TABLE I

FIELD DENSITY TESTS

Test	Date	Location	Elev.	Moisture Content (%)	Dry Unit Weight (pcf)	Soil Type	Max. Density	Percent Comp.
1	2/10/89	Wall Backfill	88	11.2	128.1	A	134	95
2	"	"	88	11.3	127.0	A	134	95
3	2/14/89	"	90	10.7	126.9.	A	134	95
4	"	"	91	11.1	124.9	A	134	93
5	11/27/89	"	93	10.1	126.5	A	134	94
6	"	"	94	10.5	122.9	A	134	92

KOVACS-BYER AND ASSOCIATES, INC.

ENGINEER'S CERTIFICATE OF COMPLIANCE
FOR
COMPACTED EARTH FILLS

KB 12163-F

DESCRIPTION: "Compaction Report, Retaining Wall Backfill, 2350 San Marco Drive, Los Angeles, California"

PROPERTY OWNER'S NAME: Mr. Ivan Slavov
1825 Laurel Canyon Boulevard
Los Angeles, California 90046

DATE WORK STARTED ON PROJECT: February 10, 1989

DATE WORK WAS COMPLETED: November 27, 1989

DATE OF THIS CERTIFICATION: November 29, 1989

TO THE SUPERINTENDENT OF BUILDING:

*I hereby certify that I have personally inspected and tested the placing of compacted earth fill on the above described property, and on the basis of these inspections and tests, it is my opinion that the same was placed in conformity with the requirements of the Building Code of the City of Los Angeles.

G.S. KOVACS
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT P. WEIGLER
No. 33744
Exp. 6/30/90
CIVIL
STATE OF CALIFORNIA

*For the purpose of this Certificate, to "have personally inspected and tested" shall include inspection and testing performed by any person responsible to the licensed engineer signing this Certificate. Where the inspection and testing of all or part of the work above is delegated, full responsibility shall be assumed by the licensed engineer whose signature is affixed thereon.

Business and Professions Code, Ch.229, Sec.3. 6735.5. The use of the word "certify" or "certification" by a registered professional engineer in the practice of professional engineering or landsurveying constitutes an expression of professional opinion regarding those facts or findings which are the subject of the certification, and does not constitute a warranty or guarantee,either expressed or implied.

3580070072

15045

KOVACS-BYER AND ASSOCIATES, INC.

ENGINEER'S CERTIFICATE OF COMPLIANCE
FOR
COMPACTED EARTH FILLS

TR 5755 LT 24

KB 12163-F

DESCRIPTION: "Compaction Report, Retaining Wall Backfill, 2350 San Marco Drive, Los Angeles, California"

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G.S. KOVACS
Geotechnical Engineer

REGISTERED PROFESSIONAL ENGINEER
ROBERT P. WEIGLER
No. 33744
Exp. 6-30-91
CIVIL
STATE OF CALIFORNIA

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3580700073

ENGINEERING GEOLOGY / SOILS & FOUNDATION ENGINEERING

11430 VENTURA BLVD., STUDIO CITY, CALIFORNIA 91604-3182 (818) 980-0825 (213) 877-2757

#15043

CITY OF LOS ANGELES
DEPARTMENT OF BUILDING AND SAFETY
GRADING INSPECTOR'S COMPACTION RECORD

LA 12102-88 | 153-187 | _____
Permit Number | Dist. Map Number | Board File Number

Tract 5151 * Lot(s) 21

Street Location 2350 San Marco Dr.

Hillside yes Flat Hillside _____ Flatland _____

1. Field Compaction Approved yes

2. Field Compaction Not Approved _____

3. _____

4. _____

5. _____

Fill Lot No.'s 21
(All lots not listed above are considered to be cut or natural.)

Buttress Fill Lot No.'s _____

Required retaining wall on Lot No.'s _____

Lot No.'s having fill over 100 ft. deep _____

_____, to be held until _____

Sub-drain termination Lot No.'s _____

Additional Remarks:

1- Recommend Approval

Inspector Roy Daniels Dist. LA

Date 12-8-89

LADBS B-163 (R6.79)

B&S 5-17 (R&/00)

City of Los Angeles
DEPARTMENT OF BUILDING AND SAFETY
Grading Division

District VA | Log No. 74761
ADDRESS APPROVED | Signature/Date

APPLICATION FOR REVIEW OF TECHNICAL REPORTS AND IMPORT-EXPORT ROUTES

CD 13
JUL 15

INSTRUCTIONS

A. Address all communications to the Grading Division, Department of Building and Safety, Room 460A, City Hall, Los Angeles, California 90012-4869. Phone (Area Code 213) 485-3435.
B. Obtain address approval from the Department of Public Works prior to submittal.
C. Submit 2 copies (4 for fault study zone) of reports and 3 copies of application with items (1) through (10) completed.
D. Check should be made to the Department of Building and Safety.

Note: Please Print

(1) LEGAL DESCRIPTION
Tract 5155
Blk _____ Lots 21

(2) PROJECT ADDRESS 2350 SAN MARCO DRIVE

(3) OWNER IVAN SLAVOV
Address 1825 LAUREL CANYON BLVD
City LOS ANGELES Zip 90046
Phone (Daytime) (213) 654-2172

(4) APPLICANT IVAN SLAVOV
Address 1825 LAUREL CANYON BLVD
City LOS ANGELES, CA
Phone (Daytime) (213) 654-2172 Zip 90046

(5) Report(s) Prepared by KOVACS-BYER & ASSOC., INC

(6) Report Date(s) NOVEMBER 1 '88

(7) Status of project: ☐ Proposed ☒ Under Construction ☐ Storm Damage

(8) Previous site reports? Yes. If yes, give date(s) of report(s) and name of company(s) who prepared report(s).
FEB 22, 1988; KOVACS-BYER & ASSOC., INC.

(9) Previous Department actions? Yes. If yes, please give dates and attach a copy to expedite processing.
Dates MAY 11, 1988

(10) Signature of applicant Ivan Slavov Position OWNER

(DEPARTMENT USE ONLY)

REVIEW REQUESTED & PROCESSING	FEES	REVIEW REQUESTED & PROCESSING	FEES
☐ Foundation Investigation		☐ Seismology report per 91.2305(d)	
☐ Soils Engineering		☐ Environmental Assessment	
☐ Geology		☐ Import-Export Route	
☐ Combined Soils Engr. & Geol.		☐ Division of Land	
☐ Supplemental		Sub-total	54.
☑ Combined Supplemental	54.00	One-Stop Surcharge	1.00

THE REPORT IS ☒ APPROVED WITH CONDITIONS ☐ NOT APPROVED TOTAL FEE 55.0

DEPARTMENT ACTION BY: _____ For Geology Date _____ For Soils & Foundation 12-20-88 Date

☒ Conditions of Approval ☐ Reasons for Non-Approval ☐ See Attached letter ☐ Supplemental Sheet ____ Attache

(1) Caissons may be used in lieu of drilled friction piles recommended in the previous report. They may be designed as recommended.

(2) All conditions of approval in the Department Letter dated May 11, 1988 shall apply.

(Continued Over)

C81 (Cashier Use Only)

DEPARTMENT USE ONLY
Fee Due 55.00
Fee Verified 11-9-88
Date

DISTRIBUTION
☒ Owner
~~☐ Applicant~~
☐ _____
☒ Soil Engineer
☐ Geologist
☐ Board files
☒ Tract file
☐ LA Plan Check ☐ VN ☐ WLA ☐ SP/WLA
☒ LA Inspection ☐ VN ☐ WLA ☐ SP/WLA ☐ BM ☐ BI

7961

RECEIVED
NOV 0 8 1988
Ans'd.....

Kovacs-Byer and Associates Inc.

November 1, 1988
KB 12163-F

Ivan Slavov
1825 Laurel Canyon Boulevard
Los Angeles, California 90046

Subject

Caisson Recommendations
Lot 21, Tract 5155
2350 San Marco Drive
Los Angeles California

References: Report by Kovacs-Byer and Associates, Inc.: Preliminary Geologic and Soils Engineering Exploration, KB 11317-G, February 22, 1988.

City of Los Angeles Department of Building and Safety Review Letter dated May 11, 1988.

Dear Mr. Slavov:

As requested, we are providing recommendations for design of end-bearing caissons to support portions of the proposed residence. Due to the hardness of the cemented bedrock, it is not considered feasible to drill friction piles as previously recommended.

A caisson and grade beam foundation system may be used to support portions of the proposed residence. Caissons should be a minimum of three feet into bedrock and 24 inches in diameter to facilitate cleanout. Caissons may be designed for a bearing value of 6,000 pounds per square foot. The base of all caisson excavations should be cleaned of all loose material. All caissons should be tied in two horizontal directions with grade beams. Caissons require that the base be hand cleaned by a laborer and observed by the geologist. It is important to have casing available to prevent the caisson shafts from caving.

The existing fill and soil on the site are subject to downhill creep. Caisson shafts are subject to lateral loads due to the creep forces. Caisson shafts should be designed for a lateral load of 1,000 pounds per linear foot for each foot of shaft exposed to the existing fill and soil.

The bearing value indicated above is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading which includes the effects of wind or seismic forces. Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure within the bedrock. An allowable coefficient of friction of 0.6 may be used with the dead load forces.

Passive earth pressure may be computed as an equivalent fluid having a density of 1,000 pounds per cubic foot, with a maximum earth pressure of 6,000 pounds per square foot. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. For design of isolated caissons, the allowable passive earth pressure may be increased by 100 percent. Caissons which are spaced more than 2-1/2 caisson diameters on center may be considered isolated.

All caissons should be founded to a depth that satisfies condition #25 of the City of Los Angeles review letter dated May 11, 1988.

Should you have any questions, please call.

