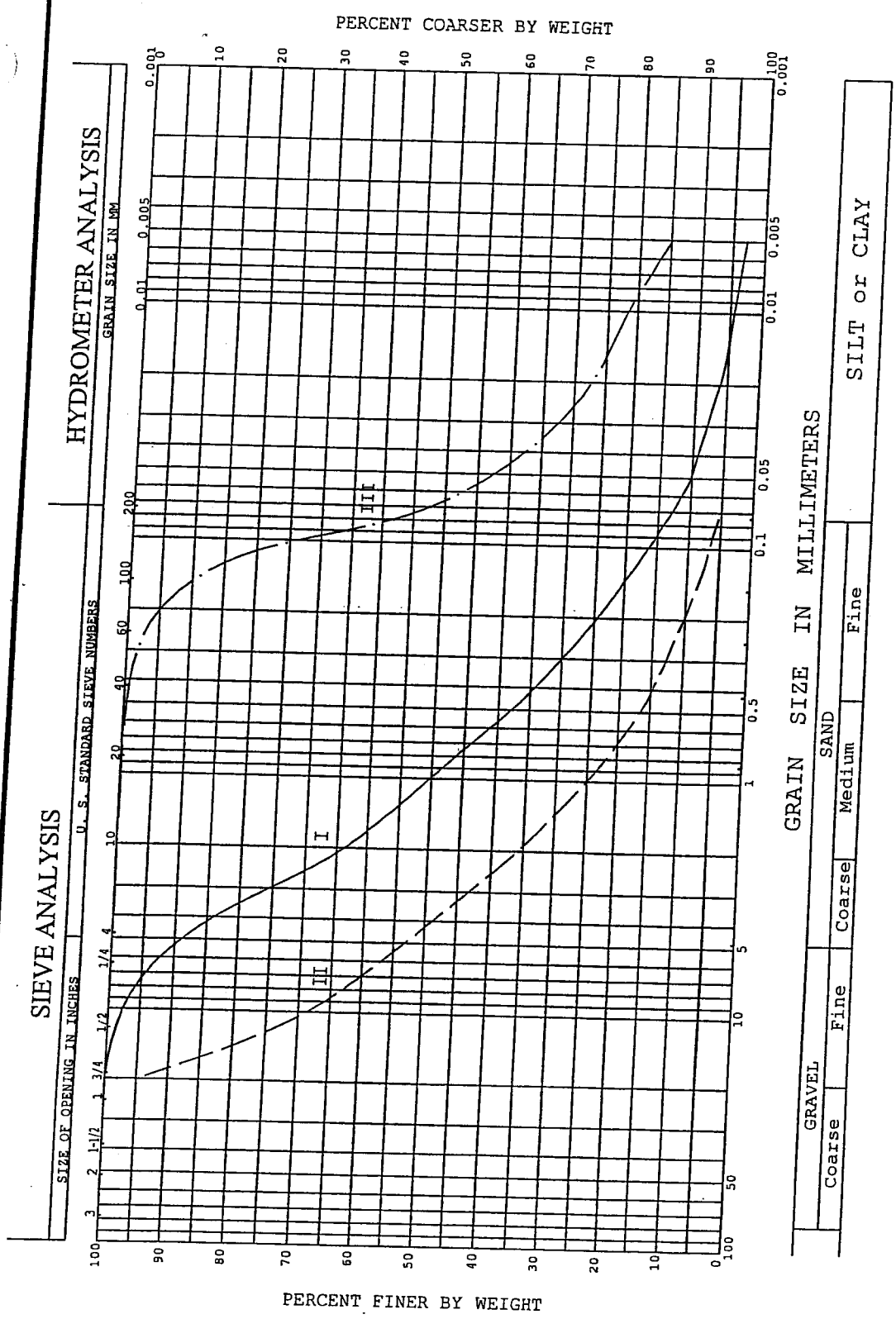
Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	1	26	SILT, very fine to fine sandy, very clayey	18.3			
II	1	31	SAND, fine to coarse, slightly silty, gravelly	1.7			
III	1	41	SAND, fine to medium, slightly silty	20.2			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1 **PLATE** A-17



Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	1	21	SAND, fine to coarse, slightly silty, gravelly	3.1			
II	1	36	SAND, fine to coarse, slightly silty, gravelly	4.3			
III	1	51	SILT, very fine to fine sandy	27.4			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1

PLATE A-18

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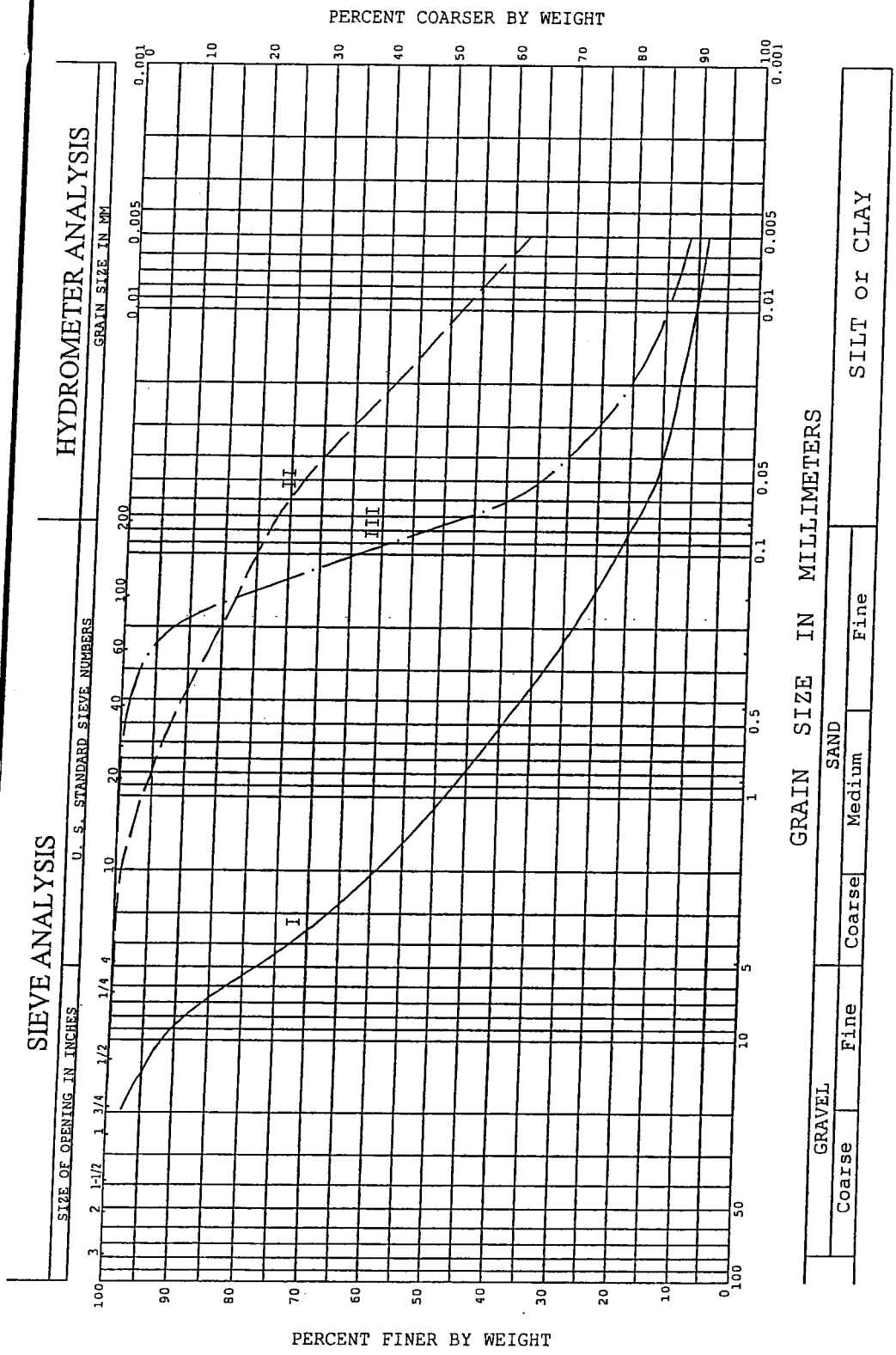

Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	1	11	SAND, f to coarse, silty to sl. silty, v gravelly	6.1			
II	1	16	SILT, very fine to fine sandy, very clayey	20.4			
III	1	46	SAND, fine, silty, occasional gravel	22.8			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1