Respectfully submitted,

JOHN W. BYER
E.G. 883

ROBERT I. ZWEIGLER
R.C.E. 33744

REGISTERED PROFESSIONAL ENGINEER
ROBERT I. ZWEIGLER
No. 33744
CIVIL
STATE OF CALIFORNIA

JAI:JWB:RIZ:mjc

xc: (2) Addressee
(4) John Morris, Structural Engineer
The A.E.P. Partnership

CITY OF LOS ANGELES
CALIFORNIA

TOM BRADLEY
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
411, CITY HALL
LOS ANGELES, CA 90012-4869

FRANK V. KROEGER
GENERAL MANAGER

WARREN V. O'BRIEN
EXECUTIVE OFFICER

DEPUTY GENERAL MANAGERS

K. ROBERT AYERS
ROBERT J. PICOTT
EARL SCHWARTZ
TIMOTHY TAYLOR

May 11, 1988

Log # 3731

Ivan Slavov
1825 Laurel Canyon Blvd.
Los Angeles, CA 90046

TRACT: 5155
LOT: 21
LOCATION: 2350 SAN MARCO DRIVE

Geological and Soil Engineering Report No. 11317-G, dated February 22, 1988, prepared by Kovacs-Byer and Associates, Incorporated.

The report concerning a downhill frame residence over a slope exceeding 2:1 in gradient has been reviewed by the Grading Division of the Department of Building and Safety. According to the report, a portion of the site is covered with a loose fill subject to creep, caving, and presumed unstable. The fill between the house and street and downslope of the proposed building is recommended for removal or removal and recompaction. However, plans were not submitted which includes site grading to remove the fill. A private sewage system is recommended for the lot.

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

1. The geologist and soils engineer shall review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans which clearly indicates that the geologist and soils engineer have reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports. The plans shall clearly show the extent of grading necessary to remove all fill from the site, outside of the building area.

2. All unstable fill and failing concrete walls shall be removed from the site.

3. All graded slopes shall be no steeper than 2:1.

4. All recommendations of the report which are in addition to or more restrictive than the conditions contained herein shall be incorporated into the plans.

5. All applicable requirements of Rule of General Application 2-84 (RGA 2-84) shall be incorporated into the construction plans.

6. If the grading permit involves the import or export of more than 1000 cubic yards of earth materials, and is in the grading hillside area, approval is required by the Board of Building and Safety. Application for approval of the import-export route should be filed with the Grading Division. Processing time of this application is approximately six weeks.

7. Suitable arrangements shall be made with the Department of Public Works for the proposed removal of support and/or retaining of slopes adjoining the public way.

8. The applicant is advised that recommendations contained herein for excavated banks may also be subject to the regulations of the Department of Public Works of the City of Los Angeles. Construction of trenches or excavations which are 5 feet or deeper and into which a person is required to descend requires a permit from the State Division of Industrial Safety prior to obtaining a grading permit.

9. Site grading shall be completed before the start of the rainy season.

10. A grading permit shall be secured and a grading bond posted.

11. A copy of the subject and appropriate referenced reports and this approval letter shall be attached to the District Office and field set of plans. Submit one copy of the above reports to the Building Department Plan Checker prior to issuance of the permit.

12. Secure the written consent from all owners upon whose property the proposed grading is to extend.

13. San Marcos Drive is a partially improved street that may require improvements if such are the findings of the City Engineer.

14. The consulting geologist shall periodically inspect the grading and upon completion submit a final report stating that the completed work complies with his recommendations. Geological data shall be obtained from grading exposures, particularly at back slope cuts for fills and buttress and on cut surfaces. This data shall be presented on a final geological map and as-graded plan.

15. Any unsupported continuous joint or foliation planes, either existing or exposed by grading, shall be removed or supported by a designed retaining wall or buttress fill.

16. All slide, slump and creep debris shall be removed unless approved individually by the geologist, soils engineer and the Department of Building and Safety.

17. All existing uncertified fill and/or creep prone soils shall be removed and recompacted under the geotechnical supervision of the soils engineer.

18. Subdrains must be installed in all natural drainage courses within which compacted fill is to be placed.

19. Both the geologist and the soils engineer shall inspect and approve all fill and subdrain placement areas prior to placing fill. Both consultants shall include in their final reports a certification of the adequacy of the foundation material to support the fill without undue settlement and/or consolidation.

20. All graded slopes are subject to erosion and shall be planted and an irrigation system installed conforming to Section 91.7007.

21. All roof and pad drainage shall be conducted to the street in an acceptable manner.

22. All deck drainage shall be collected and conducted to an approved location in a non-erosive device.

23. Wall-surface drainage shall be collected by an open-channel concrete drain along the foundation footing line.

24. The design of the subdrainage system required to prevent possible hydrostatic pressure behind raised grade beams shall be approved by the Soil Engineer prior to issuance of the building permit. Installation of the subdrainage system shall be inspected and approved by the Soil Engineer.

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24. The design of the subdrainage system required to prevent possible hydrostatic pressure behind raised grade beams shall be approved by the Soil Engineer prior to issuance of the building permit. Installation of the subdrainage system shall be inspected and approved by the Soil Engineer.

25. Footings adjacent to a descending slope steeper than 3:1 in gradient shall be located a distance of one-third the vertical height of the slope with a minimum of 5 feet and a maximum of 40 feet measured horizontally from the face of the bedrock slope.

26. The consultants shall inspect the excavations for the footings to determine that they are founded in the recommended strata before calling the Department for footing inspection.

27. All friction pile or caisson drilling and installation shall be performed under the continuous inspection and approval of the Foundation Engineer.

28. A supplemental report shall be submitted to the Grading Division containing recommendations for shoring, underpinning, and sequence of construction in the event that any excavation would remove lateral support to the public way or adjacent structures. A plot plan showing the type, number of stories, and location or absence of any structures adjacent to the excavation shall be part of the excavation plans.

29. No temporary excavations shall be made in loose fill subject to caving without the specific approval of OSHA and the Department. All other temporary excavations shall be made in accordance with the recommendations of the consultants.

30. Pile and/or caisson foundation ties are required by Code Section 91.2312(j)3B. Exceptions and modification to this requirement are provided in Rule of General Application 662.

31. Basement excavations shall be performed under the continuous inspection and approval of the Soil Engineer. A supplemental report may be submitted to the Department for approval of an alternate sequence of inspections, in lieu of continuous inspection.

32. The proposed seepage pit shall be located in the area recommended by the consultants as shown on the geologic map and critical cross-section. Deviation from the recommended location area will require written re-evaluation by the consultants.

33. The residence shall be connected to the public sewer system immediately upon its availability. Upon conversion to the public sewer system, the private sewage disposal system shall be abated in a manner acceptable to the Department.

34. A drainage easement will be required for the conductance of all deck, wall, and yard drainage to the lower street.

JAMES D. KAPRIELIAN
Chief of Grading Division

J. W. COBARRUBIAS
Engineering Geologist III

JAY SHIH
Structural Engineering Associate

JWC/JS:gas
TGRSGL051188G/2GR
(213) 485-2160

cc: Kovacs-Byer
LA District Office

JM- LA (2) 3731

City of Los Angeles
DEPARTMENT OF BUILDING AND SAFETY
Grading Division

Date 153A187 Log No.
ADDRESS APPROVED — [signature] 3-1-88
Signature Date

APPLICATION FOR REVIEW OF TECHNICAL REPORTS AND IMPORT-EXPORT ROUTES

INSTRUCTIONS

A. Address all communications to the Grading Division, Department of Building and Safety, Room 460A, City Hall, Los Angeles, California 90012-4869. Phone (Area Code 213) 485-3435.
B. Obtain address approval from the Department of Public Works prior to submittal.
C. Submit 2 copies (4 for fault study zone) of reports and 3 copies of application with items (1) through (10) completed.
D. Check should be made to the Department of Building and Safety.

Note: Please Print

(1) LEGAL DESCRIPTION
Tract 5155
Blk ____ Lots 21

(2) PROJECT ADDRESS 2350 San Marco DR.

(3) OWNER IVAN SLAVOV
Address 1825 LAUREL CYN BLVD
City LOS ANGELES Zip 90046
Phone (Daytime) 213 654-2172

(4) APPLICANT IVAN SLAVOV
Address 1825 LAUREL CYN BLVD
City LOS ANGELES
Phone (Daytime) 213/654-2172 Zip 90046

(5) Report(s) Prepared by Kovacs-Byrd

(6) Report Date(s) 02-22-1988

(7) Status of project: ☒ Proposed ☐ Under Construction ☐ Storm Damage

(8) Previous site reports? No If yes, give date(s) of report(s) and name of company(s) who prepared report(s).

(9) Previous Department actions? ~~No~~ If yes, please give dates and attach a copy to expedite processing.
Dates

(10) Signature of applicant [signature] Position owner

(DEPARTMENT USE ONLY)

REVIEW REQUESTED & PROCESSING	FEES	REVIEW REQUESTED & PROCESSING	FEES
☐ Foundation Investigation		☐ Seismology report per 91.2305(d)	
☐ Soils Engineering		☐ Environmental Assessment	
☐ Geology		☐ Import-Export Route	
☒ Combined Soils Engr. & Geol.	276.00	☐ Division of Land	
☐ Supplemental		Sub-total	276.00
☐ Combined Supplemental		One-Stop Surcharge	5.52
		TOTAL FEE	281.52

THE REPORT IS ☐ APPROVED WITH CONDITIONS ☐ NOT APPROVED

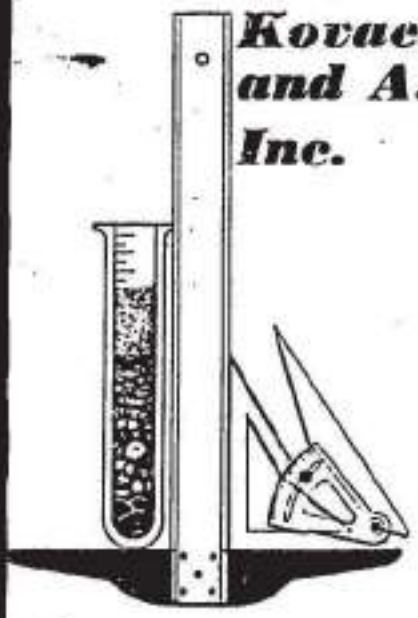
DEPARTMENT ACTION BY: _____ For Geology _____ Date _____ For Soils & Foundation _____ Date

☐ Conditions of Approval ☐ Reasons for Non-Approval ☐ See Attached letter ☐ Supplemental Sheet ____ Attached

(Continued Over)

C 276.00 GR-R
C 5.52 OSS
F6940 5 03/01/88 281.52 CHTO
(Cashier Use Only)

DEPARTMENT USE ONLY 281.52 | DISTRIBUTION ☐ Soil Engineer



Kovacs-Byer and Associates Inc.

PRELIMINARY GEOLOGIC AND SOILS ENGINEERING EXPLORATION

Proposed Single-Family Residence
Lot 21, Tract 5155
Adjacent to 2338 San Marco Drive
Los Angeles, California

for

MR. SPENCER SEAL
KB 11317-G February 22, 1988

PRELIMINARY GEOLOGIC AND SOILS

ENGINEERING EXPLORATION

PROPOSED SINGLE FAMILY RESIDENCE

LOT 21, TRACT 5155

ADJACENT TO 2338 SAN MARCO DRIVE

LOS ANGELES, CALIFORNIA

INTRODUCTION

The following report summarizes findings of our preliminary geologic and soils engineering exploration performed on the site, the purpose of which was to evaluate the nature, distribution, engineering properties, relative stability, and geologic structure of the earth materials underlying the site with respect to future construction of a multi-story, single family residence.

Intent

It is the intent of this report to aid in the design and completion of the proposed project. Implementation of the "Conclusions and Recommendations" section of this report is intended to reduce certain risks associated with construction projects. The professional opinions and geotechnical advice contained in this report

are subject to the general conditions described in the "Notice" section of this report.

EXPLORATION

The scope of our exploration is based on the Preliminary Plans prepared by Ivan Slavov. It is limited to the areas of the proposed project as shown on the enclosed Geologic Map and Cross Sections. The exploration also included the adjacent lot to the north (Lot 20). Separate reports have been prepared for each of the lots (KB 11316-G and KB 11317-G).

The field exploration was conducted in December, 1987 and January, 1988 with the aid of hand labor, which was provided by the client, and field geologic mapping. It included observing 10 test pits on the two lots, to depths of 2.5 to 8 feet, mapping feet, mapping outcrops adjacent to and within the property, and obtaining samples. Downhole observation of the earth materials encountered was performed by the project geologist.

Office tasks included laboratory testing, engineering analysis, and preparation of this report. Laboratory test results are shown on Plates B-1 and B-2. The test pits are logged on Table I. Surface geologic conditions and the location of the test pits are

shown on the enclosed Geologic Map. Subsurface distribution of the earth materials, projected geologic structure, and the proposed project are shown on Sections A through D.

Available geologic and soils engineering reports for the area were reviewed, including Kovacs-Byer and Associates reports:

KB 10160-G, "Preliminary Geologic and Soils Engineering Exploration, Lots 19, 20 and 21, Tract 7456, between 6407 and 6445 Deep Dell Place, Los Angeles, California", dated December 3, 1986.

PROPOSED PROJECT

Information concerning the proposed project was provided by Ivan Slavov. Also, the Topographic Map prepared by Edward A. Hynes, licensed land surveyor, dated January 1988, was used as a guide for the field exploration. It is proposed to construct a three-story single family residence over the descending slope. Remedial grading may be utilized in order to improve the city street along the length of the lot. Retaining walls will be necessary along the street to retain the street fill. No easement is available to reach the sewer line on Holly Drive to the east, therefore, a private sewerage disposal system is planned to service the proposed residence.

Formal plans have not been prepared and await the conclusions and recommendations of this exploration.

SITE DESCRIPTION

The subject property consists of a vacant hillside lot on the southern flank of the eastern Santa Monica Mountains. The subject property is located on the eastern flank of a northerly trending ridge, approximately 1/4 mile south of the Hollywood Reservoir and approximately 1/2 mile east of the Hollywood Bowl, along San Marco Drive. Total relief from San Marco Drive to Holly Drive is on the order of 50 to 75 feet. The site descends east of San Marco Drive at an average gradient of 1 1/2:1 to the adjacent residence to the east. A concrete retaining wall is present along the northwestern portion of the site along San Marco Drive. A secondary canyon occurs on the southern portion of the lot. A steep cut is present along the eastern portion of the property and offsite which is partially retained by gunite and distressed retaining walls.

Past grading has consisted of cutting to create the street, and placing fill within the secondary canyon and along the downhill side of the street. A small dwelling was present along the south eastern portion of the property on the existing level fill pad as

shown in the 1952 air photos and the enclosed vicinity map.

Vegetation on the site consists of natural and domestic shrubs and trees. Drainage is by sheetflow runoff down the existing contours of the land and partially concentrated down the secondary canyon. Several single family residences are present along San Marco Drive, however, the lots to the west and north remain vacant. No seeps, springs or groundwater were encountered during exploration.

EARTH MATERIALS

Fill

Fill generated during the grading of San Marco Drive was placed in the secondary canyon. A thick deposit of fill is present along the canyon axis. The test pits did not penetrate through the fill in this area due to the caving of the fill. The thickness of the fill was estimated from cross section projections, to be about 10 feet, but thicker sections of fill are possible. The fill consists of gravelly sand and is generally loose and dry. The base of the fill consists of clasts of rock and is prone to caving.

Soil

A thin layer of soil was found overlying the bedrock in areas devoid of fill and occasionally underlying the fill. The soil consists of silty sand which is brown, slightly moist and medium dense. The maximum thickness of soil encountered is 2.5 feet in the vicinity of Test Pit 1.

Alluvium

Alluvium is present offsite to the west along the canyon axis. Due to the steepness and outcrops of basalt on the canyon walls on the subject property, it is unlikely that the alluvium is very thick on the subject property.

Bedrock

Bedrock underlying the site, exposed in the roadcut and in the test pits, consists mostly of basalt of the Middle Miocene Topanga Formation as mapped by Hoots (1930). The basalt is mottled grey, brown and black, slightly fractured to fractured, moderately hard to very hard and locally jointed.

GEOLOGIC STRUCTURE

The bedrock described is common to this area of the Santa Monica Mountains. The bedrock is generally massive and lacks significant and continuous structural planes.

Joint planes mapped strike randomly and dip moderately to steeply in various directions. Several shear planes are present along the roadcut as shown on the Geologic Map. Shear planes mapped strike east-west and dip between 70 to 83 degrees to the south. Foliation is discernible on the basalt outcrops on the roadcut. Foliation strikes north-south and dips about 40 degrees to the east.

The generally massive nature of the bedrock is favorable for the gross stability of the site and proposed project. Joint planes are randomly oriented and not continuous. Foliation is not well developed and dips at an angle steeper than the slope.

SEISMIC CONDITIONS

The site is not located within any California Special Studies Zone and no known active fault crosses the site. The nearest known active fault to the subject property is the Newport-

Inglewood Fault located approximately 5 miles to the southwest.

The subject property and proposed structures will be subject to ground shaking in the event of earthquake. Secondary effects such as earthquake induced landsliding, rupture, and liquefaction are not likely to occur on the site.

SLOPE STABILITY

Gross Stability

Based upon the enclosed calculations, it is reasonable to assume that the existing slope is grossly stable.

Calculations are based upon shear tests of samples believed to represent the weakest material encountered during exploration. The slope angle used is a conservative representation of the subject property. Therefore, all other slopes of flatter gradient or lesser heights are considered stable.

Surficial Stability

The existing fill is considered to be surficially unstable. Recommendations are presented in the "Conclusions and

Recommendation" section of this report in order to mitigate this problem. Based upon the enclosed calculations, it is reasonable to assume that the existing natural soil is surficially stable. The method of analysis used is based on the "parallel seepage model" recommended by the ASCE and the Building and Safety Advisory Committee (August 16, 1978). This method is currently considered acceptable by the Los Angeles Department of Building and Safety for the analysis of surficial slope stability.

The assumptions upon which this method is based are: a uniform planar slope; uniform soil density and shear strength; and uniform seepage parallel to the slope. As with any analysis method, the validity of the analysis is determined in part by how closely the assumptions model the field conditions.

In the case of surficial deposits overlying natural slopes, it is our opinion that the assumptions of the "parallel seepage model" are not completely satisfied. Thus, even though the calculation indicates that the surficial materials on the site are stable with a factor of safety in excess of 1.5, it is our opinion that the mitigating measures recommended in the "Conclusions and Recommendations" of this report should be implemented during development of the site.

ENGINEERING CONSIDERATIONS

Samples of the soil and bedrock were obtained from the test pits and road cut and transported to the laboratory for testing and analysis. The strength of the soil and bedrock was determined by performing shear tests in the direct shear machine. The tests were performed at the conditions noted on the Shear Test Diagrams, Plates B-1 and B-2.

CONCLUSIONS AND RECOMMENDATIONS

General Findings

Based upon our exploration, it is our finding that construction of the proposed project is considered feasible from a geologic and soils engineering standpoint provided our advice and recommendations are followed and are implemented during construction.

The recommended bearing material is the bedrock. A deepened foundation system is recommended for support of the proposed residence and retaining walls.

It is recommended that the fill adjacent to the street be removed and replaced as compacted fill. Grade beams should be designed to

retain the existing fill. It is also recommended that the wedge of fill along the axis of the canyon and below the lowermost proposed grade beams on the northeast portion of the property be removed.

Grading

The following guidelines may be used in preparation of the grading plan and job specifications for the placement of fill between San Marco Drive and the proposed residence. We would appreciate the opportunity of reviewing the contract documents prior to solicitation of bids to insure that the intent of our recommendations is conveyed to the contractor.

A. The areas to receive compacted fill shall be stripped of all vegetation, debris, existing fill, soil, alluvium, and soft or disturbed earth materials. The excavated areas shall be observed by the soils engineer and/or geologist prior to placing compacted fill.

B. Fill, consisting of approved by the soils engineer, shall be placed in compacted layers with suitable compaction equipment. The excavated onsite materials are considered satisfactory for reuse in controlled fills. Any imported fill shall be observed by the soils engineer prior to use in fill areas. Rocks larger than six inches in diameter shall not be used in the fill.