PLATE A-19

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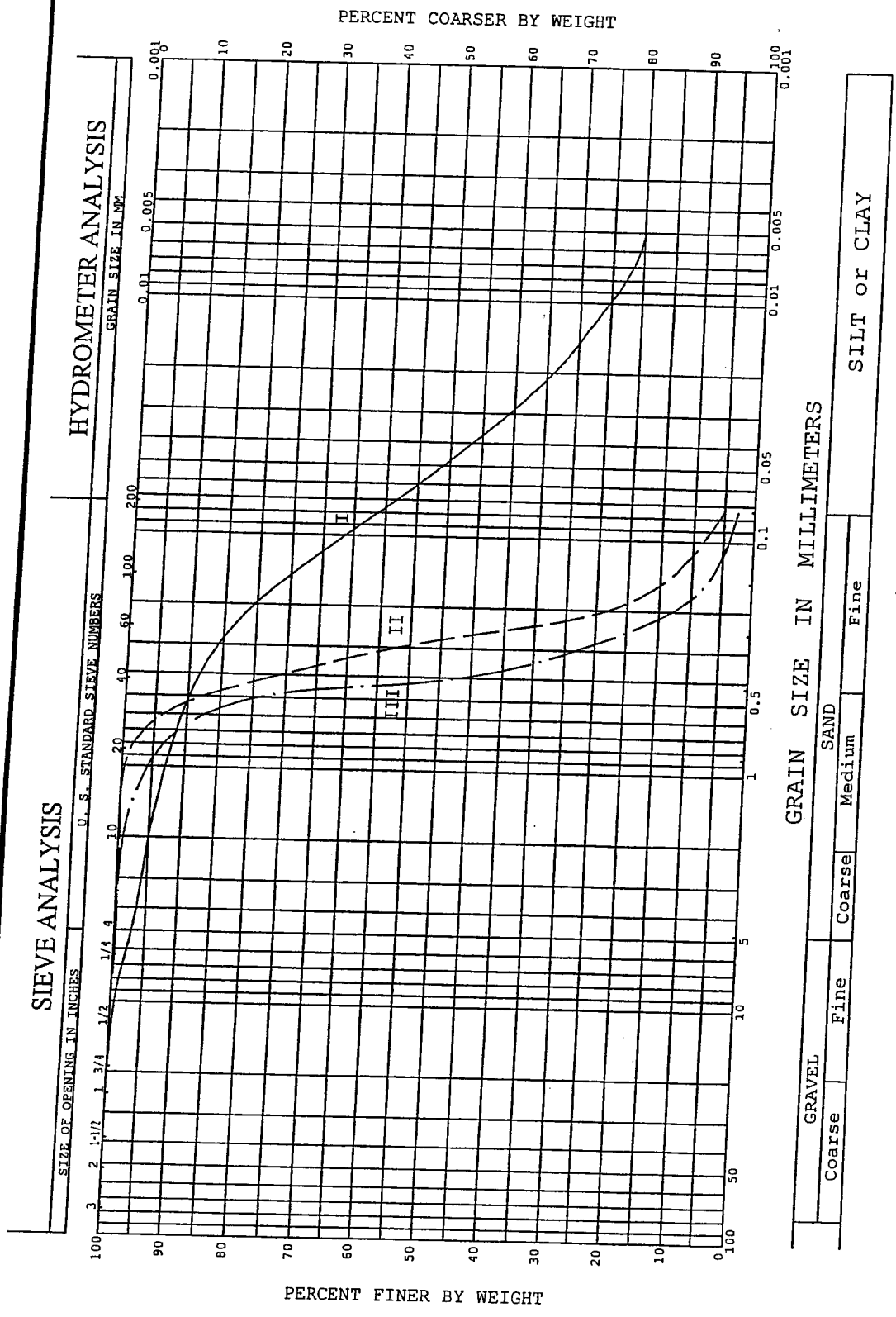