C. The fill shall be compacted to at least 90 percent of the maximum laboratory density of the material used. The maximum density shall be determined by ASTM D 1557-78 or equivalent.

Field observation and testing shall be performed by the soils engineer during grading to assist the contractor in

retain the existing fill. It is also recommended that the wedge of fill along the axis of the canyon and below the lowermost proposed grade beams on the northeast portion of the property be removed.

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C. The fill shall be compacted to at least 90 percent of the maximum laboratory density for the material used. The maximum density shall be determined by ASTM D 1557-78 or equivalent.

D. Field observation and testing shall be performed by the soils engineer during grading to assist the contractor in

obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until 90 percent compaction is obtained.

Deepened Foundations - Friction Piles

Friction piles are recommended to support the proposed residence and retaining walls. Piles should be a minimum of 24 inches in diameter and a minimum of 10 feet into bedrock. Piles may be assumed fixed at 4 feet into bedrock. The piles may be designed for a skin friction of 800 pounds per square foot for that portion of pile in contact with the bedrock. All piles for the residence should be tied in two horizontal directions with grade beams.

Lateral Design

The existing fill and soil on the site are subject to downhill creep. Pile shafts are subject to lateral loads due to the creep forces. Pile shafts should be designed for a lateral load of 1,000 pounds per linear foot for each foot of shaft exposed to the existing fill and soil.

The friction value indicated above is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading which includes the effects of wind or seismic forces. Resistance to lateral loading may be provided by passive earth pressure within the bedrock.

Passive earth pressure may be computed as an equivalent fluid having a density of 800 pounds per cubic foot, with a maximum earth pressure of 5,000 pounds per square foot. For design of isolated piles, the allowable passive earth pressure may be increased by 100 percent. Piles which are spaced more than 2 1/2 pile diameters on center may be considered isolated.

Foundation Settlement

Settlement of the foundation system is expected to occur on initial application of loading. The settlement is expected to be 1/4 to 1/2 inch. Differential settlement is not expected to exceed 1/4 inch.

Floor Slabs

Floor slabs should be structurally designed to derive support entirely from the deepened foundation system.

Retaining Walls

Retaining walls supporting approved compacted fill may be designed for active pressure as shown on the following table.

Surface Slope of Retained Material Horizontal to Vertical	Equivalent Fluid Weight Lb./Ft.
Level	43
5 to 1	43
4 to 1	43
3 to 1	43
2 to 1	43
1 1/2 to 1	55

Retaining walls should be backfilled with a minimum of 12 inches of gravel adjacent to the wall to within 2 feet of the ground surface, provided with a compacted fill blanket at the surface, provided with a subdrain or weepholes, and provided with proper surface drainage devices. The onsite earth materials, when used for retaining wall backfill, should be compacted to a minimum of 90 percent of the maximum density as determined by ASTM D 1557-78 or equivalent. Footings may be sized per the "Deepened Foundation" section of this report.

Temporary Cut Slope Stability

Vertical cut slopes within the bedrock may be excavated up to 5

feet. Slopes in excess of 5 feet should have the upper portion trimmed to 1:1 (45 degrees). The fill should be trimmed to 1:1 for wall excavations.

The geologist should be present during grading to see temporary slopes. All excavations should be stabilized within 30 days of initial excavation. Water should not be allowed to pond on top of the excavations nor to flow towards it. No vehicular surcharge should be allowed within three feet of the top of the cut.

Waterproofing

Rooms located below grade have a history of moisture intrusion, seepage, and leakage. Conventional waterproofing materials, such as asphalt emulsion, have often proved ineffective. Certain precautions can be taken to reduce the possibility of future seepage problems. Superplasticized and water-retardant concrete may be utilized to make pouring easier and reduce cracking and shrinkage. Equally important is the use of a subdrain which daylights to the atmosphere. The subdrain should be covered with gravel to facilitate collection of water.

Construction of raised floor buildings where the grade under the floor is lowered for joist clearance can also lead to moisture

problems. Surface moisture can seep through the footing and pond in the underfloor area. Positive drainage away from the footings, waterproofing the footings, compaction of trench backfill and subdrains can help to reduce moisture intrusion.

Excavation Characteristics

The test pits did encounter hard, cemented bedrock. However, hard, cemented layers are known to occur at random locations and depths and may be encountered during foundation excavation. Should a hard, cemented layer be encountered, coring or the use of jackhammers may be necessary. The existing fill is subject to caving due to its loose granular nature. Casing may be required during foundation excavations.

Decking

Prior to placing decking adjacent to the street, the existing fill and soil should be removed and recompacted to 90 percent of the maximum dry density, as determined by ASTM D 1557-78. Decking should be reinforced with a minimum of 6x6-10x10 or 12-W2.8 welded wire fabric. Decking which caps a retaining wall should be provided with a flexible joint to allow for the normal 1 to 2 percent deflection of the retaining wall.

Decking which does not cap a retaining wall should not be tied to the wall. The space between the wall and the deck will require periodic caulking to prevent moisture intrusion into the retaining wall backfill.

Paving

Prior to placing paving, the existing fill and soil should be removed, moistened as required to obtain optimum moisture content, and recompacted to 90 percent of the maximum dry density, as determined by ASTM D 1557-78. The trench backfill below paving, should be compacted to 90 percent of the maximum dry density. Irrigation water should be prevented from migrating under paving. The following pavement sections are recommended:

Service	Pavement Thickness (Inches)	Base Course (Inches)
Light Passenger Cars	3	0

Drainage

Pad and roof drainage should be collected and transferred to San Marco Drive or collected through non-erosive drainage devices and conveyed away from the steep offsite slope to the east. Drainage should not be allowed to pond on the pad or against any founda-

tion or retaining wall. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters which are located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill.

Sewerage Disposal

Sewers are not available to service the property. A private sewerage disposal system, consisting of a septic tank and seepage pit may be installed on the site. The seepage pit should be located as shown on the enclosed Geologic Map, and should be sealed in the upper portion to avoid percolation into the surficial materials and to provide the required 25-foot horizontal setback to the bedrock contact. It is recommended that a seepage pit be excavated, bricked, and tested for percolation rate prior to obtaining a building permit. More than one pit may be required. The use of a private sewerage disposal system on the subject property should not adversely affect the stability of the site or adjoining properties. The system should be designed in accordance with the requirements of the Los Angeles Health Department. Seepage pits should be observed by the project geologist prior to bricking and after being sealed.

A private sewerage disposal system should be considered a temporary system which may require periodic maintenance and pumping to remain effective. The residence should be connected to the City sewer as soon as practical.

Site Observation

It is recommended that all foundation and seepage pit excavations be seen by the geologist prior to placing forms, concrete, or steel. Any fill which is placed should be approved, tested, and verified if used for engineered purposes. Cut slopes and temporary wall excavations should be observed by the geologist. Should the observations reveal any unforeseen hazard, the geologist will provide additional recommendations.

Please advise Kovacs-Byer and Associates, Inc., at least 24-hours prior to any required site visit. All approved plans and permits should be on the site and available.

Please call this office with any questions. This report and our exploration are subject to the following NOTICE.

NOTICE

General Conditions

In the event of any changes in the design or location of any structure, as outlined in this report, the conclusions and recommendations contained herein may not be considered valid unless the changes are reviewed by us and our conclusions and recommendations are modified or reaffirmed after such review.

The subsurface conditions, excavation characteristics, and geologic structure described herein and shown on the enclosed cross sections have been projected from excavations on the site as indicated and should in no way be construed to reflect any variations which may occur between these excavations or which may result from changes in subsurface conditions.

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can be extremely hazardous.

If conditions encountered during construction appear to differ from those disclosed herein, notify us immediately so we may consider the need for modifications. Compliance with the design concepts, specifications or recommendations during construction requires our review during the course of construction.

IF EXPLORATION WAS PERFORMED ONLY ON A PORTION OF THE SITE, IT CANNOT BE CONSIDERED AS INDICATIVE OF THE PORTIONS OF THE SITE NOT EXPLORED.

This report is issued and made for your sole use and benefit, is not transferrable and is as of the exploration date. Any liability in connection herewith shall not exceed our fee for the exploration. No warranty, expressed or implied, is made or intended in connection with the above exploration or by the furnishing of this report or by any other oral or written statement.

THIS REPORT WAS PREPARED ON THE BASIS OF THE PRELIMINARY DEVELOPMENT PLAN FURNISHED. FINAL PLANS SHOULD BE REVIEWED BY THIS OFFICE AS ADDITIONAL GEOTECHNICAL WORK MAY BE REQUIRED.