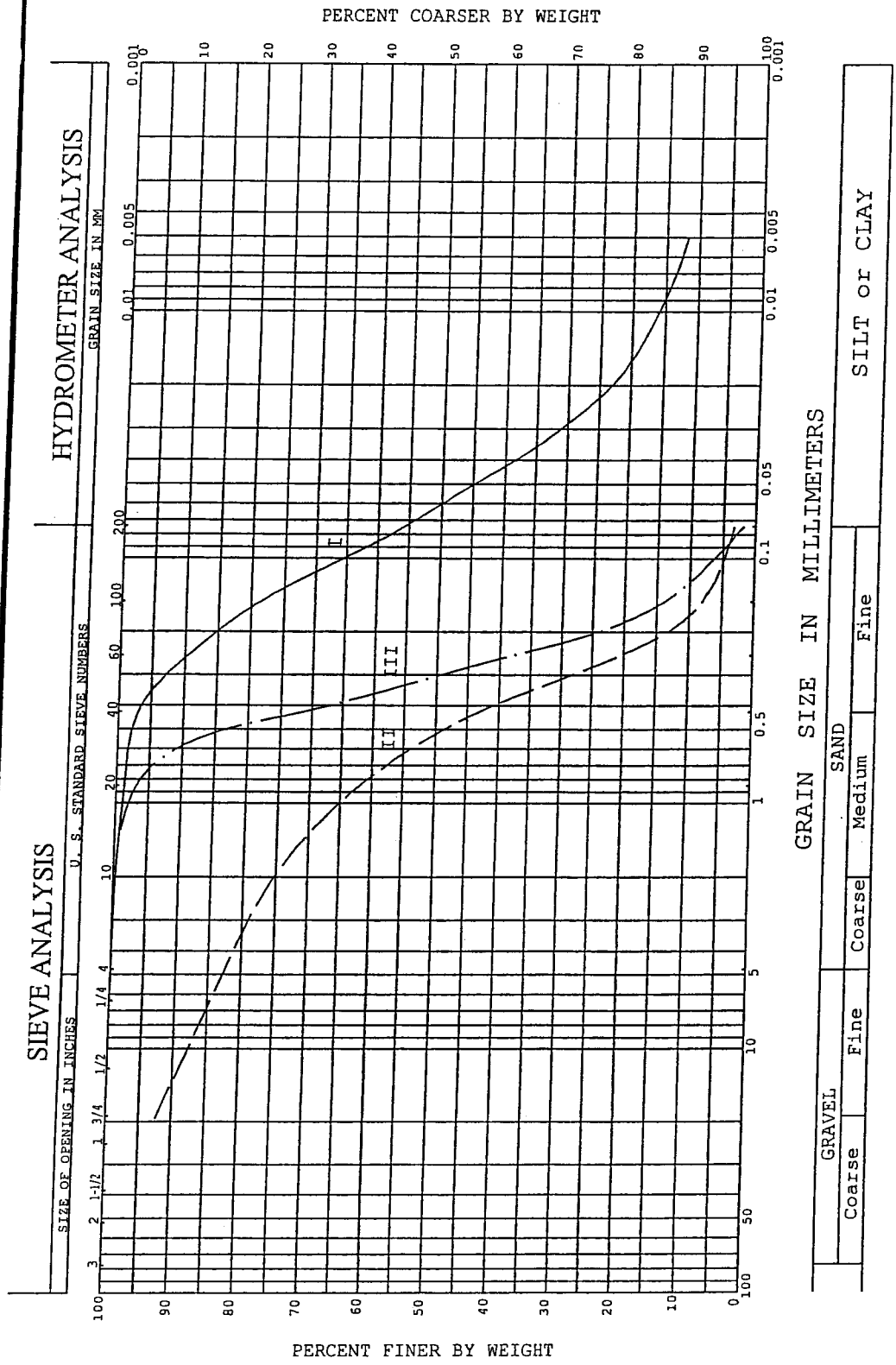
Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	2	11	SILT, very fine to fine sandy, slightly clayey	15.6			
II	2	36	SAND, fine to medium, slightly silty	16.7			
III	2	46	SAND, fine to medium, slightly silty	20.3			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1 **PLATE** A-20



Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	2	21	SILT, very fine to fine sandy, slightly clayey	14.1			
II	2	31	SAND, fine to coarse, slightly silty, gravelly	2.2			
III	2	41	SAND, fine to medium, slightly silty	19.9			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1

PLATE A-21

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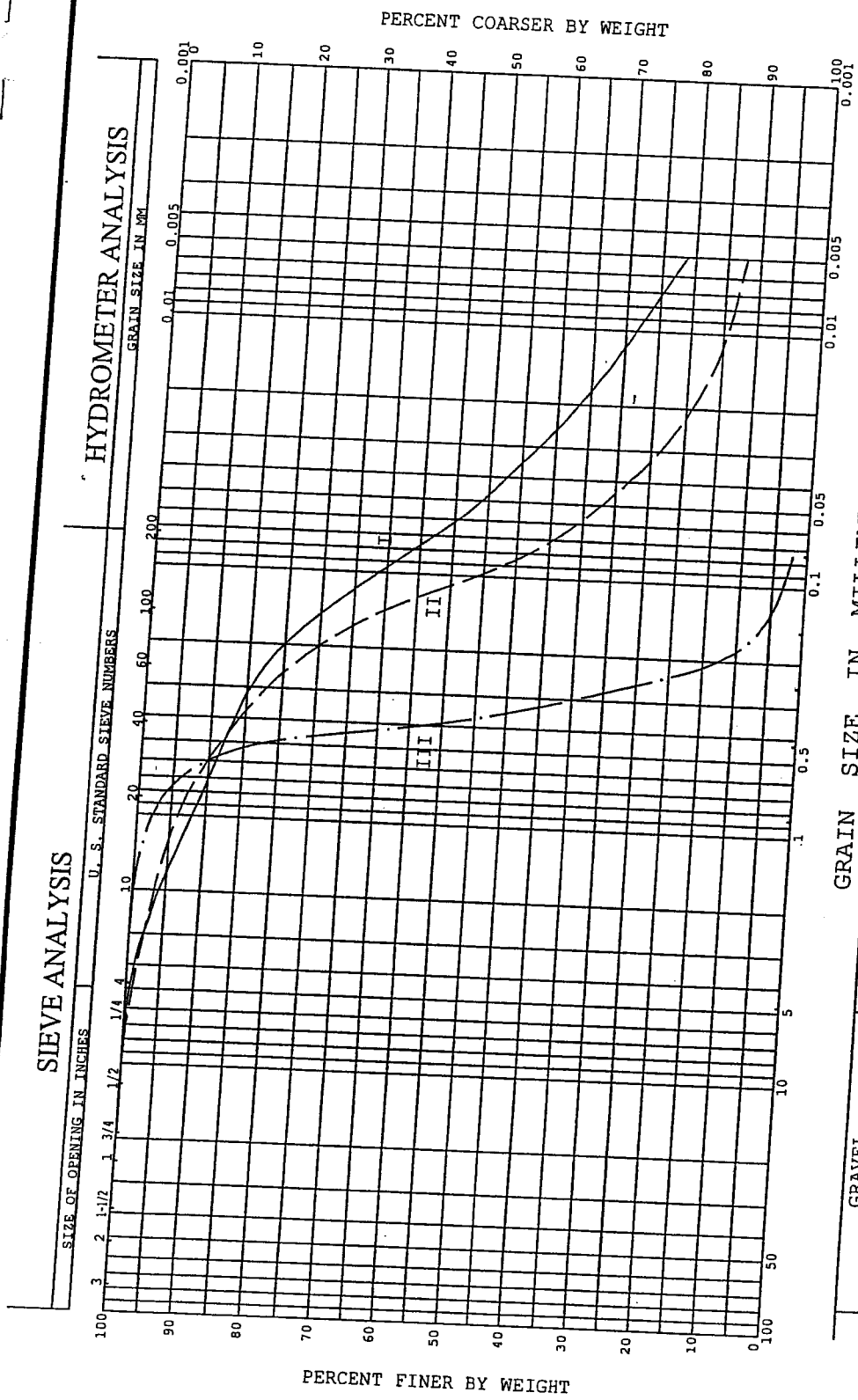