Respectfully submitted,

JOHN W. BYER
E.G. 883

ROBERT I. ZWEIGLER
R.C.E. 33744

GC:JWB:RIZ:mds

Enc: Geologic Map
Sections A through D
Vicinity Map
Regional Geology Map
Table I
Plates B-1 and B-2
Calculation Sheets (2)

xc: (6) Addressee

Koraes-Byer and Associates Inc.
CONSULTING ENGINEERS and GEOLOGISTS

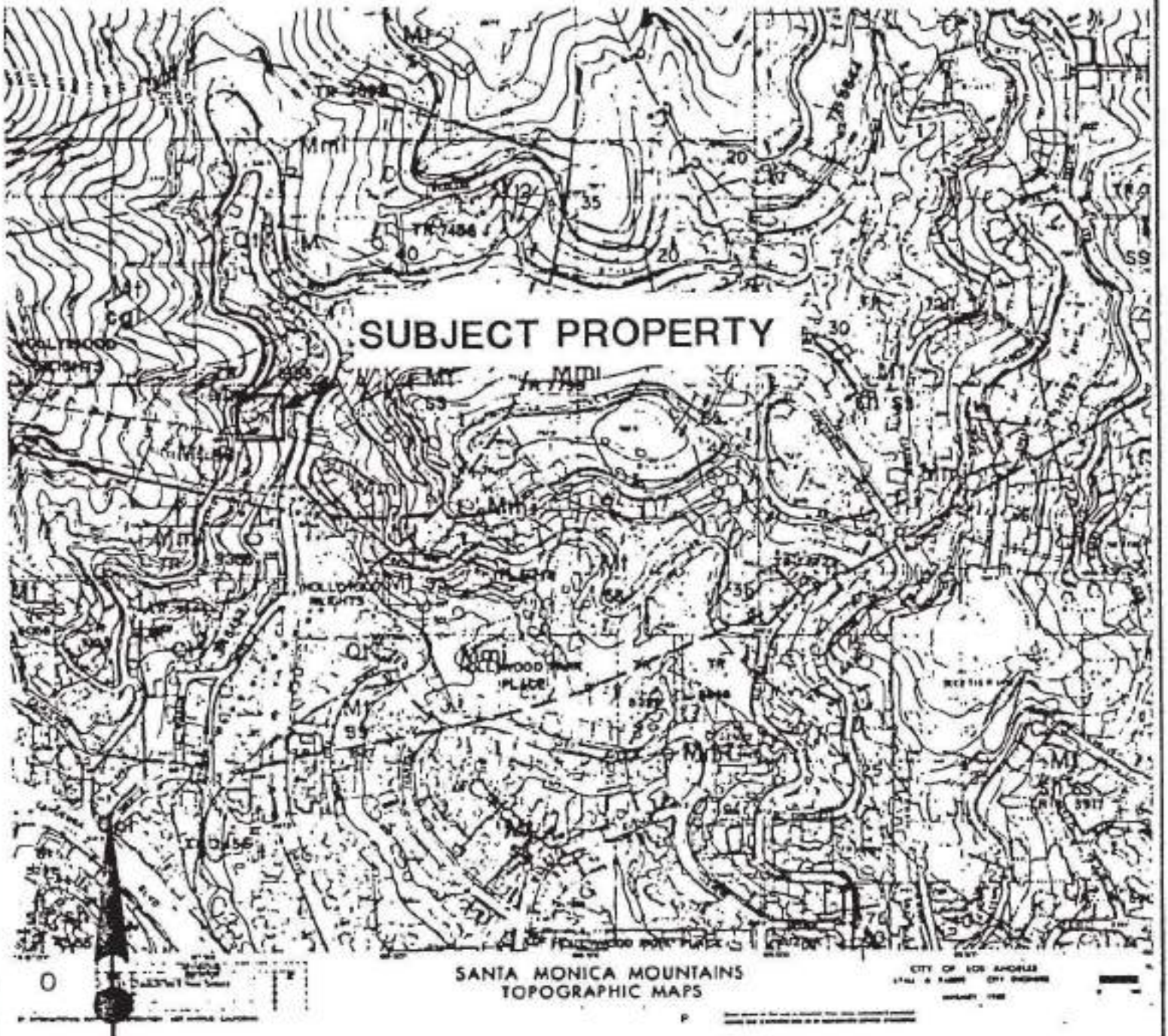
BY GC DATE

SUBJECT SEAL
REG. GEOL. MAP

CHECKED BY DATE

KB 11317-G

REF: GEOLOGY OF SANTA MONICA MOUNTAINS;
TOPO SHEET #O



Kovacs-Byer and Associates Inc.
CONSULTING ENGINEERS and GEOLOGISTS

BY GC DATE

CHECKED BY DATE

SUBJECT SEAL
VICINITY MAP

REF: SANTA MONICA MOUNTAINS TOPO KB 11317-G

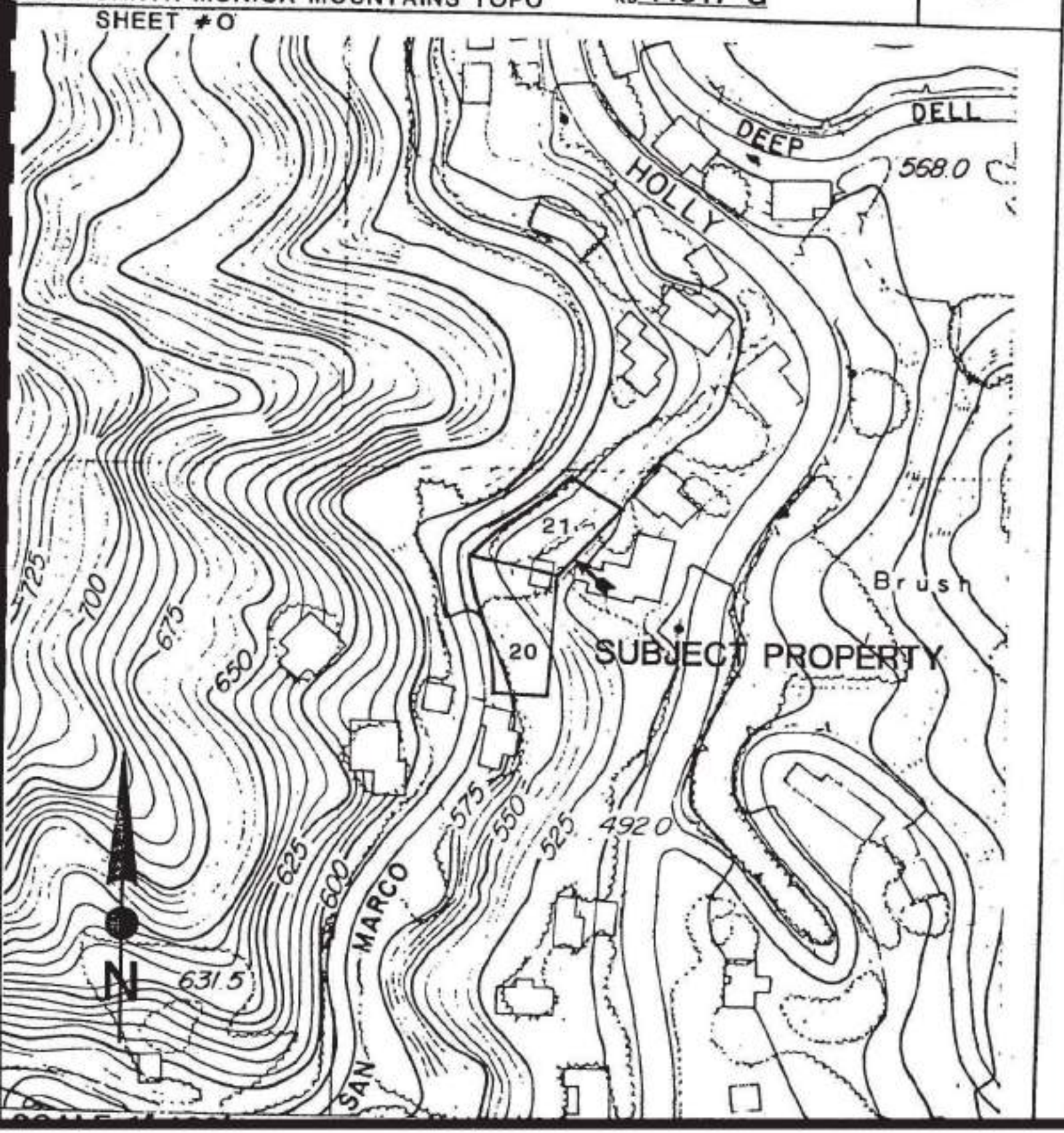


TABLE I

LOG OF TEST PITS

Number	(Feet)	Description
1	0 - 2 1/2	SOIL: Silty Sand, brown, dry, loose to medium dense with roots, porous
	2 1/2 - 4	BEDROCK: Weathered Basalt, mottled grey and brown moderately fractured, massive, moderately hard some roots
	4 - 5	grades to hard and less weathered
		End at 5 feet; No Water; No Caving; No Fill.
2	0 - 2 1/2	FILL: Gravelly Sand, mottled brown to dark brown, dry, loose
	2 1/2 - 3 1/2	SOIL: Silty Sand, brown, moist, dense
	3 1/2 - 5	BEDROCK: Basalt, very hard, massive, cemented, slightly fractured
		End at 5 feet; No Water; No Caving; Fill to 2 1/2 feet.
3	0 - 6"	SOIL: Silty Sand, brown, slightly moist, medium dense with roots
	6" - 2 1/2'	BEDROCK: Basalt, mottled brown and black, very hard, tight, massive, slightly fractured
		End at 2 1/2 feet; No Water; No Caving; No Fill.
4	0 - 2 1/2	FILL: Gravelly Sand, brown, loose to medium dense, slightly moist to moist
	2 1/2 - 6	grades to silty and clayey sand
	6 - 8	blocks of basalt from road cut up to 12", no matrix, caving in, impossible to dig deeper
		End at 8 feet; No Water; Fill to total depth. Metal and wood at bottom; Fill Caving In.

TABLE I

LOG OF TEST PITS

Number	(Feet)	Description
5	0 - 1	SOIL: Silty Sand, brown, slightly moist, medium dense
	1 - 3	BEDROCK: Sandstone and Basalt, sandstone is tan, basalt is dark brown, basalt on south side of test pit; basalt and sandstone on rest of test pit, basalt is very hard, slightly fractured
		End at 3 feet; No Water; No Caving; No Fill.
		JOINT: Vertical N77E N60E; 51NW E-W Vertical N16W Vertical N17W 45NE
6	0 - 3	FILL: Gravelly Sand, mottled brown, dry, loose
	3 - 5	BEDROCK: Basalt and Sandstone, mottled light brown and dark brown, hard, fractured, jointed
		End at 5 feet; No Water; Partial Caving; Fill to 3 feet.
		JOINT: N80W; 46S N5 W; 45W
7	0 - 4	FILL: Sandy gravel, dark brown, gravel fragments up to 8 inches, dry, loose
	4 - 5 1/2	very little fines, clast supported fill, very porous
		Hole Caved In. End at 5 1/2 feet; No Water; No Bedrock; Fill to total depth.

TABLE I

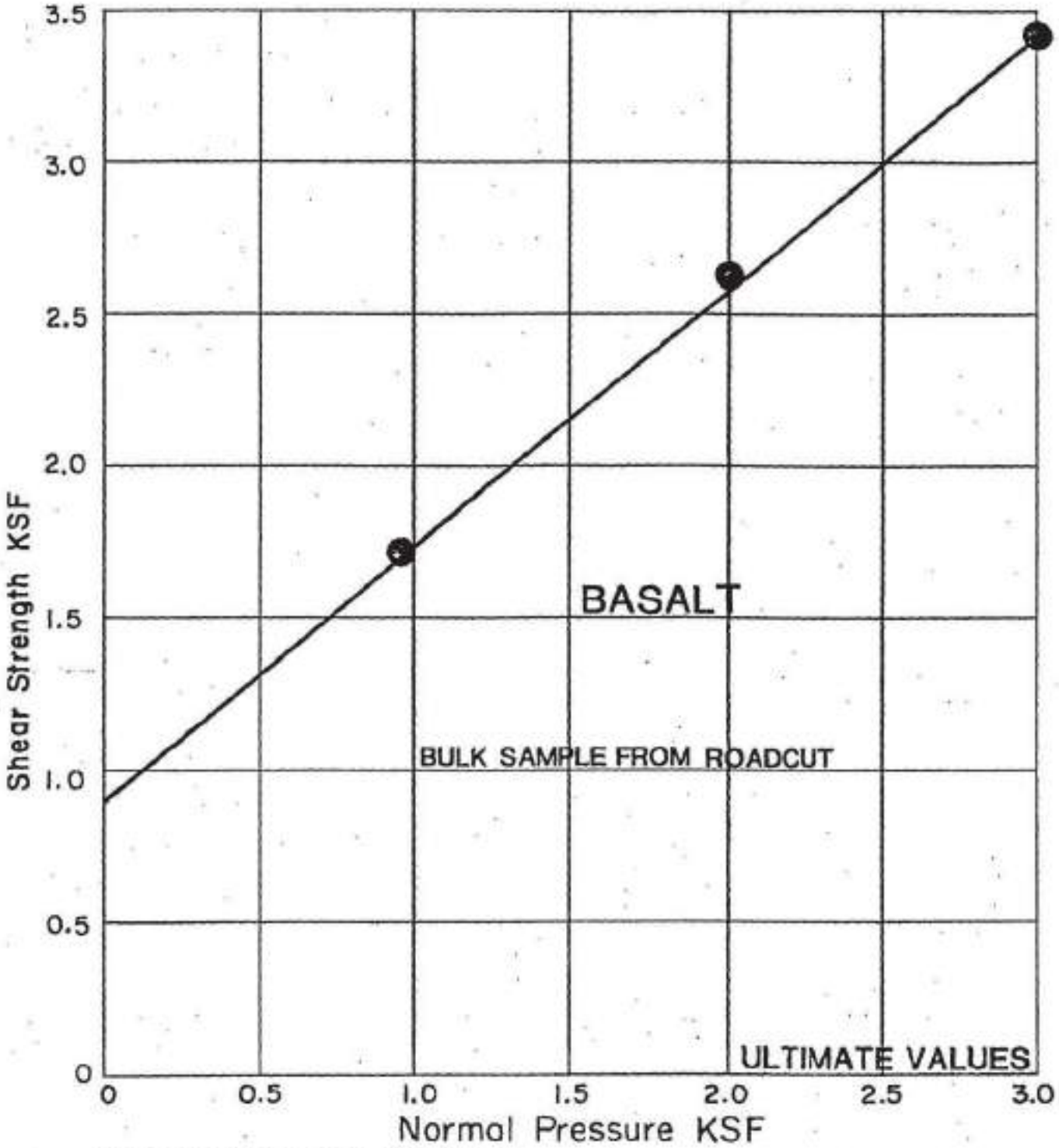
LOG OF TEST PITS

Number	(Feet)	Description
8	0 - 6 1/2	FILL: Cobble and gravel with little to no sandy matrix, loose, dry, caving imminent
		End at 6 1/2 feet; No Water; Partial Caving; Fill to total depth.
9	0 - 2	FILL: Gravelly Sand, brown, dry, loose with some roots
	2 - 4 1/2	grades to sandy gravel, caving imminent
	4 1/2 - 7	BEDROCK: Basalt, mottled grey and brown, moderately fractured, weathered, moderately hard
		End at 7 feet; No Water; Partial Caving; Fill to 4 1/2 feet.
10	0 - 1	FILL: Gravelly Sand, brown, dry, loose
	1 - 3	SOIL: Sandy Clay, brown, slightly moist, loose
	3 - 4 1/2	BEDROCK, Basalt, grey, phaneritic, slightly fractured, moderately weathered, very hard
		End at 4 1/2 feet; No Water; Partial Caving; Fill to 1 foot; contact dipping very steeply to Northeast.

NOTE: The stratification depths represent the approximate boundary between earth types; the transition may be gradual.

SHEAR TEST DIAGRAM

Project SEAL KB 11317-G



○ Direct Shear at Field Moisture
● Direct Shear, Saturated
∪ Unconfined Compression Test
⊕ Vane Shear Test
⊙ Penetrometer

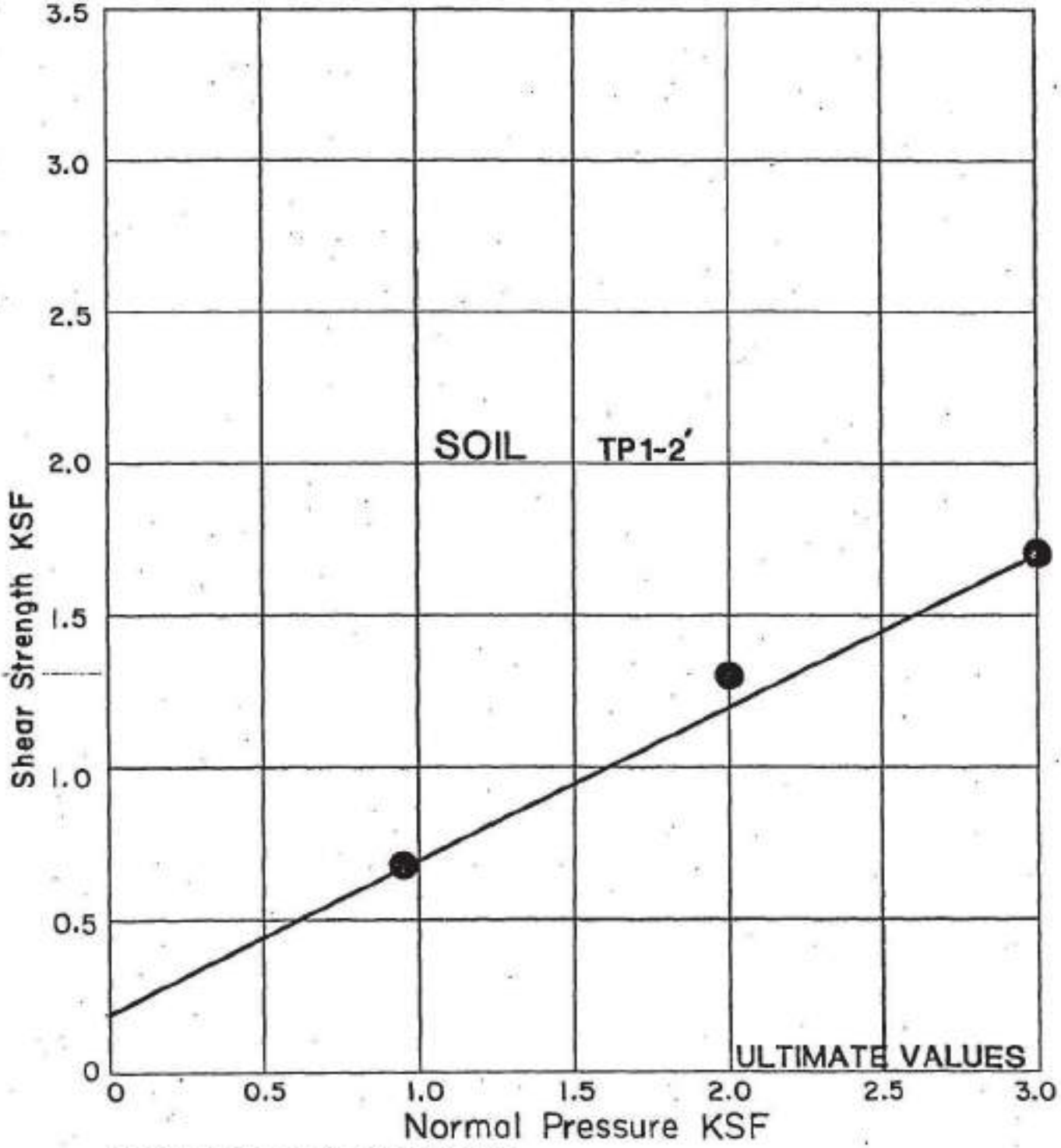
γ_d = 133.5 pcf

MOISTURE CONTENT = 4.9 %

KOVACS-BYER and ASSOCIATES, Inc.

SHEAR TEST DIAGRAM

Project SEAL KB 11317-G



○ Direct Shear at Field Moisture
● Direct Shear, Saturated
∪ Unconfined Compression Test
⊕ Vane Shear Test
⊙ Penetrometer

γ_d = 98.9 pcf

MOISTURE CONTENT = 11.2 %

PLATE B-2

Kovacs-Byer and Associates Inc.
CONSULTING ENGINEERS and GEOLOGISTS

BY GC DATE

SUBJECT SEAL

CALC SHEET # 1

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KB 11317-G

SLOPE STABILITY CALCULATIONS

Compute slope stability utilizing Taylor's 'FUNDAMENTALS OF SOIL MECHANICS'. Critical Height corresponds to safe slope height.

Slope angle to be analyzed = 35 degrees.