Curve No.	Boring No.	Depth ft.	Soil Description	Natural W/C, %	LL	PL	PI
I	2	16	SILT, very fine to fine sandy, slightly clayey	16.5			
II	2	26	SAND, very fine to fine, silty	13.4			
III	2	51	SAND, fine to medium, slightly silty	23.7			

GRADATION CURVE

Proposed Apartment Complex
4043 Irving Place
Culver City, California

HU ASSOCIATES, INC. *Geotechnical Engineering Consultants*

PROJECT NO. HA-5887-1 **PLATE** A-22

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Gorham, Thomas

From: Greg Seares [gregseares@gmail.com]
Sent: Wednesday, April 02, 2008 8:08 PM
To: Gorham, Thomas
Subject: 4043 Irving Place

I am writing in support of the project at 4043 Irving Place. And any other condo projects where zoning allows them. My wife and I have been renting in Culver City for 2 years, and have been looking to buy here in the neighborhood for the same amount of time. We moved to Culver City from Pasadena because of it's walkability, safe neighborhoods, easy access to many parts of Los Angeles, and great downtown area. There are hardly any available condominiums to buy in the downtown area for a young couple like ourselves, and we hope that more units such as these will be built in the future. I personally believe that by promoting density in its downtown, Culver City will lessen, rather than worsen, traffic. We live on Lincoln at Braddock - besides driving to work, my wife & I rarely drive. We can walk to everything we need, and I believe that that future culver city condo owners will do the same.

Greg Seares
4116 Lincoln Avenue

Gorham, Thomas

From: Anna Baum [minyaxmintz@yahoo.com]
Sent: Wednesday, April 02, 2008 10:05 PM
To: Gorham, Thomas
Cc: residentsculvercity@yahoogroups.com
Subject: Irving Place

Dear Mr. Gorham,

I am a Culver City Resident living on Lincoln Avenue.
I want
to express my strong desire that the area remain as residential and charming as it is today. The project being reviewed for 4043 Iving Place would have a negative impact on the area--already traffic, congestion, parking, and pollution problems are beginning to damage the wonderful atmosphere of Culver City.

I cannot attend the meeting April 9, so please take my concerns into consideration.

Best Regards,
Anna Baum

You rock. That's why Blockbuster's offering you one month of Blockbuster Total Access, No Cost.
http://tc.deals.yahoo.com/tc/blockbuster/text5.com

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To: Planning Commission Members
Thomas Gorham, Deputy Director of Planning
Sol Blumenfeld, Director, Community Development Director
Carol Schwab, City Attorney

From: Owners of Landmark Designated Historical Homes adjacent to proposed project - 4043 Irving Place
Date: April 3, 2008

Re: Independent Soil Engineering Report

Please find attached an independent soil engineering report commissioned by the owners of the 3 Landmark Homes adjacent to the above project. The engineer made a site visit and reviewed the soil report paid for by the developer.

Please refer to the "Conclusions and Recommendations" section of the report beginning on p.3.

The engineer's report indicates:

1. "Construction of the proposed development with a subterranean garage will be difficult."
2. There would be several problems with the proposed shoring systems. More intense measures would need to be taken than described in the soil engineering report submitted by the developer, including measures to be taken in the event of excessive movement of the system.
3. The likelihood is that the free standing concrete walls on our properties will be damaged and require replacement.
4. A vibration monitoring program will be needed because "the existing buildings are sensitive to vibrations due to construction equipment."

The developer proposes to excavate 15-20 deep for the subterranean garage, *only 3 feet*, from these brittle, historic, concrete homes. There is significant risk for damage to these homes because of the proximity of the excavation, the sandy content of the soil, and the need to use heavy, vibrating equipment in the construction.

We request your careful review of this project and ask that the project be scaled back to reduce the potential damage to our homes.

Respectfully submitted,

Michael and Judith Miller
Louis and Helen Apodaca
Helen Vowles

L.A. Private Eyes Geotechnical Engineers
A Division of Prestige Engineering, Inc.

1373 Westwood Boulevard, Suite A, Los Angeles, California 90024
Toll Free: (866) GEO-ENGR or (866) 436-3647
Web Site: www.geo-engineer.com
Fax: (310) 268-5501

Mr. & Mrs. Louis Apodaca,
Mrs. Judith Miller, & Mrs. Barbara Vowles
4052 A, B, & C Lafayette Place
Culver City, California 90232

April 1, 2008
Job No. 03JM08

Subject: **Limited Geotechnical Assessment**
Existing Residences
4052 A, B, & C Lafayette Place
Culver City, California

Ladies & Gentlemen:

In accordance with your request, on March 25, 2008, we performed a limited geotechnical assessment of the subject properties in your presence to visually evaluate the impact of a proposed development planned to be the northwest of your properties from a geotechnical viewpoint. Copies of selected photographs taken during the assessment are attached with this submittal.

LIST OF REFERENCES

The following publications and references were reviewed as part of this assessment. Information obtained after reviewing these documents is summarized within the text of this report.

1. Technical Appendix to the Safety Element of the Los Angeles County General Plan, Volume 2, Department of Regional Planning, County of Los Angeles, January 1990.

2. Seismic Hazard Zones Maps, Venice Quadrangle, Department of Conservation, Division of Mines and Geology, Official Map released February 1, 1998.

3. Seismic Hazard Evaluation of the Venice 7.5-Minute Quadrangle, Los Angeles County, California, Department Of Conservation, Division of Mines and Geology, Open-File Report 98-05-1998.

4. Excavation and Grading Code Administration, Inspection, and Enforcement, Michael Scullin-1983.

5. Evaluating Earthquake Hazards in the Los Angeles Region, U.S. Geological Survey Paper 1360, J. I. Ziony-1985.

In addition, at the time of inspection, you provided us with the following:

A. Preliminary Soil Investigation, Proposed Apartment Complex, Lots 3, 20, & 21, Tract 1775, 4043 Irving Place, Culver City, CA, Prepared for Metro Real Estates & Development by Hu Associates, Inc. (HA) on April 17, 2007, Job No. HA-5887-1.

Pertinent information based on our discussions with you at the time of inspection and after reviewing the above referenced documents is summarized below.

EXITING CONDITIONS

- The subject properties consist of 3 two-story historic buildings that were constructed in 1923. For discussion purposes and to be consistent with the directions discussed in Reference A, we have assumed that the proposed construction is located to the west of the subject properties. The existing buildings consist of reinforced concrete structures that are supported on shallow conventional foundations; basements do not underlie the subject properties. It is our understanding that the free-standing concrete wall noted to the west of the existing buildings has been constructed right on the property line. The existing wall is leaning excessively in some areas such as 4052A & B Lafayette Place.

- A newer concrete block wall has been constructed behind the free-standing wall along your property line. The newer wall is right behind the free standing wall along the westerly property line at 4052C Lafayette while it is further away to the west of 4052A Lafayette. A room addition has been constructed to the southwest of Building 4052A by enclosing the narrow walkway to the west of the building with wooden walls that rest on the free-standing wall along the westerly property line. Existing cracks were noted at the southwesterly exterior corner of the free standing walls supporting this addition.

- The buildings are generally within 3 feet of the free-standing wall along the property line wall. The walkways in the westerly side yards of the existing properties are paved with brick pavers except in 4052C Lafayette where tiles have been laid down. You indicated that you have lived in the properties for a long time and have not experienced major problems. Other than a few old cracks, major cracks were not noted in the hardscaped areas around the buildings.

- It is our understanding that the subject buildings sustained some damage due to the 1994 Northridge earthquake; the extent of damage was limited to a few cracks. A few cracks were noted in the tile work at the entrance to 4052C Lafayette Place; it is our understanding that these cracks occurred due to vibrations due to demolition of a thick concrete loading dock that was associated with a newspaper facility which used to occupy the adjoining construction site before it was paved for surface parking.

- The interior floors are covered with hardwood, tile, linoleum, and carpeting. Where visible, the floor tiles for the most part were free of major cracks. We checked the levelness of all three structures by performing a floor-level survey on portions of their lower level interior floors using a water-level (manometer). Based on our measurements, the lower level floors are generally level; the results of our measurements are retained in our files for future reference.

PROPOSED CONSTRUCTION

Based on our discussions with you and review of Reference A, it is our understanding that it is planned to build a three to four story structure that is underlain by a 1 level deep subterranean garage. The planned development is in its initial design stages; other than a few architectural drawings, detailed plans for construction of the site have not apparently been submitted to the City of Culver City for review as of this writing. The finished floor of the structure (above the subterranean level) will be some 4 feet above the existing grades. Excavations on the order of 12 feet, right along the westerly property line, are planned for construction of the proposed basement. Based on review of HA report (Ref. A), the site soils are firm and capable of supporting the planned development on conventional foundations.

CONCLUSIONS AND RECOMMENDATIONS

Based on our site observations and review of Reference A, it is our opinion that due to the close proximity of the existing structures to the property line, construction of the proposed development with a subterranean garage is going to be difficult. As indicated by HA, due to close proximity of the existing properties to the proposed construction and the sandy nature of the subgrade soils, shoring should be used for support of temporary excavations for construction of the proposed subterranean garage. Presented below is a list of a few measures which would lessen the impact of the proposed construction on the existing buildings.

Depending on the adequacy of design employed for the proposed shoring and retaining walls system and procedures used to install the shoring and retaining wall system, the exiting structures at 4052 A, B, & C Lafayette Place may be affected. Depending on the location of the proposed excavation line relative to the westerly property line, there is a high likelihood that even employing a shoring system the free-standing concrete wall may experience further damage and require removal and replacement. Also the room addition to the southwest of 4052A Lafayette place may need to be underpinned using the soldier piles planned for the proposed shoring system.

HA indicates that the shoring system may be designed as a cantilevered system if lateral deflection of the excavation tops is not critical. Obviously, this type of design is not desirable and in order to reduce the potential for damage to your properties, the shoring should be designed for a braced system. Such shoring system should be designed for the same pressures as

the permanent basement retaining walls which in this case will be equivalent to a trapezoidal pressure distribution of 32H where H is the depth of excavation in feet or an at-rest lateral pressure of 60 pounds per cubic foot (pcf), whichever is greater.

These pressures assume that the basement walls will be equipped with a permanent drainage system to prevent build up of hydrostatic water pressure behind them. Otherwise, the walls would have to be designed for higher pressures so as to reduce the potential for their excessive deflection. A perforated pipe and a gravel chimney or a Mirafi or Miradrain to a location such as a sump pump to be discharged to the street as the grades at the base of the garage walls are well below the existing grades. During periods of inclement weather, as recommended by HA, temporary measures should be undertaken to adequately direct surface runoff from all sources away from excavations. As recommended, adequate pumps and sumps should be provided to handle any flow into the excavations and to prevent flooding, ponding, and inundation of the site. HA recommends that no excavation shall be made during unfavorable weather.

As indicated by HA, in addition to the lateral earth pressure discussed above, the shoring and the proposed basement walls shall also be designed for the additional lateral surcharge pressures imposed by the foundations of the existing structures. The surcharge pressures due to the existing concrete structures will be higher than conventional wood-framed structures constructed nowadays. No vertical excavations are to be made next to existing structures or where limited by property lines. Wood lagging must be pressure treated for contact with soils if the lagging is to remain after construction of the subterranean retaining walls. HA indicated that excavations should be in accordance with all applicable CAL/OSHA requirements for safety of workers and protection of the adjoining properties.

HA indicates that the braced shoring system may be comprised of braced sheet pile walls, braced soldier pile system or other system approved by them. The problem with the sheet pile system is that it requires a vibratory hammer to drive it below the planned excavation depth; excessive vibration could be damaging to the existing structures as they are very close to the proposed excavation. The shoring system may be designed as a braced system if it is stabilized using tiebacks, rakers, or slot-cutting procedures. It is our understanding that you do not desire any tiebacks to be installed underneath your properties.

With a raker system, diagonal steel beams would be used to stabilize the shoring system next to the existing structures. With the slot-cutting procedures, a bank of soil could be used to provide lateral support for the shoring system. With this method, slots are excavated in the earth embankment stabilizing the shoring system in an A-B-C pattern; all the A slots are dug out to allow construction of that portion of the basement walls before the B slots and so on.

The shoring installation should be continuously observed and monitored by the soil engineer of record for the proposed construction (HA). Ref. A indicates that monitoring of the movements of the shoring system and of the ground surface behind the shoring is recommended in areas where adjacent structures may be affected by the excavation. The monitoring should consist of survey points on top of the soldier piles on a daily basis and/or installation of inclinometers to be installed behind the shoring system. Inclinometers measure the lateral deflection of the retained

earth mass and the existing structures. The monitoring should be started before the excavation of the shoring system has begun and should continue until the basement walls have been constructed and braced.

Before start of construction, a video and photographic survey of the exterior as well as the interior of the existing structures should be made. The purpose of this documentation is to catalog a list of the existing damage to be compared to any new damage due to the proposed construction. In addition to the monitoring program discussed above, a vibration monitoring program should be undertaken since the existing buildings are sensitive to vibrations due to construction equipment as noted previously during removal of the loading dock of the newspaper facility. What is missing from the HA report is the measures that are to be undertaken in case of excessive movement of the shoring system. Normally in such cases, the excavation is stopped while additional measures are undertaken to reinforce the shoring system so as to reduce the potential for further movement of the existing structures.

HA indicates that successful performance of the proposed construction and safeguarding of the existing structures is highly dependent on implementation of adequate drainage measures such as surface drains and swales to prevent ponding of water. HA indicates that construction of planters immediately adjacent to the proposed structure to be avoided unless provisions for drainage such as catch basins and drains are made. Overwatering of the landscaped areas should be avoided. HA indicates that the contractor shall supervise and direct the construction activities and shall be responsible for all construction means, methods, techniques, sequences, and procedures. The contractor will be solely and completely responsible for conditions at the job site including safety of all persons and property during the performance of the work.

The shoring system that will presumably be designed by a shoring structural engineer should be reviewed by HA and us to ensure adherence to the recommendations discussed here and in Reference A. In addition, we request that a copy of the shoring plans as well as the basement walls to be provided us for review. We should be retained to provide intermittent observations during construction to observe the site conditions and verify that the proposed construction is being performed in accordance with the approved plans.

LIMITATIONS

Our work is limited to a visual assessment of the existing conditions at the site. The findings discussed above are not intended to provide you with a complete geotechnical history of the site or its improvements, as L.A. Private Eyes was not contracted to research compliance with code requirements or existence of any permits, geotechnical documents, or certificates of occupancy for this structure with any agencies. Such documents may include prior geotechnical reports, permits, and plans that may detail the geotechnical or geological history of the site and/or its vicinity that can not readily be obtained in a visual assessment of the site. If you wish us to research and review such documents, we can provide this service for an additional cost. However, if you obtain any such documents, we will be more than happy to review them for you at no additional cost.

It is important to recognize that our assessment is not intended to identify every crack or problem at the site but to identify general trends to point at some of the more obvious conditions that influence the site. As such, defects may exist at the site that are not discussed in this report especially if they are hidden and are concealed by earth materials, vegetation, floor covering, or structures such as retaining walls. If such defects are present, they are beyond the scope of this assessment. To identify such defects, a detailed subsurface investigation consisting of drilling borings or test pits at the site may be required. A sub-surface investigation was not performed as part of this assessment. Subsurface investigation and geologic mapping may result in differing conclusions than those listed above. In addition, leaking sewer, water, or plumbing lines, which are not directly observable, may adversely affect the geologic conditions at the site. Man-made or natural alterations at the site or adjacent to it such as excavations, strong storms, excessive rains, changes in groundwater characteristics, may also affect the geologic stability of the property and its improvements.

The findings presented in this report are only applicable at the time of the assessment. Future site conditions may vary from those observed at the time of our assessment. This report has been prepared in a manner consistent with the level of care and skill ordinarily exercised by other geotechnical engineers practicing in the same locality under similar conditions. With time, additional findings or new technologies may alter the standard of care for which we cannot be held responsible. This report should not be confused with a subsurface investigation that is usually required by the governing agencies for construction of new improvements or repair of the existing ones at the site. Our report should not be confused with a property survey either as we do not establish lot lines or prepare topographic maps; for that purpose, you should contact a licensed land surveyor.

This report is not intended to express or imply a home warranty or guarantee of any kind. We do not guarantee the work of the developer, contractors, or other consultants that may have performed work at the site. Therefore, no guarantee or warranty of any kind is expressed or implied pertaining to the future performance of the site or the structure thereon in any respect. This report is not a complete investigation for code compliance or public records that might affect this property. This assessment report should not be used as fulfillment of the disclosure requirements of California Civil Code Section 1102.6, nor is it to be used as a substitute disclosure as authorized by section 1102.4.

This report is prepared for the exclusive use of our client and authorized agents and should not be considered transferable to third parties without our prior authorization. Prior to use by others, L.A. Private Eyes Geotechnical Engineers should revisit the site and review the applicability of this report. Additional work may be required to update this report prior to its use by others.

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