BASALT BEDROCK PROPERTIES

Cohesion (C) (psf)	Weight (W) (pcf)	Friction (FA) (deg.)
900	140	40

For Factor of Safety (Fs) = 1.5 :

Cd = C/Fs = 600.00 psf

FAd = arctan(tan(FA)/Fs) = 29.2 degrees.
(for FAd > 25 degrees, use FAd = 25 degrees)

Interpolate Stability Number (sn) from chart below:

	Slope Angles							
Angles	20	30	40	50	60	70	80	90
5	.09	.11	.13	.145	.16	.185	.21	.26
F 10	.045	.075	.10	.12	.14	.16	.188	.22
A 15	.02	.045	.07	.095	.115	.14	.168	.20
d 20	0	.025	.05	.075	.098	.12	.15	.18
25	0	.01	.033	.055	.08	.105	.13	.17

sn = .021

Hc = Cd/Wt(sn) = Critical Height

Hc = 199.3 feet.

CONCLUSION: TOTAL RELIEF FROM SAN MARCO DRIVE TO HOLLY DRIVE IS APPROXIMATELY 76 FEET THEREFORE THE NATURAL SLOPE IS GROSSLY STABLE.

Kovacs-Byer and Associates Inc.
CONSULTING ENGINEERS and GEOLOGISTS

BY GC DATE

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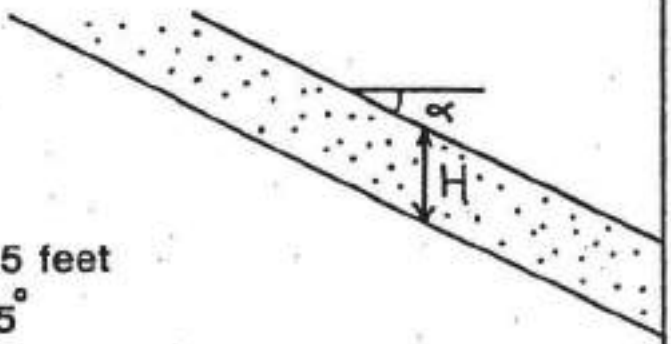
SUBJECT SEAL
SURFICIAL STABILITY

KB 11317-G

SURFICIAL STABILITY ANALYSIS

CALCULATE THE SURFICIAL STABILITY OF THE NATURAL SOIL ON THE DESCENDING SLOPES WHICH ARE AS STEEP AS 35°
USE THE INFINITE SLOPE ANALYSIS WITH PARALLEL SEEPAGE*

SOIL PROPERTIES (ALL SAT'D)



γ_T = 110 pcf
ϕ = 26°
C = 190 psf
H (DEPTH OF SATURATION) = 2.5 feet
α (SLOPE ANGLE) = 35°
γ_w (DENSITY OF WATER) = 62.4 pcf

$$\text{FACTOR OF SAFETY} = \frac{C + (\gamma_T - \gamma_w) H \cdot \cos^2\alpha \cdot \tan\phi}{\gamma_T \cdot H \cdot \cos\alpha \cdot \sin\alpha}$$

$$= \frac{190 + (110 - 62.4) \cdot 2.5 \cdot \cos^2 35 \cdot \tan 26}{110 \cdot 2.5 \cdot \cos 35 \cdot \sin 35} =$$

$$FS. = 1.77 > 1.5$$

CONCLUSIONS

THE NATURAL SLOPES ARE SURFICIALLY STABLE.

NOTE: SEE TEXT FOR DISCUSSIONS AND RESULTS

* AS RECOMMENDED BY THE ASCE AND BUILDING AND SAFETY

BIG MAP( )

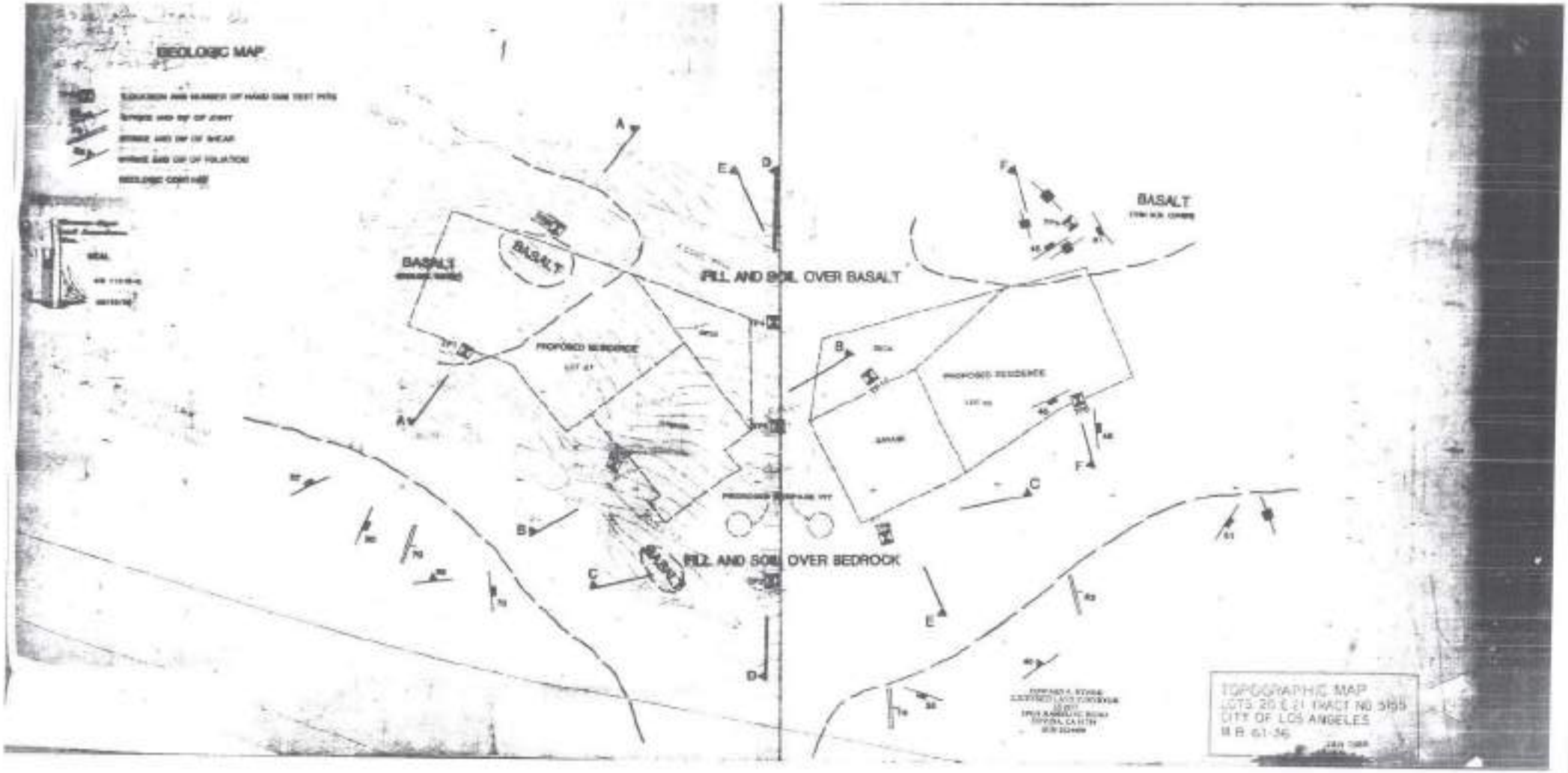
B & S

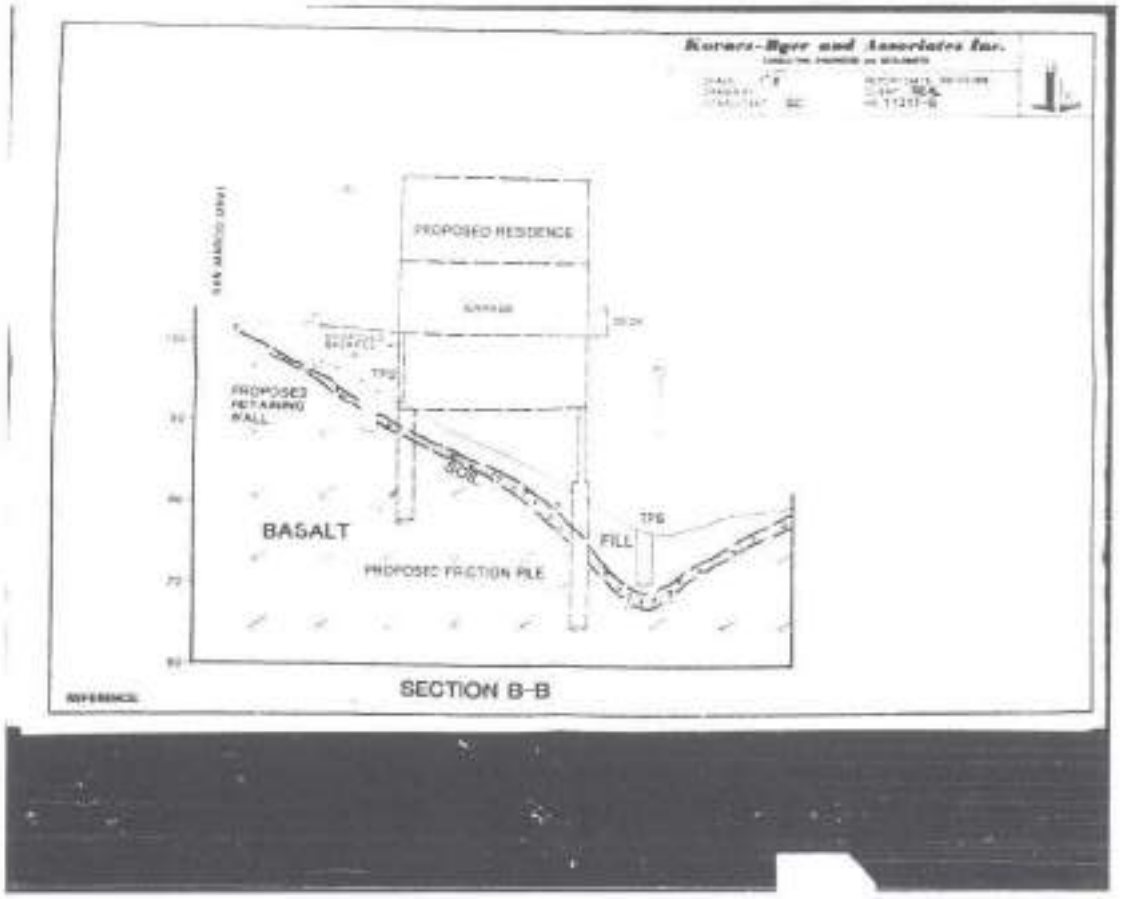
TRACT: 5155
BLOCK:
LOT: 21
JOB ADDRESS: 2358 Via Marisol

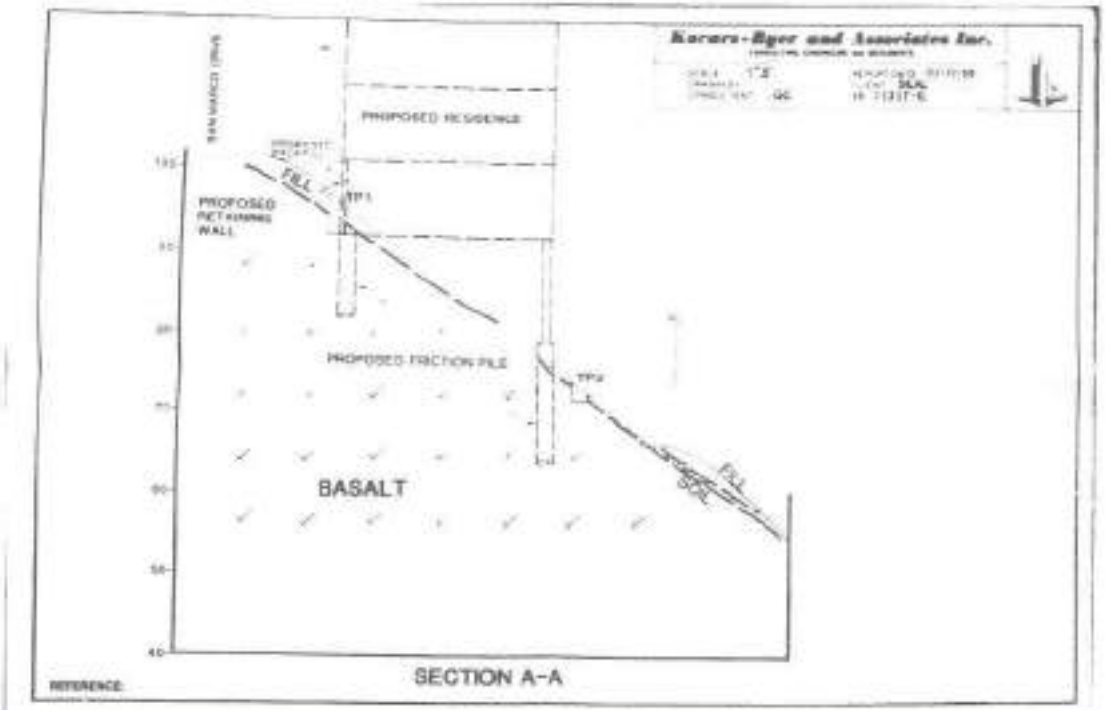
#4 2-22-88

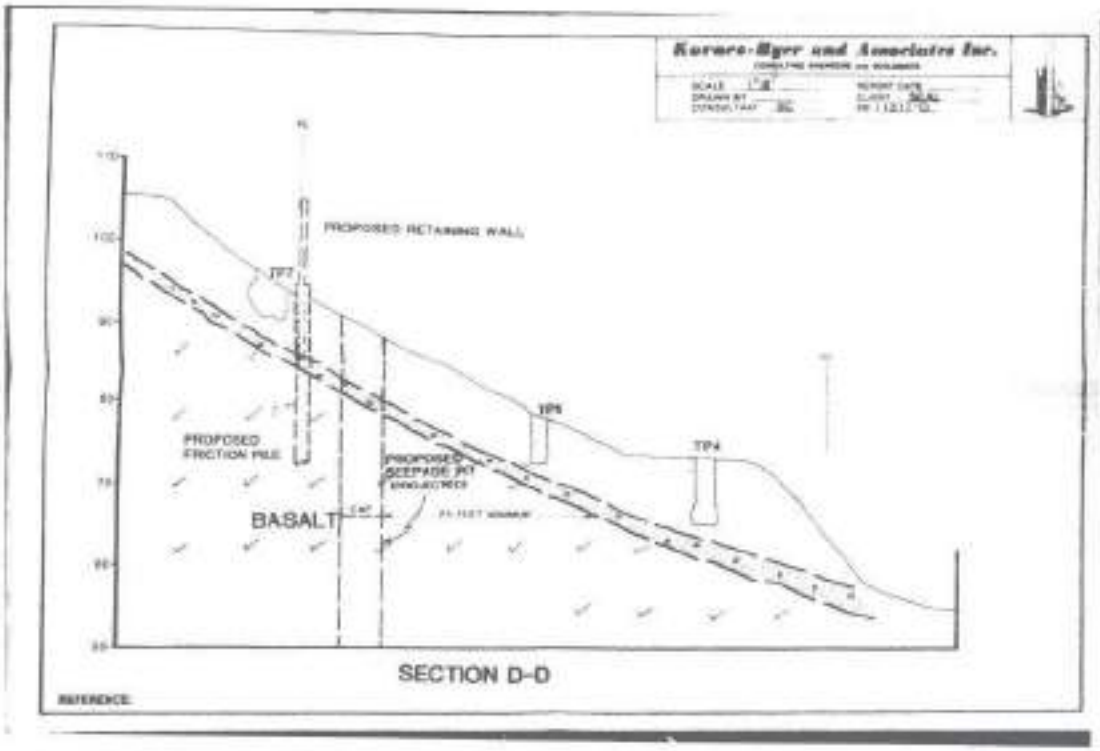
GRADING FILES

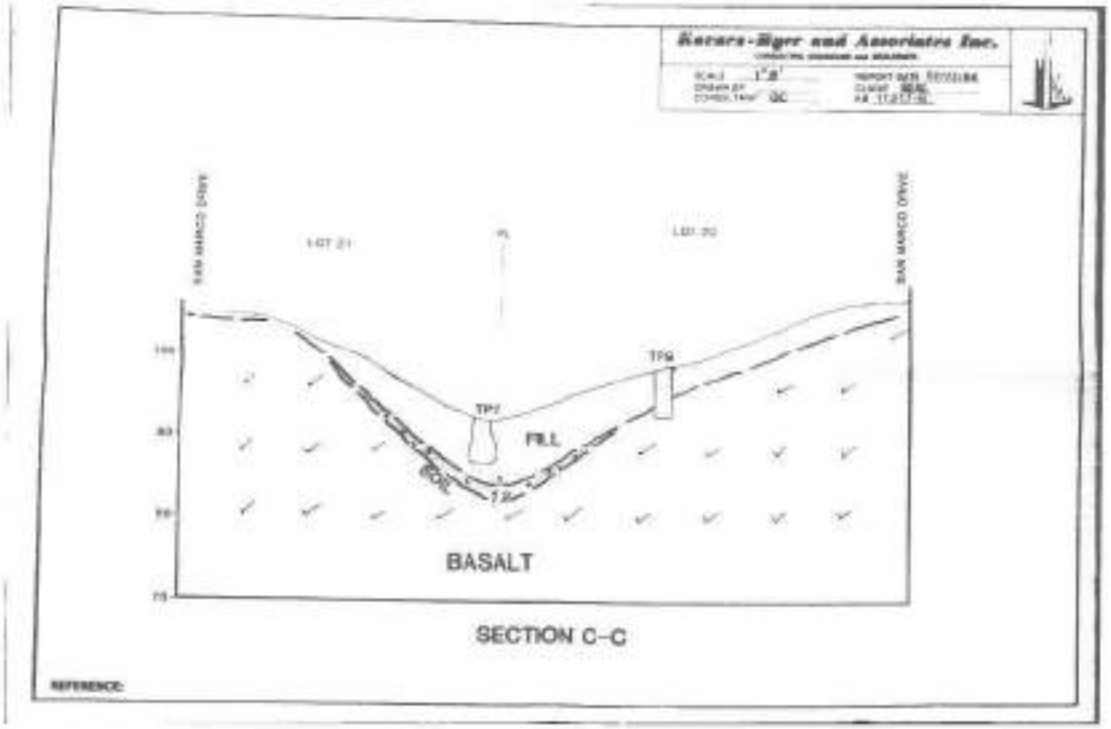

GEOLOGIC MAP
BASALT
BASALT
FILL AND SOIL OVER BASALT
BASALT
FILL AND SOIL OVER BEDROCK
TOPOGRAPHIC MAP
LOTS 20 & 21 TRACT NO 5150
CITY OF LOS ANGELES
M B 61-36


GEOLOGIC MAP
BASALT
BASALT
FILL AND SOIL OVER BASALT
PROPOSED RESIDENCE
PROPOSED RESIDENCE
GARAGE
FILL AND SOIL OVER BEDROCK
A
B
C
D
E
F
TOPOGRAPHIC MAP
LOTS 20 & 21 TRACT NO 5155
CITY OF LOS ANGELES
M.B. 61-36


Kleinfelder and Associates Inc.
PROPOSED RESIDENCE
GARAGE
PROPOSED RETAINING WALL
BASALT
FILL
PROPOSED FRICTION PILE
SECTION B-B


Kerr-Byer and Associates Inc.
PROPOSED RESIDENCE
PROPOSED RETAINING WALL
TP1
PROPOSED FRICTION PILE
TP2
BASALT
SECTION A-A
REFERENCE


Kerner-Ifyer and Associates Inc.
PROPOSED RETAINING WALL
TP7
TP5
TP4
PROPOSED FRICTION PILE
PROPOSED SEEPAGE PIT
BASALT
SECTION D-D
REFERENCE:


Kevers-Byer and Associates Inc.
SAN MARCO DRIVE
LOT 21
LOT 20
SAN MARCO DRIVE
TP7
TP8
FILL
BASALT
SECTION C-C
REFERENCE: