THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
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"Trust the Name You Know"

June 29, 2001
JB 18457-I

Palisades Landmark LLC
10600 Santa Monica Boulevard
Los Angeles, California 90025

Attention: Ken Kahan

Subject

Addendum Geologic and Soils Engineering Exploration Report #2
Proposed Landslide Repair and Multi-Unit Condominium and Town Home Buildings
Tentative Tract 52928
17331-17333 Tramonto Drive
Pacific Palisades, California

Grading Section Log # 31587-01

References: **Reports by The J. Byer Group, Inc.:**

Geologic and Soils Engineering Exploration, Proposed Landslide Repair and Multi-Unit Condominium and Town Home Buildings, Tentative Tract 52928, 17331-17333 Tramonto Drive, Pacific Palisades, California, dated August 16, 2000 and

Addendum Geologic and Soils Engineering Exploration Report, Proposed Landslide Repair and Multi-Unit Condominium and Town Home Buildings, November 29, 2000.

City of Los Angeles Department of Building and Safety, Grading Section, review letters, dated September 21, 2000 and January 22, 2001.

Gentlemen:

The J. Byer Group has prepared this addendum report to provide additional information to the Grading Section for the design and construction of the proposed project. The city review letter dated January 22, 2001 is attached for reference.

Item 1 - *Revise section K to show boring B-6, include the data from boring B-6 and revise recommendations for piles P31 through P40, as necessary. Justify the recommended 1.5:1 set back plane. Provide recommendations for the minimum embedment of the piles below set back plane. Similarly, the location of boring LC-2 is not shown on cross-section L, and boring PS4B is not shown on cross-section P.*

Sections K, L, and P have been revised to show B-6, LC-2, and PS4B, respectively. Calculation Sheets 4 through 6 indicate that the 1½:1 setback plane has a safety factor greater than 1.25. The calculation assumes that all of the slide debris has been removed. Piles should be embedded at least 20 feet into bedrock below the 1½:1 setback plane.

Item 2 - *Revise all cross-sections, as necessary, based upon the new slide plane map provided in the report dated 11/20/00 for 17325 Castellemmare.*

All of the cross sections have been revised to reflect the most recent slide plane map.

Item 3 - *Provide the information requested in item 3 of the Inter-Departmental letter dated 09/21/00; The recommendations shall be specific for shoring/retaining wall design and final slope gradients that conform with the Code; show the proposed walls and slopes on a detailed geologic map and sections. A cross-section, oriented perpendicular to the slope, shall also be provided through the adjacent building to the east that shows how the ascending slope will be stabilized down to the property line*

A narrow strip (20 foot wide) of the subject property extends to Castellammare Drive and coincides with the eastern toe of the Revello Drive slide. It is recommended that the subdrain system for the landslide repair discharge to the street through this strip. As requested, Section Q was drawn perpendicular to the slope contours and passing through the adjacent building to the east. As depicted on the Finite Element Grid map and Section Q, the Revello slide 'daylights' to the slope within the strip. Construction of the subdrain outlet at the elevation of the deepest slide removal will result in complete removal of the slide debris.

The owner of the downslope property (Palmer) is currently processing plans to stabilize and develop the toe of the Revello Drive slide. Ideally, the strip of land would be removed, the subdrain installed, and the void backfilled coeval with construction of the Palmer project. If the downslope property is not re-developed, or if cooperation is not possible, then the subdrain system could be installed within a shored excavation. A row of shoring piles will be required along the Palmer/Palisades Landmark common property line as illustrated on Section Q. Based upon Calculation Sheet #12, the shoring may be designed for an equivalent fluid pressure of 65 pcf. Shoring will not be required along the downhill property line since the slide debris thins to zero. The slope may then be manufactured at a 2:1 gradient, which may require retaining walls. It is our understanding that once the Vesting Tentative Tract is approved, a civil engineer will prepare a formal grading plan. As an alternative, a permanent retaining wall may be constructed along the Palmer/Palisades Landmark common property line to eliminate re-manufacturing the slope.

Item 4 - *Clarify the design recommendations for piles P31 through P35; The report dated 08/16100 indicates 145 Kips per foot and the current report indicates an EFP of 65 pcf.*

Piles P31 though P40 extend beyond the limits of the slide and are intended to support the existing properties along Revello Drive. Piles P31 through 40 should be founded a minimum of 20 feet into bedrock below a 1½:1 plane projected up from the base of the slide as shown in Sections L, K, and O. The recommended design equivalent fluid pressure is 65 pcf for the portion of the pile between the ground surface and the 1½:1 setback plane.

Item 5 - *Justify shear strength parameters obtained in 2D back stability analyses for the landslide by providing 3D back stability analyses. If lower shear strength parameters are obtained, revise all slope stability/retaining structures calculations and revise recommendations for retaining wall design.*

As known to the Department, a 3D stability analysis of the Revello Drive landslide was performed using a finite element method. The results of the 3D analysis were presented in our report *"Addendum Geologic and Soils Engineering Exploration Report #4, Proposed Condominium*

Building, Tentative Tract 52769, 17325 Castellammare Drive, Pacific Palisades, California, Grading Section Log # 29622-3R," dated April 6, 2001 prepared for the adjacent property (G.H. Palmer). In addition to the report, the 3D calculation was presented in person to the Grading Section personnel, who performed an independent 'hand check'.

In summary, the three dimensional back calculation requires a higher shear strength to achieve static equilibrium, as compared to the previous two dimensional calculations. Therefore, the shear strength determined for the slide and used in the calculations for design loads on soldier piles and retaining structures is considered to be conservative.

Item 6 - *Provide recommendations for permanent de-watering of the landslide to remain above the subject property Or revise the design/stability calculations to assume worst-case conditions that could occur, The response shall address not only the groundwater above the lower slide plane, but also a potential perched groundwater table above the upper slide plane. As a minimum, ground water shall be assumed 30 feet above the landslide plane unless a lower ground water elevation may be justified; additionally, provide stability calculations to determine the effect on the factor of safety for rises in groundwater at five-foot intervals above the 30-foot level.*

It may not be possible to de-water the offsite properties. Section H is the most critical section with respect to stability. Based upon Section H, the safety factor of the proposed repair was calculated assuming that the water rose to the top of the soldier pile retaining system. The groundwater surface is shown on the section. Calculation sheets 1-3 indicate that the proposed repair will have a safety factor greater than 1.5.

Item 7 - *Label property boundaries, as well as show/label proposed grades on all cross-sections.*

The cross sections have been better labeled to identify property boundaries as well existing and proposed grades.

Item 8 - *Extend easterly cross-section E-E to show toe the off-site slope.*

The easterly extension of Section E, which shows the offsite slope, roughly coincides with Section O. Section O is believed to be the most critical section with respect to stability.

Item 9 - *Revise cross-sections E-E and G-G to show subject development. The structures described as proposed structures are actually proposed structures for G.H. Palmer & Associates site, and not for the subject site. Cross-section G-G shall be extended to show Revello Drive.*

Sections E and G have been revised to show the proposed development. Also, Section G has been extended to Revello Drive.

Item 10 - *Provide design recommendations for the lower row soldier pile system subject to surcharge from the proposed structure shown on cross-section H.*

As recommended in the preliminary report, piles are recommended to support the southern portion of Building 2 below a 1:1 setback plane projected up from the base of the lower soldier piles. Piles should be a minimum of 24 inches in diameter and a minimum of eight feet into fill below the setback plane. Therefore, the lower soldier pile row will not be surcharged by the proposed structures. Section H shows the setback plane and deepened foundations.

Item 11 - *Cross-section I shows existing building, but no building is shown on Geologic Map, please clarify. The basalt is not shown on the cross-section. In addition, show the location of boring PS1B. Determine the minimum depth of soldier pile below the plane with 1.5 factor of safety.*

The proposed development plans of the site provided by the architect do not include the existing structures. The existing structures are shown on the Santa Monica Mountains topographic maps. The basalt, as well as PS1B are shown in revised Section I. Soldier piles should be embedded at least 20 feet below the 1.5 factor of safety plane.

Item 12 - *Design calculations and recommendations for the retaining wall that will support fifty feet of fill on section O. Explain, why the height of the wall is shown to be 50 feet(down to soil/bedrock contact) if no exploration determining the thickness of colluvium at this location was conducted. Also, show location of the proposed building.*

The thickness of the colluvium was conservatively estimated at 10 to 15 feet. Therefore, assuming at the highest point the planned grade is 35 feet above the ground surface, the retaining wall could retain up to 50 feet of compacted fill. The actual thickness of the colluvium will be verified during construction. The enclosed calculations indicate that retaining walls supporting compacted fill with a level backslope, higher than 15 feet and up to 50 feet, may be designed for an equivalent fluid pressure of 55 pcf.

The upslope building is shown on Section O and is located mostly on alluvial terrace. Footings may have to be deepened in places to reach the terrace.

Item 13 - *Slope stability calculations for cross-section P are based on shear strength of siltstone bedrock. However the existing soils comprise of terrace deposits and basalt, please clarify.*

The November 29, 2000 addendum report referenced a Geosoils report for the property located at 17315 Sunset Boulevard (intersection of Sunset Boulevard and Los Liones Drive). Shear Diagram SH-2 from their report indicates a cohesion value/phi angle combination of 750 psf/33 degrees for the basalt. A study of the Pacific Palisades by Moran, Proctor, Muesser & Rutledge, 1959 (*Final Report, Pacific Palisades Landslide Study)* contains shear test results of nearby terrace. They report a cohesion value/phi angle combination of 550 psf/20.5 degrees for nearby terrace. The stability of

Section P was re-analyzed using these values, which appear reasonable for the area. Calculation Sheets 9 through 11 show that the steep basalt slope depicted in Section P is grossly stable.

Item 14 - *Show the locations for sections Q and R on the map and complete the sections with geologic information.*

Sections Q and R were erroneously included in the last report. These sections were not intended to show the existing geologic structure and the proposed development. Section Q is now located through the strip of land that extends through building the existing building to Castellammarre Drive (see response to Item 3).

Item 15 - *Provide all referenced slope stability analyses.*

A copy of the 3D calculation of the Revello Drive landslide performed for the Palmer project is enclosed. All other stability calculations pertinent to the proposed development are included herein or within our referenced reports.

Item 16 - *Provide analyses for overtopping of the landslide over the proposed retaining wall.*

An over-topping failure was modeled based upon Section H, which is the most critical with respect to stability. Calculations sheets 7 and 8 indicate the safety factor for an over-topping failure will be greater than 1.5. The hypothetical failure surface is shown on Section H.

Item 17 - *Provide minimum embedment of all soldier piles shown on all cress-sections, in addition to I and K.*

All soldier piles should be embedded a minimum of 20 feet into the recommended bearing material. Soldier piles near Sections I and K should be embedded 20 feet below a 2:1 plane projected up from the toe of slope, Piles P30 through P4 should be embedded 20 feet below a 1½:1 plane projected up from the base of the slide, and the remaining soldier piles should be embedded below the slide.

Item 18 - *Show de-watering system on the cross-sections for all soldier pile/retaining structures.*

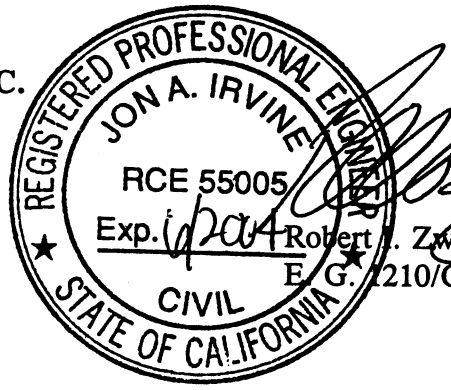
Typical subdrains are shown on the revised sections. Also, the Chimney Drain Detail shows the recommended drain at the soldier piles along the uphill side of the repair. It is our understanding, that the civil engineer will prepare a formal subdrain plan upon approval of the Tentative Tract.

Item 19 - *Provide recommended minimum deflection for all retaining structures.*

For aesthetic reasons, maximum deflection of both permanent and temporary soldier piles should be limited to 1 inch. Shored excavations should be surveyed and monitored for deflection.

The J. Byer Group appreciates the opportunity to continue as your geotechnical consultants. Any questions regarding this or the referenced report should be directed to the undersigned.

Respectfully submitted,
THE J. BYER GROUP, INC.



Jon A. Irvine
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JAI:RIZ:JWB:flh
Y:\FINAL\ADDENDUM\19457-i1.add.wpd

Enc: City of Los Angeles Department of Building and Safety, Grading Section review letter dated January 22, 2001 (3 pages)
Calculation Sheets (14)
Finite Element Calculation from JB 18241-I (9 pages)
Shear Diagram SH-2 by Geosoils
Sections O - Q
Chimney Drain Detail

In Pocket: Sections A - N
Geologic Map
Finite Element Grid

xc: (3) Addressee
(1) Gary Safronoff
(1) William Rose & Associates
(3) City of Los Angeles Department of Building & Safety, Grading Section

CITY OF LOS ANGELES
CALIFORNIA

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

ANDREW A. ADELMAN
GENERAL MANAGER

WALT KRUKOW
EXECUTIVE OFFICER

January 22, 2001

Log # 31587-01
SOILS/GEOLOGY FILE - 2

Palisades Landmark LLC
10600 Santa Monica Bl
Los Angeles, CA 90025

TRACT: (Tentative Tract 52928)
LOT: 1
LOCATION: 17331-17333 Tramonto Dr

CURRENT REFERENCE REPORT/LETTER(S)	REPORT NO.	DATE(S) OF DOCUMENT	PREPARED BY
Geology/Soil Report	18457-I	11/29/00	J. Byer Group
Ovrszd Doc	``	``	``

PREVIOUS REFERENCE REPORT/LETTER(S)	REPORT NO.	DATE(S) OF DOCUMENT	PREPARED BY
Geology/Soil Report	18457	08/16/00	J. Byer Group
Department letter	29828	02/07/00	LADBS
``	31587	09/21/00	``

The referenced reports concerning a proposed condominium development have been reviewed by the Grading Section of the Department of Building and Safety. The reports cannot be approved as they lack sufficient information to determine the stability or safety of the proposed development. An addendum to the reports shall be submitted which contains the following information:

1. Revise section K to show boring B-6, include the data from boring B-6 and revise recommendations for piles P31 through P40, as necessary. Justify the recommended 1.5:1 set back plane. Provide recommendations for the minimum embedment of the piles below set back plane. Similarly, the location of boring LC-2 is not shown on cross-section L, and boring PS4B is not shown on cross-section P.

2. Revise all cross-sections, as necessary, based upon the new slide plane map provided in the report dated 11/20/00 for 17325 Castellemmare.

3. Provide the information requested in item 3 of the Inter-Departmental letter dated 09/21/00; The recommendations shall be specific for shoring/retaining wall design and final slope gradients that conform with the Code; show the proposed walls and slopes on a detailed geologic map and sections. A cross-section, oriented perpendicular to the slope, shall also

be provided through the adjacent building to the east that shows how the ascending slope will be stabilized down to the property line.

4. Clarify the design recommendations for piles P31 through P35; The report dated 08/16/00 indicates 145 Kips per foot and the current report indicates an EFP of 65 pcf.

5. Justify shear strength parameters obtained in 2D back stability analyses for the landslide by providing 3D back stability analyses. If lower shear strength parameters are obtained, revise all slope stability/retaining structures calculations and revise recommendations for retaining wall design.

6. Provide recommendations for permanent de-watering of the landslide to remain above the subject property or revise the design/stability calculations to assume worst-case conditions that could occur. The response shall address not only the groundwater above the lower slide plane, but also a potential perched groundwater table above the upper slide plane. As a minimum, ground water shall be assumed 30 feet above the landslide plane unless a lower ground water elevation may be justified; additionally, provide stability calculations to determine the effect on the factor of safety for rises in groundwater at five-foot intervals above the 30-foot level.

7. Label property boundaries, as well as show/label proposed grades on all cross-sections.

8. Extend easterly cross-section E-E to show toe the off-site slope.

9. Revise cross-sections E-E and G-G to show subject development. The structures described as proposed structures are actually proposed structures for G.H. Palmer & Associates site, and not for the subject site. Cross-section G-G shall be extended to show Revello Drive.

10. Provide design recommendations for the lower row soldier pile system subject to surcharge from the proposed structure shown on cross-section H.

11. Cross-section I shows existing building, but no building is shown on Geologic Map, please clarify. The basalt is not shown on the cross-section. In addition, show the location of boring PS1B. Determine the minimum depth of soldier pile below the plane with 1.5 factor-of-safety.

12. Design calculations and recommendations for the retaining wall that will support fifty feet of fill on section O. Explain, why the height of the wall is shown to be 50 feet(down to soil/bedrock contact) if no exploration determining the thickness of colluvium at this location was conducted. Also, show location of the proposed building.

13. Slope stability calculations for cross-section P are based on shear strength of siltstone bedrock. However the existing soils comprise of terrace deposits and basalt, please clarify.

14. Show the locations of sections Q and R on the map and complete the sections with geologic information.

15. Provide all referenced slope stability analyses.

16. Provide analyses for overtopping of the landslide over the proposed retaining wall.

17. Provide minimum embedment of all soldier piles shown on all cross-sections, in addition to I and K.

18. Show de-watering system on the cross-sections for all soldier pile/retaining structures.

19. Provide recommended minimum deflection for all retaining structures.

DAVID HSU
Chief of Grading Section

DANA PREVOST
Engineering Geologist II

ANDRZEJ T. SZPIKOWSKI
Geotechnical Engineer I

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cc: J. Byer Group
WLA District Office

REAME (ROTATIONAL EQUILIBRIUM ANALYSIS OF MULTILAYERED EMBANKMENT), Windows 95
THIS 1999 VERSION OF REAME IS LICENSED BY CIVIL ENGINEERING SOFTWARE CENTER TO

The J. Byer Group, Inc.

TITLE **CALCULATE THE SAFETY FACTOR OF THE REPAIR BASED UPON SECTION H. ASSUME THAT THE SLIDE DEBRIS IS REPLACED WITH COMPACTED FILL AND SOLDIER PILES ALONG THE UPHILL AND DOWNHILL PROPERTY LINES. THE UPHILL PILES ARE DESIGNED FOR EQUIVALENT FLUID PRESSURE = 30 PCF, WHILE THE EQUIVALENT FLUID PRESSURE FOR THE DOWNHILL PILES IS 65 PCF. ALSO, ASSUME WORST CASE GROUNDWATER CONDITIONS SHOWN IN SECTION H.**

NO. OF STATIC AND SEISMIC CASES (NCASE) = 1
NO. OF NONCIRCULAR SLIP SURFACES (NSS) = 1
TWO-DIMENSIONAL ANALYSIS (THREED = 0)
CASE NO. 1 SEISMIC COEFFICIENT (SEIC) =0.000

NO. OF BOUNDARY LINES (NBL) = 4

NO. OF POINTS ON BOUNDARY LINE 1 = 2
1 X COORD.= 0 Y COORD.= 0
2 X COORD.= 500 Y COORD.= 0

NO. OF POINTS ON BOUNDARY LINE 2 = 6
1 X COORD.= 220 Y COORD.= 178
2 X COORD.= 220 Y COORD.= 130
3 X COORD.= 320 Y COORD.= 107
4 X COORD.= 388 Y COORD.= 88
5 X COORD.= 414 Y COORD.= 88
6 X COORD.= 500 Y COORD.= 88

NO. OF POINTS ON BOUNDARY LINE 3 = 2
1 X COORD.= 0 Y COORD.= 222
2 X COORD.= 66 Y COORD.= 222

NO. OF POINTS ON BOUNDARY LINE 4 = 14
1 X COORD.= 0 Y COORD.= 252
2 X COORD.= 65 Y COORD.= 230
3 X COORD.= 96 Y COORD.= 216
4 X COORD.= 114 Y COORD.= 216
5 X COORD.= 114 Y COORD.= 211
6 X COORD.= 138 Y COORD.= 198
7 X COORD.= 160 Y COORD.= 192
8 X COORD.= 200 Y COORD.= 182
9 X COORD.= 220 Y COORD.= 178
10 X COORD.= 240 Y COORD.= 176
11 X COORD.= 257 Y COORD.= 172
12 X COORD.= 388 Y COORD.= 137
13 X COORD.= 388 Y COORD.= 90
14 X COORD.= 500 Y COORD.= 90

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1	0.000					
2	99999.000	-0.230	-0.279	0.000	0.000	
3	0.000					
4	-0.338	-0.452	0.000	99999.000	-0.542	-0.273
	-0.250	-0.200	-0.100	-0.235	-0.267	99999.000
	0.000					

UNIT WEIGHT OF WATER (GW) = 62.4

EARTH MATERIAL	SOIL NO.	COHESION	FRIC. ANGLE	UNIT WEIGHT
BASE OF SLIDE	1	0	16	130
COMPACTED FILL	2	400	29	130
TENSION CRACK ZONE	3	0	0	62.4

USE PHREATIC SURFACE
NO. OF SLICES (NSLI) = 10
NO. OF ADD. CIRCLES (NAC) = 3
ANALYSIS BY MODIFIED SPENCER METHOD (MTHD=4)
NUMBER OF FORCES (NFO)= 2
SOFT SOIL NUMBER (SSN)= 0

NO. OF POINTS ON WATER TABLE (NPWT) = 7

1	X COORD.= 0	Y COORD.= 200
2	X COORD.= 120	Y COORD.= 200
3	X COORD.= 220	Y COORD.= 173
4	X COORD.= 220	Y COORD.= 132
5	X COORD.= 388	Y COORD.= 90
6	X COORD.= 434	Y COORD.= 88
7	X COORD.= 500	Y COORD.= 87

NO. OF SOILS WITH DIFFERENT WATER TABLE (NSDW) = 0
NO. OF SOILS WITH DIFFERENT PORE PRESSURE RATIO (NSDP) = 0
SLICES WILL BE SUBDIVIDED

FORCE NO.	MAGNITUDE (MFO)	X COORD. (XFO)	Y COORD. (YFO)	ANGLE (AFO)	TYPE (ANC)	INTERACTION (SAI)
1	31740.00	80.000	147.330	0.00	1	0
2	71790.00	200.000	105.670	0.00	1	0

NOTE: EXTERNAL FORCES WERE USED TO MODEL THE SOLDIER PILES. FORCE #1 IS THE RESULTANT FROM THE UPPER SOLDIER PILES DESIGNED FOR EQUIVALENT FLUID PRESSURE OF 30 PCF. FORCE #2 IS THE RESULTANT FROM THE LOWER SOLDIER PILES DESIGNED FOR EQUIVALENT FLUID PRESSURE OF 65 PCF.

NO. OF POINTS ON SLIP SURFACE (NPSS) 1 = 9

1	X COORD.= 66	Y COORD.= 222
2	X COORD.= 68	Y COORD.= 217
3	X COORD.= 71	Y COORD.= 208
4	X COORD.= 161	Y COORD.= 162
5	X COORD.= 177	Y COORD.= 153
6	X COORD.= 214	Y COORD.= 135
7	X COORD.= 220	Y COORD.= 132
8	X COORD.= 320	Y COORD.= 109
9	X COORD.= 388	Y COORD.= 90

SLIP SURFACE NO. 1

FOR SLIP SURFACE NO. 1 FACTOR OF SAFETY IS 1.737

SUMMARY OF SLICE INFORMATION FOR MOST CRITICAL SLIP SURFACE

SL. NO.	SOIL NO.	SLICE WIDTH	BOTTOM TANGENT	BOTTOM SHEAR	INTERSLICE NORMAL	INTERSLICE SHEAR	RESISTING FORCE	DRIVING FORCE	THRUST HEIGHT
2	1	3.000	-2.500	5.856E+02	4.179E+03	-1.482E+03	.27E+04	.47E+04	6.225
3	1	3.000	-3.000	1.257E+03	1.103E+04	-3.913E+03	.69E+04	.11E+05	7.827
4	1	24.010	-0.511	9.590E+03	2.893E+04	-1.026E+04	.19E+05	.29E+05	5.566
5	1	0.990	-0.511	3.594E+02	2.975E+04	-1.055E+04	.70E+03	.12E+04	5.566
6	1	18.000	-0.511	7.209E+03	4.859E+04	-1.723E+04	.14E+05	.27E+05	5.667
7	1	13.564	-0.511	4.062E+03	6.363E+04	-2.257E+04	.79E+04	.20E+05	6.190
8	1	10.436	-0.511	2.707E+03	7.538E+04	-2.674E+04	.53E+04	.15E+05	6.723
9	1	22.000	-0.511	5.814E+03	1.031E+05	-3.657E+04	.11E+05	.34E+05	7.880
10	1	0.119	-0.511	3.407E+01	1.033E+05	-3.663E+04	.66E+02	.20E+03	7.886
11	1	0.881	-0.511	2.538E+02	1.045E+05	-3.706E+04	.50E+03	.15E+04	7.930
12	1	16.000	-0.563	4.916E+03	1.313E+05	-4.655E+04	.98E+04	.32E+05	9.289
13	1	15.673	-0.486	7.323E+03	1.282E+05	-4.546E+04	.14E+05	.51E+04	12.051
14	1	7.327	-0.486	2.807E+03	1.411E+05	-5.003E+04	.54E+04	.16E+05	11.867
15	1	14.000	-0.486	5.804E+03	1.674E+05	-5.938E+04	.11E+05	.33E+05	11.689
16	1	6.000	-0.500	2.675E+03	1.798E+05	-6.378E+04	.52E+04	.15E+05	11.721
17	2	5.228	-0.230	1.118E+04	1.759E+05	-6.239E+04	.20E+05	.76E+04	11.318
18	2	14.772	-0.230	3.238E+04	1.646E+05	-5.840E+04	.58E+05	.22E+05	10.177
19	2	17.000	-0.230	3.790E+04	1.515E+05	-5.374E+04	.68E+05	.26E+05	8.835
20	2	0.782	-0.230	1.742E+03	1.509E+05	-5.352E+04	.31E+04	.12E+04	8.772
21	2	32.554	-0.230	7.167E+04	1.260E+05	-4.468E+04	.13E+06	.49E+05	6.021
22	2	29.663	-0.230	6.390E+04	1.037E+05	-3.677E+04	.11E+06	.43E+05	3.197
23	2	2.891	-0.279	6.057E+03	1.024E+05	-3.630E+04	.11E+05	.50E+04	3.017
24	2	32.554	-0.279	7.633E+04	1.484E+04	-5.264E+03	.14E+06	-.82E+04	1.237
25	2	32.554	-0.279	6.900E+04	3.906E-03	0.000E+00	.12E+06	.57E+05	0.000
		SUM					.78E+06	.45E+06	

FOR SLIP SURFACE NO. 1 WITH SEISMIC COEFFICIENT 0.000
BY MODIFIED SPENCER METHOD, DEL ANGLE = 0.341 AND FACTOR OF SAFETY IS 1.737

CONCLUSIONS: **THE CALCULATED SAFETY FACTOR AFTER THE REPAIR IS GREATER THAN 1.5.**

TITLE: CALCULATE THE SAFETY FACTOR OF THE 1½:1 SETBACK PLANE SHOWN IN SECTION K. ASSUME SLIDE DEBRIS HAS BEEN REMOVED.

NO. OF STATIC AND SEISMIC CASES (NCASE) = 1
NO. OF NONCIRCULAR SLIP SURFACES (NSS) = 0
TWO-DIMENSIONAL ANALYSIS (THREED = 0)
CASE NO. 1 SEISMIC COEFFICIENT (SEIC) =0.000
NO. OF BOUNDARY LINES (NBL) = 3

NO. OF POINTS ON BOUNDARY LINE 1 = 2
1 X COORD.=-1000 Y COORD.= 0
2 X COORD.= 1000 Y COORD.= 0

NO. OF POINTS ON BOUNDARY LINE 2 = 4
1 X COORD.=-1000 Y COORD.= 135
2 X COORD.= 99 Y COORD.= 135
3 X COORD.= 99 Y COORD.= 1
4 X COORD.= 1000 Y COORD.= 1

NO. OF POINTS ON BOUNDARY LINE 3 = 8
1 X COORD.=-1000 Y COORD.= 228
2 X COORD.= 25 Y COORD.= 228
3 X COORD.= 74 Y COORD.= 215
4 X COORD.= 99 Y COORD.= 189
5 X COORD.= 99 Y COORD.= 144
6 X COORD.= 120 Y COORD.= 131
7 X COORD.= 153 Y COORD.= 120
8 X COORD.= 1000 Y COORD.= 120

LINE NO. AND SLOPE OF EACH SEGMENT ARE:
1 0.000
2 0.000 99999.000 0.000
3 0.000 -0.265 -1.040 99999.000 -0.619 -0.333
0.000

MIN. DEPTH OF TALLEST SLICE (DMIN) = 0
NO. OF RADIUS CONTROL ZONES (NRCZ) = 2
RADIUS DECREMENT (RDEC) FOR ZONE 1 = 0
NO. OF CIRCLES (NCIR) FOR ZONE 1 = 5
ID NO. FOR FIRST CIRCLE (INFC) FOR ZONE 1 = 1
NO. OF BOTTOM LINES (NOL) FOR ZONE 1 = 1
LINE NO. (LINO) BEG. NO. (NBP) END NO. (NEP)
1 1 2

RADIUS DECREMENT (RDEC) FOR ZONE 2 = 0
NO. OF CIRCLES (NCIR) FOR ZONE 2 = 0
ID NO. FOR FIRST CIRCLE (INFC) FOR ZONE 2 = 1
NO. OF BOTTOM LINES (NOL) FOR ZONE 2 = 1
LINE NO. (LINO) BEG. NO. (NBP) END NO. (NEP)
2 1 4
UNIT WEIGHT OF WATER (GW) = 62.4

EARTH MATERIAL	SOIL NO.	COHESION	FRIC. ANGLE	UNIT WEIGHT
BEDROCK	1	780	31	135
BEDROCK	2	780	31	135

NO SEEPAGE
USE GRID
NO. OF SLICES (NSLI) = 10
NO. OF ADD. CIRCLES (NAC) = 3
ANALYSIS BY SIMPLIFIED BISHOP METHOD (MTHD=2)
NUMBER OF FORCES (NFO)= 1
SOFT SOIL NUMBER (SSN)= 0

INPUT COORD. OF GRID POINTS 1,2,AND 3

POINT 1 X COORD. = 80 Y COORD. = 345
POINT 2 X COORD. = 80 Y COORD. = 220
POINT 3 X COORD. = 180 Y COORD. = 220

X INCREMENT (XINC) = 12 Y INCREMENT (YINC) = 12
NO. OF DIVISIONS BETWEEN POINTS 1 AND 2 (ND12) = 5
NO. OF DIVISIONS BETWEEN POINTS 2 AND 3 (ND23) = 4
ONLY F. S. AT EACH CENTER WILL BE PRINTED
SLICES WILL BE SUBDIVIDED

FORCE NO.	MAGNITUDE (MFO)*	X COORD. (XFO)	Y COORD. (YFO)	ANGLE (AFO)	TYPE (ANC)	INTERACTION (SAI)
1	65812.50	45.000	159.000	0.00	1	0

- RESULTANT FORCE EQUAL TO EQUIVALENT FLUID PRESSURE = 65 PCF FOR 45 FOOT CANTILEVERED SOLDIER PILE

LOWEST FACTOR OF SAFETY AT EACH GRID POINT IS TABULATED BELOW

COORDINATE	80.000	105.000	130.000	155.000	180.000
345.000	2.348	1.943	1.652	1.457	1.552
320.000	2.271	1.848	1.558	1.378	1.670
295.000	2.195	1.749	1.461	1.342	1.811
270.000	2.124	1.651	1.367	1.441	1.925
245.000	2.070	1.556	1.354	1.549	2.162
220.000	2.062	1.469	1.438	1.668	2.611

MINIMUM FACTORS OF SAFETY OCCUR AT THE FOLLOWING 2 CENTERS

FACTOR OF SAFETY = 1.342 AT (155.000,295.000)
FACTOR OF SAFETY = 1.354 AT (130.000,245.000)

IN THE FOLLOWING TABLE WARNING INDICATES HOW MANY TIMES THE MAXIMUM RADIUS IS LIMITED BY THE END POINTS OF GROUND LINES

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
155	295	8	8	175.791	1.342	0
167	295	8	7	185.965	1.544	0
143	295	8	8	172.393	1.364	0
155	307	8	8	187.192	1.357	0
155	283	8	7	170.716	1.457	0
158	295	8	7	182.978	1.488	0
152	295	8	8	174.872	1.315	0
149	295	8	8	173.999	1.330	0
152	298	8	8	177.730	1.324	0
152	292	8	8	172.019	1.309	0

THE J. BYER GROUP, INC.

SLOPE STABILITY CALCULATIONS

CLIENT: PALISADES LANDMARK JB 18457-I CALCULATION SHEET #6

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
152	289	8	8	169.172	1.311	0
155	292	8	8	172.954	1.337	0
149	292	8	8	171.131	1.320	0

AT POINT (152 292) RADIUS 172.019
THE MINIMUM FACTOR OF SAFETY IS 1.309

SUMMARY OF SLICE INFORMATION FOR MOST CRITICAL SLIP SURFACE

SL. NO.	SOIL NO.	SLICE WIDTH	SLICE HEIGHT	WATER HEIGHT	SLICE SINE	TOTAL WEIGHT	EFFEC. WEIGHT	RESIS. MOMENT	DRIVING MOMENT
1	2	16.225	17.369	0.000	-.881	.380E+05	.380E+05	.646E+07	.577E+07
2	2	16.225	42.187	0.000	-.787	.924E+05	.924E+05	.942E+07	.125E+08
3	2	0.220	51.904	0.000	-.739	.154E+04	.154E+04	.151E+06	.196E+06
4	2	16.005	58.095	0.000	-.692	.126E+06	.126E+06	.123E+08	.149E+08
5	2	16.225	67.463	0.000	-.598	.148E+06	.148E+06	.150E+08	.152E+08
6	2	16.225	73.894	0.000	-.504	.162E+06	.162E+06	.170E+08	.140E+08
7	2	0.545	76.252	0.000	-.455	.561E+04	.561E+04	.599E+06	.439E+06
8	2	7.703	74.213	0.000	-.431	.772E+05	.772E+05	.834E+07	.572E+07
9	1	7.977	69.567	0.000	-.385	.749E+05	.749E+05	.830E+07	.497E+07
10	1	9.320	63.914	0.000	-.335	.804E+05	.804E+05	.916E+07	.464E+07
11	2	6.905	14.592	0.000	-.288	.136E+05	.136E+05	.231E+07	.674E+06
12	2	14.095	10.892	0.000	-.227	.207E+05	.207E+05	.403E+07	.809E+06
13	2	2.130	7.860	0.000	-.180	.226E+04	.226E+04	.520E+06	.699E+05
14	2	16.225	6.224	0.000	-.126	.136E+05	.136E+05	.359E+07	.297E+06
15	2	14.645	2.344	0.000	-.037	.463E+04	.463E+04	.244E+07	.293E+05
16	2	1.580	0.010	0.000	.010	.214E+01	.214E+01	.212E+06	-.383E+01
							SUM	.998E+08	.803E+08

AT CENTER (152.000 , 292.000) WITH RADIUS 172.019 AND SEIS. COEFF. 0.00
FACTOR OF SAFETY BY SIMPLIFIED BISHOP METHOD IS **1.309**

CONCLUSIONS: **THE SAFETY FACTOR OF THE 1½:1 PLANE IS GREATER THAN 1.25. SEE SECTION K FOR THE LOCATION OF THE CRITICAL FAILURE CIRCLE.**

TITLE **CALCULATE THE SAFETY FACTOR OF A POTENTIAL FAILURE THAT OVER-TOPS THE RETAINING AND REPAIR BASED UPON SECTION H**

NO. OF STATIC AND SEISMIC CASES (NCASE) = 1
NO. OF NONCIRCULAR SLIP SURFACES (NSS) = 1
TWO-DIMENSIONAL ANALYSIS (THREED = 0)
CASE NO. 1 SEISMIC COEFFICIENT (SEIC) =0.000
NO. OF BOUNDARY LINES (NBL) = 5

NO. OF POINTS ON BOUNDARY LINE 1 = 2
1 X COORD.= 0 Y COORD.= 0
2 X COORD.= 500 Y COORD.= 0

NO. OF POINTS ON BOUNDARY LINE 2 = 6
1 X COORD.= 0 Y COORD.= 1
2 X COORD.= 161 Y COORD.= 1
3 X COORD.= 161 Y COORD.= 163
4 X COORD.= 220 Y COORD.= 178
5 X COORD.= 220 Y COORD.= 1
6 X COORD.= 500 Y COORD.= 1

NO. OF POINTS ON BOUNDARY LINE 3 = 5
1 X COORD.= 220 Y COORD.= 178
2 X COORD.= 220 Y COORD.= 132
3 X COORD.= 320 Y COORD.= 109
4 X COORD.= 388 Y COORD.= 90
5 X COORD.= 388 Y COORD.= 137

NO. OF POINTS ON BOUNDARY LINE 4 = 2
1 X COORD.= 0 Y COORD.= 252
2 X COORD.= 65 Y COORD.= 230

NO. OF POINTS ON BOUNDARY LINE 5 = 15
1 X COORD.= 0 Y COORD.= 252
2 X COORD.= 31 Y COORD.= 252
3 X COORD.= 65 Y COORD.= 230
4 X COORD.= 96 Y COORD.= 216
5 X COORD.= 114 Y COORD.= 216
6 X COORD.= 114 Y COORD.= 211
7 X COORD.= 138 Y COORD.= 198
8 X COORD.= 160 Y COORD.= 192
9 X COORD.= 200 Y COORD.= 182
10 X COORD.= 220 Y COORD.= 178
11 X COORD.= 240 Y COORD.= 176
12 X COORD.= 257 Y COORD.= 172
13 X COORD.= 388 Y COORD.= 137
14 X COORD.= 388 Y COORD.= 90
15 X COORD.= 500 Y COORD.= 90

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1	0.000					
2	0.000	99999.000	0.254	99999.000	0.000	
3	99999.000	-0.230	-0.279	99999.000		
4	-0.338					
5	0.000	-0.647	-0.452	0.000	99999.000	-0.542
	-0.273	-0.250	-0.200	-0.100	-0.235	-0.267
	99999.000	0.000				

UNIT WEIGHT OF WATER (GW) = 62.4

EARTH MATERIALS	SOIL NO.	COHESION	FRIC. ANGLE	UNIT WEIGHT
SLIDE DEBRIS	1	320	25	130
BASE OF SLIDE	2	0	16	130
COMPACTED FILL	3	400	29	130
TENSION CRACK ZONE	4	0	0	62.4

NO SEEPAGE
NO. OF SLICES (NSLI) = 10
NO. OF ADD. CIRCLES (NAC) = 3
ANALYSIS BY MODIFIED SPENCER METHOD (MTHD=4)
NUMBER OF FORCES (NFO)= 0
SOFT SOIL NUMBER (SSN)= 0
SLICES WILL BE SUBDIVIDED

NO. OF POINTS ON SLIP SURFACE (NPSS) 1 = 5
1 X COORD.= 66 Y COORD.= 222
2 X COORD.= 68 Y COORD.= 217
3 X COORD.= 71 Y COORD.= 208
4 X COORD.= 161 Y COORD.= 162
5 X COORD.= 220 Y COORD.= 178

FOR SLIP SURFACE NO. 1 FACTOR OF SAFETY IS 1.710

SUMMARY OF SLICE INFORMATION FOR MOST CRITICAL SLIP SURFACE

SL. NO.	SOIL NO.	SLICE WIDTH	BOTTOM TANGENT	BOTTOM SHEAR	INTERSLICE NORMAL	INTERSLICE SHEAR	RESISTING FORCE	DRIVING FORCE	THRUST HEIGHT
2	2	2.544	-2.500	2.090E+02	1.106E+03	-3.151E+02	.96E+03	.16E+04	2.985
3	2	3.000	-2.500	7.246E+02	4.850E+03	-1.381E+03	.33E+04	.57E+04	4.761
4	2	3.000	-3.000	1.385E+03	1.225E+04	-3.489E+03	.75E+04	.12E+05	7.569
5	2	6.829	-0.511	2.754E+03	1.727E+04	-4.918E+03	.53E+04	.81E+04	6.687
6	2	15.797	-0.511	6.591E+03	2.929E+04	-8.340E+03	.13E+05	.19E+05	6.779
7	2	2.375	-0.511	1.017E+03	3.114E+04	-8.868E+03	.20E+04	.30E+04	6.896
8	2	13.422	-0.511	6.722E+03	4.340E+04	-1.236E+04	.13E+05	.20E+05	7.551
9	2	4.578	-0.511	2.728E+03	4.837E+04	-1.377E+04	.52E+04	.80E+04	7.756
10	2	11.219	-0.511	5.758E+03	5.887E+04	-1.676E+04	.11E+05	.17E+05	8.680
11	2	12.781	-0.511	6.462E+03	7.065E+04	-2.012E+04	.12E+05	.19E+05	9.878
12	2	3.016	-0.511	1.535E+03	7.345E+04	-2.092E+04	.29E+04	.45E+04	10.170
13	2	15.797	-0.511	8.774E+03	8.944E+04	-2.547E+04	.17E+05	.26E+05	11.600
14	2	3.187	-0.511	1.920E+03	9.294E+04	-2.647E+04	.37E+04	.57E+04	11.869
15	2	1.000	-0.511	6.128E+02	9.406E+04	-2.679E+04	.12E+04	.18E+04	11.953
16	1	11.610	0.271	1.747E+04	6.258E+04	-1.782E+04	.31E+05	-.13E+05	9.879
17	1	15.797	0.271	1.840E+04	3.010E+04	-8.573E+03	.33E+05	-.13E+05	7.006
18	1	11.594	0.271	9.564E+03	1.385E+04	-3.945E+03	.17E+05	-.63E+04	4.989
19	1	4.203	0.271	2.664E+03	9.507E+03	-2.708E+03	.47E+04	-.16E+04	4.395
20	1	15.797	0.271	6.467E+03	7.813E-03	0.000E+00	.11E+05	-.28E+04	0.000
		SUM					.19E+06	.11E+06	

FOR SLIP SURFACE NO. 1 WITH SEISMIC COEFFICIENT 0.000
BY MODIFIED SPENCER METHOD, DEL ANGLE = 0.277 AND FACTOR OF SAFETY IS 1.710

CONCLUSIONS: **THE CALCULATED SAFETY FACTOR AFTER THE REPAIR FOR A POTENTIAL FAILURE THAT OVER-TOPS THE REAR YARD SOLDIER PILE/RETAINING WALL SYSTEM IS GREATER THAN 1.5.**

TITLE CALCULATE THE GROSS STABILITY OF THE SLOPE DEPICTED IN SECTION P.

NO. OF STATIC AND SEISMIC CASES (NCASE) = 1
NO. OF NONCIRCULAR SLIP SURFACES (NSS) = 0
TWO-DIMENSIONAL ANALYSIS (THREED = 0)
CASE NO. 1 SEISMIC COEFFICIENT (SEIC) =0.000

NO. OF BOUNDARY LINES (NBL) = 4

NO. OF POINTS ON BOUNDARY LINE 1 = 2
1 X COORD.=-500 Y COORD.= 0
2 X COORD.= 500 Y COORD.= 0

NO. OF POINTS ON BOUNDARY LINE 2 = 4
1 X COORD.= 134 Y COORD.= 120
2 X COORD.= 134 Y COORD.= 1
3 X COORD.= 190 Y COORD.= 1
4 X COORD.= 190 Y COORD.= 88

NO. OF POINTS ON BOUNDARY LINE 3 = 4
1 X COORD.= 93 Y COORD.= 150
2 X COORD.= 93 Y COORD.= 135
3 X COORD.= 122 Y COORD.= 120
4 X COORD.= 167 Y COORD.= 120

NO. OF POINTS ON BOUNDARY LINE 4 = 12
1 X COORD.=-500 Y COORD.= 170
2 X COORD.= 45 Y COORD.= 170
3 X COORD.= 93 Y COORD.= 150
4 X COORD.= 93 Y COORD.= 135
5 X COORD.= 145 Y COORD.= 135
6 X COORD.= 160 Y COORD.= 125
7 X COORD.= 167 Y COORD.= 120
8 X COORD.= 186 Y COORD.= 100
9 X COORD.= 190 Y COORD.= 88
10 X COORD.= 199 Y COORD.= 79
11 X COORD.= 240 Y COORD.= 60
12 X COORD.= 500 Y COORD.= 60

LINE NO. AND SLOPE OF EACH SEGMENT ARE:

1	0.000					
2	99999.000	0.000	99999.000			
3	99999.000	-0.517	0.000			
4	0.000	-0.417	99999.000	0.000	-0.667	-0.714
	-1.053	-3.000	-1.000	-0.463	0.000	

MIN. DEPTH OF TALLEST SLICE (DMIN) = 0
NO. OF RADIUS CONTROL ZONES (NRCZ) = 1

RADIUS DECREMENT (RDEC) FOR ZONE 1 = 0
NO. OF CIRCLES (NCIR) FOR ZONE 1 = 5
ID NO. FOR FIRST CIRCLE (INFC) FOR ZONE 1 = 1
NO. OF BOTTOM LINES (NOL) FOR ZONE 1 = 1
LINE NO. (LINO) BEG. NO. (NBP) END NO. (NEP)

1 1 2

UNIT WEIGHT OF WATER (GW) = 62.4

EARTH MATERIAL	SOIL NO.	COHESION	FRIC. ANGLE	UNIT WEIGHT
SILTSTONE BEDROCK	1	780	31	130
BASALT BEDROCK	2	750	33	130
ALLUVIAL TERRACE	3	550	20.5	130

NO SEEPAGE
USE GRID
NO. OF SLICES (NSLI) = 10
NO. OF ADD. CIRCLES (NAC) = 3
ANALYSIS BY SIMPLIFIED BISHOP METHOD (MTHD=2)
NUMBER OF FORCES (NFO)= 0
SOFT SOIL NUMBER (SSN)= 0

INPUT COORD. OF GRID POINTS 1,2,AND 3

POINT 1 X COORD. = 140 Y COORD. = 310
POINT 2 X COORD. = 140 Y COORD. = 160
POINT 3 X COORD. = 260 Y COORD. = 160

X INCREMENT (XINC) = 12 Y INCREMENT (YINC) = 12
NO. OF DIVISIONS BETWEEN POINTS 1 AND 2 (ND12) = 5
NO. OF DIVISIONS BETWEEN POINTS 2 AND 3 (ND23) = 4
ONLY F. S. AT EACH CENTER WILL BE PRINTED
SLICES WILL BE SUBDIVIDED

LOWEST FACTOR OF SAFETY AT EACH GRID POINT IS TABULATED BELOW

COORDINATE	140.000	170.000	200.000	230.000	260.000	290.000
310.000	2.677	2.255	1.984	1.835	1.839	1.772
280.000	2.615	2.188	1.926	1.811	1.825	1.674
250.000	2.570	2.143	1.903	1.835	1.678	1.639
220.000	2.565	2.121	1.903	1.744	1.587	3.494
190.000	2.660	2.196	1.913	1.591	1.922	3.243
160.000	2.907	2.377	1.722	1.683	2.939	5.037

MINIMUM FACTORS OF SAFETY OCCUR AT THE FOLLOWING 4 CENTERS

FACTOR OF SAFETY = 1.811 AT (230.000,280.000)
FACTOR OF SAFETY = 1.639 AT (290.000,250.000)
FACTOR OF SAFETY = 1.587 AT (260.000,220.000)
FACTOR OF SAFETY = 1.591 AT (230.000,190.000)

IN THE FOLLOWING TABLE WARNING INDICATES HOW MANY TIMES THE MAXIMUM RADIUS IS LIMITED BY THE END POINTS OF GROUND LINES

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
260	220	8	5	153.249	1.587	0
272	220	8	6	156.250	1.730	0
248	220	8	5	146.952	1.620	0
260	232	8	5	162.863	1.618	0
260	208	8	6	140.030	1.695	0
263	220	8	5	154.897	1.617	0

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
257	220	8	5	151.629	1.592	0
260	223	8	5	155.619	1.594	0
260	217	8	5	150.904	1.592	0

AT POINT (260 220) RADIUS 153.249

THE MINIMUM FACTOR OF SAFETY IS 1.587

SUMMARY OF SLICE INFORMATION FOR MOST CRITICAL SLIP SURFACE

SL. NO.	SOIL NO.	SLICE WIDTH	SLICE HEIGHT	WATER HEIGHT	SLICE SINE	TOTAL WEIGHT	EFFEC. WEIGHT	RESIS. MOMENT	DRIVING MOMENT
1	3	6.578	4.738	0.000	-.811	.405E+04	.405E+04	.108E+07	.503E+06
2	3	4.812	12.136	0.000	-.773	.759E+04	.759E+04	.916E+06	.900E+06
3	2	1.126	15.650	0.000	-.754	.229E+04	.229E+04	.347E+06	.265E+06
4	2	0.640	16.442	0.000	-.748	.137E+04	.137E+04	.201E+06	.157E+06
5	2	6.578	17.967	0.000	-.725	.154E+05	.154E+05	.215E+07	.171E+07
6	2	6.578	20.096	0.000	-.682	.172E+05	.172E+05	.228E+07	.180E+07
7	2	1.204	21.006	0.000	-.656	.329E+04	.329E+04	.430E+06	.331E+06
8	2	5.374	21.468	0.000	-.635	.150E+05	.150E+05	.195E+07	.146E+07
9	2	1.626	21.760	0.000	-.612	.460E+04	.460E+04	.598E+06	.432E+06
10	2	4.952	21.049	0.000	-.591	.136E+05	.136E+05	.179E+07	.123E+07
11	2	6.578	19.001	0.000	-.553	.162E+05	.162E+05	.225E+07	.138E+07
12	2	6.578	16.208	0.000	-.510	.139E+05	.139E+05	.207E+07	.108E+07
13	2	0.892	14.421	0.000	-.486	.167E+04	.167E+04	.263E+06	.125E+06
14	2	4.000	9.282	0.000	-.470	.483E+04	.483E+04	.945E+06	.348E+06
15	1	1.686	3.914	0.000	-.451	.858E+03	.858E+03	.296E+06	.593E+05
16	1	6.578	1.795	0.000	-.424	.153E+04	.153E+04	.996E+06	.998E+05
							SUM	.186E+08	.119E+08

AT CENTER (260.000 , 220.000) WITH RADIUS 153.249 AND SEIS. COEFF. 0.00
FACTOR OF SAFETY BY SIMPLIFIED BISHOP METHOD IS **1.587**

CONCLUSIONS: **THE CALCULATED SAFETY FACTOR OF SECTION P IS GREATER THAN 1.5.**

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SHORING PILE

JB: 18457-I CONSULT: JAI
CLIENT: PALISADES LANDMARK

CALCULATION SHEET # 12

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALLS. THE WALL HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. ASSUME THE BACKFILL IS SATURATED WITH NO EXCESS HYDROSTATIC PRESSURE. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	SLIDE DEBRIS	RETAINED LENGTH	25 feet
SHEAR DIAGRAM:	2	BACKSLOPE ANGLE:	20 degrees
COHESION:	320 psf	SURCHARGE:	0 pounds
PHI ANGLE:	25 degrees	SURCHARGE TYPE:	U Uniform
DENSITY	130 pcf	INITIAL FAILURE ANGLE:	40 degrees
SAFETY FACTOR:	1.25	FINAL FAILURE ANGLE:	70 degrees
PILE FRICTION	0 degrees	INITIAL TENSION CRACK:	5 feet
CD (C/FS):	256.0 psf	FINAL TENSION CRACK:	60 feet

PHID = ATAN(TAN(PHI)/FS) = 20.5 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	47 degrees
AREA OF TRIAL FAILURE WEDGE	416.8 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	54182.5 pounds
NUMBER OF TRIAL WEDGES ANALYZED	1736 trials
LENGTH OF FAILURE PLANE	39.6 feet
DEPTH OF TENSION CRACK	5.9 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	27.0 feet
CALCULATED HORIZONTAL THRUST ON WALL	**16449.8 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**52.6 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**65.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED SHORING PILES MAY MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 65 POUNDS PER CUBIC FOOT. THE FLUID PRESSURE SHOULD BE MULTIPLIED BY THE PILE SPACING.

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, GLENDALE, CA 91206
(818) 549-9959 FAX: (818) 543-3747

SHORING PILE

JB: 18457-I CONSULT: JAI
CLIENT: PALISADES LANDMARK

CALCULATION SHEET # 13

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALLS. THE WALL HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. ASSUME THE BACKFILL IS SATURATED WITH NO EXCESS HYDROSTATIC PRESSURE. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	BEDROCK	RETAINED LENGTH	45 feet
SHEAR DIAGRAM:	2	BACKSLOPE ANGLE:	27 degrees
COHESION:	780 psf	SURCHARGE:	0 pounds
PHI ANGLE:	31 degrees	SURCHARGE TYPE:	U Uniform
DENSITY	130 pcf	INITIAL FAILURE ANGLE:	40 degrees
SAFETY FACTOR:	1.5	FINAL FAILURE ANGLE:	70 degrees
PILE FRICTION	0 degrees	INITIAL TENSION CRACK:	5 feet
CD (C/FS):	520.0 psf	FINAL TENSION CRACK:	100 feet

PHID = ATAN(TAN(PHI)/FS) = 21.8 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	43 degrees
AREA OF TRIAL FAILURE WEDGE	2157.9 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	280532.7 pounds
NUMBER OF TRIAL WEDGES ANALYZED	2976 trials
LENGTH OF FAILURE PLANE	99.8 feet
DEPTH OF TENSION CRACK	14.1 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	73.0 feet
CALCULATED HORIZONTAL THRUST ON WALL	**56975.0 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**56.3 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**65.0 pcf**

THE CALCULATION INDICATES THAT PROPOSED SHORING PILES P31 THROUGH P40 MAY MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 65 POUNDS PER CUBIC FOOT. THE FLUID PRESSURE SHOULD BE MULTIPLIED BY THE PILE SPACING.

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, GLENDALE, CA 91206
(818) 549-9959 FAX: (818) 543-3747

RETAINING WALL

JB: 18457-I CONSULT: JAI
CLIENT: PALISADES LANDMARK

CALCULATION SHEET # 14

CALCULATE THE DESIGN MINIMUM EQUIVALENT FLUID PRESSURE (EFP) FOR PROPOSED RETAINING WALLS. THE WALL HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. ASSUME THE BACKFILL IS SATURATED WITH NO EXCESS HYDROSTATIC PRESSURE. USE THE MONONOBE-OKABE METHOD FOR SEISMIC FORCES.

CALCULATION PARAMETERS

EARTH MATERIAL:	COMPACTED FILL	WALL HEIGHT	50 feet
SHEAR DIAGRAM:	4	BACKSLOPE ANGLE:	0 degrees
COHESION:	400 psf	SURCHARGE:	0 pounds
PHI ANGLE:	29 degrees	SURCHARGE TYPE:	U Uniform
DENSITY	130 pcf	INITIAL FAILURE ANGLE:	40 degrees
SAFETY FACTOR:	1.5	FINAL FAILURE ANGLE:	70 degrees
WALL FRICTION	0 degrees	INITIAL TENSION CRACK:	5 feet
CD (C/FS):	266.7 psf	FINAL TENSION CRACK:	60 feet

PHID = ATAN(TAN(PHI)/FS) = 20.3 degrees

HORIZONTAL PSEUDO STATIC SEISMIC COEFFICIENT (k_h) 0 %g

VERTICAL PSEUDO STATIC SEISMIC COEFFICIENT (k_v) 0 %g

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	55 degrees
AREA OF TRIAL FAILURE WEDGE	863.8 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	112290.7 pounds
NUMBER OF TRIAL WEDGES ANALYZED	1736 trials
LENGTH OF FAILURE PLANE	54.0 feet
DEPTH OF TENSION CRACK	5.7 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	31.0 feet
CALCULATED HORIZONTAL THRUST ON WALL	**61360.9 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**49.1 pcf**
DESIGN EQUIVALENT FLUID PRESSURE	**55.0 pcf**

THE CALCULATION INDICATES THAT THE PROPOSED RETAINING WALL MAY BE DESIGNED FOR AN EQUIVALENT FLUID PRESSURE OF 55 POUNDS PER CUBIC FOOT.

FINITE ELEMENT ANALYSIS OF REVELLO LANDSLIDE

Phi Angle along base of Slide	16 degrees	
Cohesion Value of Slide Base	72.53 psf	
Unit Weight of Slide Mass	130 pcf	
Surface Area of Typical Cell	800 psf	
Cohesion Value Along Slide Margin	72.53 psf	Peak Strength
Direction of Slide Movement Vector	50 degrees	
Unbalanced Force For Slide Mass	-81.3 pounds	
Section A - Unbalanced Force	-664146 pounds	
Section B - Unbalanced Force	705710 pounds	
Section C - Unbalanced Force	387442 pounds	

	Average Cell Thickness	Surface Area Cell Base	Cell Volume	Cell Mass	Direction Vector	Maximum Dip of Cell	Apparent Slide Angle	Unbalanced Force Vector	Strength Along Slide Margin			
									Average Depth	Length	Surface Area	Resisting Force*
cell #	ft	ft^2	ft^3	(pounds)	(degrees)	(degrees)	(degrees)	(pounds)	(feet)	(feet)	ft^2	(pounds)
E3	12	800	9600	1248000	36	33.7	32.9	321046.3			0	0
E5	12	650	7800	1014000	34	33.7	32.7	245283.6			0	0
F2	18.4	800	14720	1913600	50	33.7	33.7	552159.8			0	0
F4	15.75	800	12600	1638000	39	33.7	33.2	449009.4			0	0
F6	18.4	800	14720	1913600	29	32.8	31.0	456186.4			0	0
F8	25	162	4050	526500	2	33	23.5	12935.8			0	0
G1	15.5	800	12400	1612000	58	30.5	30.3	352013.6			0	0
G3	21	800	16800	2184000	46	32	31.9	565657.7			0	0
G5	22.3	800	17840	2319200	31	26.6	25.3	324781.5			0	0
G7	24.4	476	11614.4	1509872	31	30	28.6	281165.1			0	0
G9	28	800	22400	2912000	24	21	19.0	98550.2			0	0
H0	8.6	631	5426.6	705458	130	49.8	11.6	-274389.9	17	32	544	164313.54
H2	21	800	16800	2184000	55	29.1	29.0	447262.8			0	0
H4	22.5	800	18000	2340000	36	25	24.3	286859.6			0	0
H6	25.1	800	20080	2610400	31	26	24.8	345684.0			0	0
H8	7.4	800	5920	769600	7	30	22.9	36837.5			0	0
H10	28	749	20972	2726360	4	23.2	16.6	-28184.3			0	0
I1	22.75	800	18200	2366000	133	53	9.2	-477361.3	16	30	480	138502.057

cell #	Average Cell Thickness ft	Surface Area Cell Base ft^2	Cell Volume ft^3	Cell Mass (pounds)	Direction Vector (degrees)	Maximum Dip of Cell (degrees)	Apparent Slide Angle (degrees)	Unbalanced Force Vector (pounds)	Strength Along Slide Margin: Average Depth (feet)	Length (feet)	Surface Area ft^2	Resisting Force* (pounds)
I3	35.1	800	28080	3650400	50	25.1	25.1	528212.1			0	0
I5	32	800	25600	3328000	33	26	25.0	470948.7			0	0
I7	28	800	22400	2912000	35	25.9	25.1	411390.2			0	0
I9	30.9	800	24720	3213600	3	39.8	29.6	720426.3			0	0
I11	28.8	800	23040	2995200	11	31.2	25.2	15825.6	27	35	945	413018.788
J0	10.7	240	2568	333840	130	60	16.7	-143806.1	16	20	320	92334.7045
J2	26.3	800	21040	2735200	75	45	42.2	1282915.0			0	0
J4	41	800	32800	4264000	35	26	25.2	636077.4			0	0
J6	34.7	800	27760	3608800	32	26	24.9	507685.9			0	0
J8	34	800	27200	3536000	44	26.6	26.5	596990.6			0	0
J10	37.8	800	30240	3931200	14	39.8	34.0	1217306.6			0	0
J12	38.3	275	10532.5	1369225	-10	38.7	21.8	-720591.2	37	38	1406	804326.045
K1	11	308	3388	440440	135	73	15.9	-300361.3	22	30	660	243904.276
K3	42.2	800	33760	4388800	70	24.6	23.3	504321.1			0	0
K5	42.8	800	34240	4451200	31	26.6	25.3	675309.9			0	0
K7	37.2	800	29760	3868800	32	26.6	25.5	588529.4			0	0
K9	41.6	800	33280	4326400	40	26.6	26.3	725694.0			0	0
K11	43.4	800	34720	4513600	13	38.7	32.6	1288406.8			0	0
L2	20.5	715	14657.5	1905475	122	72.3	44.1	451778.6	30	35	1050	501437.905
L4	42	800	33600	4368000	65	21.3	20.6	298267.8			0	0
L6	43.3	800	34640	4503200	30	22.4	21.2	351604.3			0	0
L8	42.5	800	34000	4420000	46	21.8	21.8	389157.0			0	0
L10	46.3	800	37040	4815200	33	26.6	25.6	756904.9			0	0
L12	46.5	706	32829	4267770	10	24	18.8	-801808.0	46	30	1380	957134.688
M1	8.3	81	672.3	87399	116	75	56.6	-52146.9	15	13	195	53633.7662
M3	42	800	33600	4368000	73	23.5	21.8	388668.5			0	0
M5	47.6	800	38080	4950400	27	15.9	14.7	-168744.5			0	0
M7	44.2	800	35360	4596800	32	17.5	16.7	-238.8			0	0
M9	46.2	800	36960	4804800	39	12.5	12.3	-368512.6			0	0
M11	47.1	800	37680	4898400	29	15.9	14.9	-150490.8			0	0
M13	48.2	512.5	24702.5	3211325	18	24	20.7	-756519.5	47	29	1363	963745.757
N2	18	571	10278	1336140	128	66.3	25.3	-190689.2	27	30	810	354016.104
N4	48.8	800	39040	5075200	68	18.4	17.6	82069.3			0	0

cell #	Average Cell Thickness ft	Surface Area Cell Base ft^2	Cell Volume ft^3	Cell Mass (pounds)	Direction Vector (degrees)	Maximum Dip of Cell (degrees)	Apparent Slide Angle (degrees)	Unbalanced Force Vector (pounds)	Strength Along Slide Margin: Average Depth (feet)	Length (feet)	Surface Area ft^2	Resisting Force* (pounds)
N6	47.2	800	37760	4908800	29	14.7	13.8	-247657.3			0	0
N8	44.3	800	35440	4607200	25	14	12.7	-318841.5			0	0
N10	47.6	800	38080	4950400	25	12	10.9	-497462.5			0	0
N12	49	800	39200	5096000	16	13.4	11.2	-486371.0			0	0
N14	46.7	296	13823.2	1797016	-6	22	12.7	-1046004.2	45	29	1305	887497.698
O3	33.65	800	26920	3499600	127	62.7	23.5	53511.2	27	30	810	354016.104
O5	51.7	800	41360	5376800	60	14.5	14.3	-216433.0			0	0
O7	46.6	800	37280	4846400	33	16.7	16.0	-55060.7			0	0
O9	42.9	800	34320	4461600	37	13.1	12.8	-307228.2			0	0
O11	47.3	800	37840	4919200	30	11.9	11.2	-468958.8			0	0
O13	46.5	800	37200	4836000	14	24.4	20.2	295175.7			0	0
P2	12.3	108	1328.4	172692	118	75	54.4	24542.6	15	10	150	41256.7432
P4	51.6	800	41280	5366400	70	15.1	14.2	-221876.4			0	0
P6	54.4	800	43520	5657600	38	15.4	15.1	-146738.5			0	0
P8	43.2	800	34560	4492800	13	17.4	14.1	-208681.7			0	0
P10	42.2	800	33760	4388800	27	12	11.1	-434505.0			0	0
P12	44.1	800	35280	4586400	26	11.8	10.8	-473002.6			0	0
P14	37.9	800	30320	3941600	-16	29.2	12.8	-817965.4	34	30	1020	542195.175
Q3	27.6	544	15014.4	1951872	119	65.2	37.8	-186122.7	40	37	1480	906603.421
Q5	57.5	800	46000	5980000	66	11.6	11.2	-562110.1			0	0
Q7	52.5	800	42000	5460000	23	14.5	13.0	-344278.7			0	0
Q9	42.4	800	33920	4409600	23	21.8	19.6	222692.9			0	0
Q11	41.3	800	33040	4295200	25	21.8	19.9	238826.1			0	0
Q13	40.6	800	32480	4222400	26	15.1	13.8	-214555.4			0	0
Q15	32.1	800	25680	3338400	13	75.8	72.4	4459382.9	32	29	928	468233.446
R2	17	280	4760	618800	94	75	69.6	557481.9	22	23	506	186993.278
R4	55.1	800	44080	5730400	61	15.9	15.6	-93557.4			0	0
R6	56	800	44800	5824000	62	9	8.8	-791295.5			0	0
R8	48.4	800	38720	5033600	23	10.5	9.4	-640597.3			0	0
R10	44.3	800	35440	4607200	29	21.8	20.5	304698.6			0	0
R12	41.8	800	33440	4347200	31	21.8	20.7	302633.8			0	0
R14	35	800	28000	3640000	14	28	23.3	408486.2			0	0
R16	30.5	800	24400	3172000	0	11.3	7.3	-970529.1	30	30	900	429803.918

cell #	Average Cell Thickness ft	Surface Area Cell Base ft^2	Cell Volume ft^3	Cell Mass (pounds)	Direction Vector (degrees)	Maximum Dip of Cell (degrees)	Apparent Slide Angle (degrees)	Unbalanced Force Vector (pounds)	Strength Along Slide Margin Average Depth (feet)	Length (feet)	Surface Area ft^2	Resisting Force* (pounds)
S3	38.3	800	30640	3983200	92	67	60.3	3650710.3	25	15	375	153770.597
S5	57.1	800	45680	5938400	59	14	13.8	-280386.6			0	0
S7	52.1	800	41680	5418400	45	12.5	12.5	-391661.0			0	0
S9	48.2	800	38560	5012800	41	21.2	21.0	379208.7			0	0
S11	47.1	800	37680	4898400	33	24.2	23.3	567544.1			0	0
S13	38.5	800	30800	4004000	32	25.9	24.8	562546.0			0	0
S15	27.4	800	21920	2849600	-11	42	23.6	323061.2			0	0
S17	24	264	6336	823680	-35	42	4.5	-797766.0	30	40	1200	573071.891
T2	15.3	540	8262	1074060	117	57	31.0	-76813.6	25	30	750	307541.193
T4	50.1	800	40080	5210400	74	13.6	12.5	-377978.5			0	0
T6	53.8	800	43040	5595200	36	16	15.5	-99914.2			0	0
T8	49.3	800	39440	5127200	51	14	14.0	-235039.6			0	0
T10	49.2	800	39360	5116800	56	15	14.9	-152112.7			0	0
T12	43.3	800	34640	4503200	42	21.8	21.6	386091.5			0	0
T14	34.7	800	27760	3608800	35	26.6	25.8	567589.2			0	0
T16	26.3	800	21040	2735200	0	24	16.0	-57186.5			0	0
U3	30	800	24000	3120000	102	58	44.6	1608801.8	10	13	130	26980.1961
U5	47.12	800	37696	4900480	80	13.5	11.7	-420505.1			0	0
U7	51	800	40800	5304000	32	15	14.3	-213528.9			0	0
U9	47.7	800	38160	4960800	41	12.4	12.3	-380872.1			0	0
U11	45.8	800	36640	4763200	67	12.9	12.4	-359402.7			0	0
U13	37	800	29600	3848000	53	16.5	16.5	-23633.6			0	0
U15	33.4	800	26720	3473600	150	45	-9.9	-1745004.1			0	0
U17	22.3	552	12309.6	1600248	-6	24.6	14.4	-298049.6	19.5	30	585	196442.673
V2	11.7	150	1755	228150	120	63	33.9	-30697.4	10	22	220	45658.7934
V4	30.9	800	24720	3213600	72	13.6	12.6	-244391.0			0	0
V6	43.3	800	34640	4503200	63	14	13.7	-240250.2			0	0
V8	47.3	800	37840	4919200	46	15	15.0	-144647.5			0	0
V10	45	800	36000	4680000	68	12.5	11.9	-390885.1			0	0
V12	37.4	800	29920	3889600	70	9.9	9.3	-512135.2			0	0
V14	35.9	800	28720	3733600	39	6.2	6.1	-709115.3			0	0
V16	24.4	800	19520	2537600	-9	32.8	18.4	48847.6			0	0
V18	15	28	420	54600	-5	0	0.0	-94308.7	15	5	75	20628.3716

cell #	Average Cell Thickness ft	Surface Area Cell Base ft^2	Cell Volume ft^3	Cell Mass (pounds)	Direction Vector (degrees)	Maximum Dip of Cell (degrees)	Apparent Slide Angle (degrees)	Unbalanced Force Vector (pounds)	Strength Along Slide Margin			
									Average Depth (feet)	Length (feet)	Surface Area ft^2	Resisting Force* (pounds)
W3	14	620	8680	1128400	121	37	13.8	-99476.2			0	0
W5	24.9	800	19920	2589600	77	11	9.8	-336241.5			0	0
W7	35.4	800	28320	3681600	62	7	6.8	-649586.6			0	0
W9	38.6	800	30880	4014400	52	7	7.0	-692593.9			0	0
W11	37	800	29600	3848000	62	7	6.8	-676393.0			0	0
W13	31.7	800	25360	3296800	63	6.2	6.0	-635435.7			0	0
W15	27.6	800	22080	2870400	58	8	7.9	-463670.9			0	0
W17	13.3	552	7341.6	954408	8	29	22.4	-16718.1	10	32.5	325	67450.4902
X4	8.3	800	6640	863200	70	7	6.6	-199724.0			0	0
X6	19	800	15200	1976000	68	7	6.7	-381505.1			0	0
X8	28.5	800	22800	2964000	65	7	6.8	-538497.9			0	0
X10	30.5	800	24400	3172000	65	8	7.7	-517368.0			0	0
X12	27.5	800	22000	2860000	63	6.2	6.0	-558748.4			0	0
X14	25.8	800	20640	2683200	49	7.6	7.6	-452656.5			0	0
X16	15.8	800	12640	1643200	6	10.7	7.7	-294899.1			0	0
X18	5	22	110	14300	72	80	79.2	-104707.7	6	10	60	9212.15891
Y5	5.5	640	3520	457600	68	7	6.7	-131784.0			0	0
Y7	14.3	704	10067.2	1308736	67	12.5	12.0	-148121.0			0	0
Y9	18.5	800	14800	1924000	67	17.9	17.2	-16669.3			0	0
Y11	18	800	14400	1872000	65	14	13.5	-136224.8			0	0
Y13	22.7	800	18160	2360800	60	11.8	11.6	-236529.9			0	0
Y15	14.5	800	11600	1508000	44	14	13.9	-110415.5			0	0
Y17	4.9	644	3155.6	410228	7	21	15.7	-60207.8	1	25	25	2150.77492
Z6	4.7	259	1217.3	158249	64	18	17.5	-51655.8			0	0
Z8	12	656	7872	1023360	70	16.7	15.7	-60344.3			0	0
Z10	20.8	800	16640	2163200	57	14.7	14.6	-108844.7			0	0
Z12	20.5	800	16400	2132000	51	12.8	12.8	-175131.1			0	0
Z14	24	800	19200	2496000	45	12.3	12.3	-219290.3			0	0
Z16	19	800	15200	1976000	10	15.9	12.3	-183336.7			0	0
Z18	3	120	360	46800	10	20.3	15.8	-59904.0	2	20	40	3981.27976
AA9	14	271	3794	493220	55	16.4	16.3	-52842.4			0	0
AA11	15.3	800	12240	1591200	51	14	14.0	-111433.2			0	0
AA13	18.8	800	15040	1955200	46	11.3	11.3	-217634.8			0	0

cell #	Average Cell Thickness ft	Surface Area Cell Base ft^2	Cell Volume ft^3	Cell Mass (pounds)	Direction Vector (degrees)	Maximum Dip of Cell (degrees)	Apparent Slide Angle (degrees)	Unbalanced Force Vector (pounds)	Strength Along Slide Margin			
									Average Depth (feet)	Length (feet)	Surface Area ft^2	Resisting Force* (pounds)
AA15	21.3	800	17040	2215200	43	11.8	11.7	-221931.2			0	0
AA17	13	308	4004	520520	22	22.6	20.2	-17881.5			0	0
BB10	10	567	5670	737100	56	12.5	12.4	-139064.2		Bulkhead		37240
BB12	11.8	665	7847	1020110	56	11.8	11.7	-250988.2		Bulkhead		119020
BB14	17.4	732	12736.8	1655784	52	11.8	11.8	-421083.1		Bulkhead		243360
BB16	19.5	532	10374	1348620	42	11.8	11.7	-416333.9		Bulkhead		258720

THE J. BYER GROUP, INC.
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

BACK-CALCULATIONS

JB 18241-I G.H. PALMER

CONSULTANT: JAI SCALE: NONE

SHEET #1

Section A
Direction Vector of Section 62 degrees
Direction Description N62E
Phi Angle 14 degrees
Cohesion 216.8 psf
Force Imbalance -36.6 pounds

Section A	
Cell #	Force Imbalance (pounds)
G1	300167.1
H2	407702.0
J2	1400695.0
K3	633499.8
L4	387841.0
N4	213370.9
O5	-122165.7
P6	-156021.1
Q5	-421950.2
R6	-678464.9
S7	-360457.9
T8	-190425.8
U7	-254936.9
U8	-130199.0
W9	-669988.5
Y9	-39652.8
Z10	-143890.3
AA11	-175159.5
Sum	-36.6

Section A
Direction Vector of Section 62 degrees
Direction Description N62E
Phi Angle 16.3445 degrees
Cohesion 0 psf
Force Imbalance 312.6 pounds

Section A	
Cell #	Force Imbalance (pounds)
G1	404739.7
H2	487129.2
J2	1448933.1
K3	620250.3
L4	376690.8
N4	173810.2
O5	-173947.8
P6	-219347.2
Q5	-499211.1
R6	-750669.6
S7	-414506.4
T8	-232095.5
U7	-303986.5
U8	-163256.4
W9	-668166.0
Y9	50103.1
Z10	-64127.8
AA11	-72029.6
Sum	312.6

THE J. BYER GROUP, INC.
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

BACK-CALCULATIONS

JB 18241-I G.H. PALMER

CONSULTANT: JAI SCALE: NONE

SHEET #2

Section B
Direction Vector of Section 59 degrees
Direction Description N59E
Phi Angle 14 degrees
Cohesion 203.4 psf
Force Imbalance 154.9 pounds

Section B	
Cell #	Force Imbalance (pounds)
E5	147684.7
F6	355130.0
H6	267422.3
I7	349082.3
J8	578245.8
L8	406403.6
M9	-345290.6
N10	-504967.7
O11	-463969.8
Q11	168014.5
R12	256222.1
S13	502515.6
U13	4227.0
V14	-695613.6
W15	-460508.7
Y15	-169977.3
Z16	-276064.5
AA17	-118400.8
Sum	154.9

Section B
Direction Vector of Section 59 degrees
Direction Description N59E
Phi Angle 16.786 degrees
Cohesion 0 psf
Force Imbalance 125.4 pounds

Section B	
Cell #	Force Imbalance (pounds)
E5	259674.1
F6	420051.4
H6	298006.3
I7	364555.6
J8	561757.9
L8	348317.1
M9	-421901.6
N10	-589606.4
O11	-546816.8
Q11	116905.6
R12	202337.4
S13	463965.5
U13	-24951.1
V14	-722847.7
W15	-443704.9
Y15	-85503.2
Z16	-214679.1
AA17	14565.5
Sum	125.4

THE J. BYER GROUP, INC.
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

BACK-CALCULATIONS

JB 18241-I G.H. PALMER

CONSULTANT: JAI SCALE: NONE

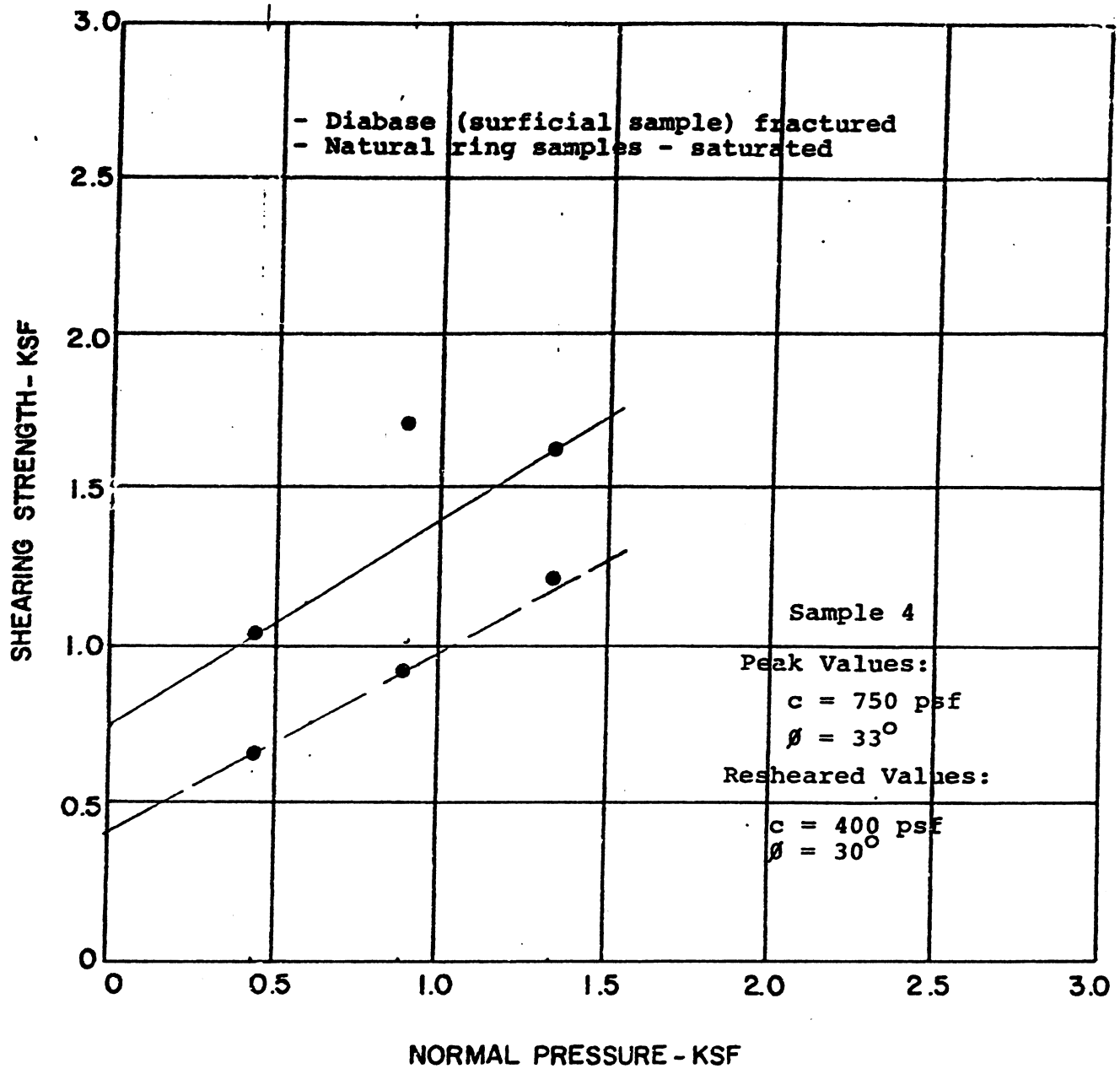
SHEET #3

Section C
Direction Vector of Section 61 degrees
Direction Description N61E
Phi Angle 14 degrees
Cohesion 191.3 psf
Force Imbalance -714.8 pounds

Section C	
Cell #	Force Imbalance (pounds)
E3	234383.0
G3	521792.9
H4	223328.9
I5	405673.4
K5	606418.4
L6	295818.4
M7	-23617.7
O7	-66791.0
P8	-300442.1
Q9	137517.5
S9	389914.5
T10	-62318.5
U11	-247716.6
W11	-622373.4
X12	-542083.8
Y13	-239296.4
AA13	-252106.6
BB14	-458815.7
Sum	-714.8

Section C
Direction Vector of Section 61 degrees
Direction Description N61E
Phi Angle 16.274 degrees
Cohesion 0 psf
Force Imbalance 384.9627 pounds

Section C	
Cell #	Force Imbalance (pounds)
E3	331510.1
G3	578678.7
H4	272229.3
I5	410086.8
K5	560035.4
L6	250526.8
M7	-68755.7
O7	-121599.5
P8	-348153.7
Q9	93900.5
S9	328725.5
T10	-118664.8
U11	-286517.2
W11	-628414.1
X12	-508297.7
Y13	-184793.5
AA13	-183086.3
BB14	-377025.6
Sum	384.9627



KEY:

O TESTS AT FIELD MOISTURE CONTENT

● TESTS AT SATURATED MOISTURE CONTENT

SHEAR TEST DIAGRAM

GeoSoils Inc.

LA MANCHA/SCHURGIN

Date 1/81 | W.O. No. 644-VN | By

Soil Mechanics • Geology • Foundation Engineering

PLATE SH-2

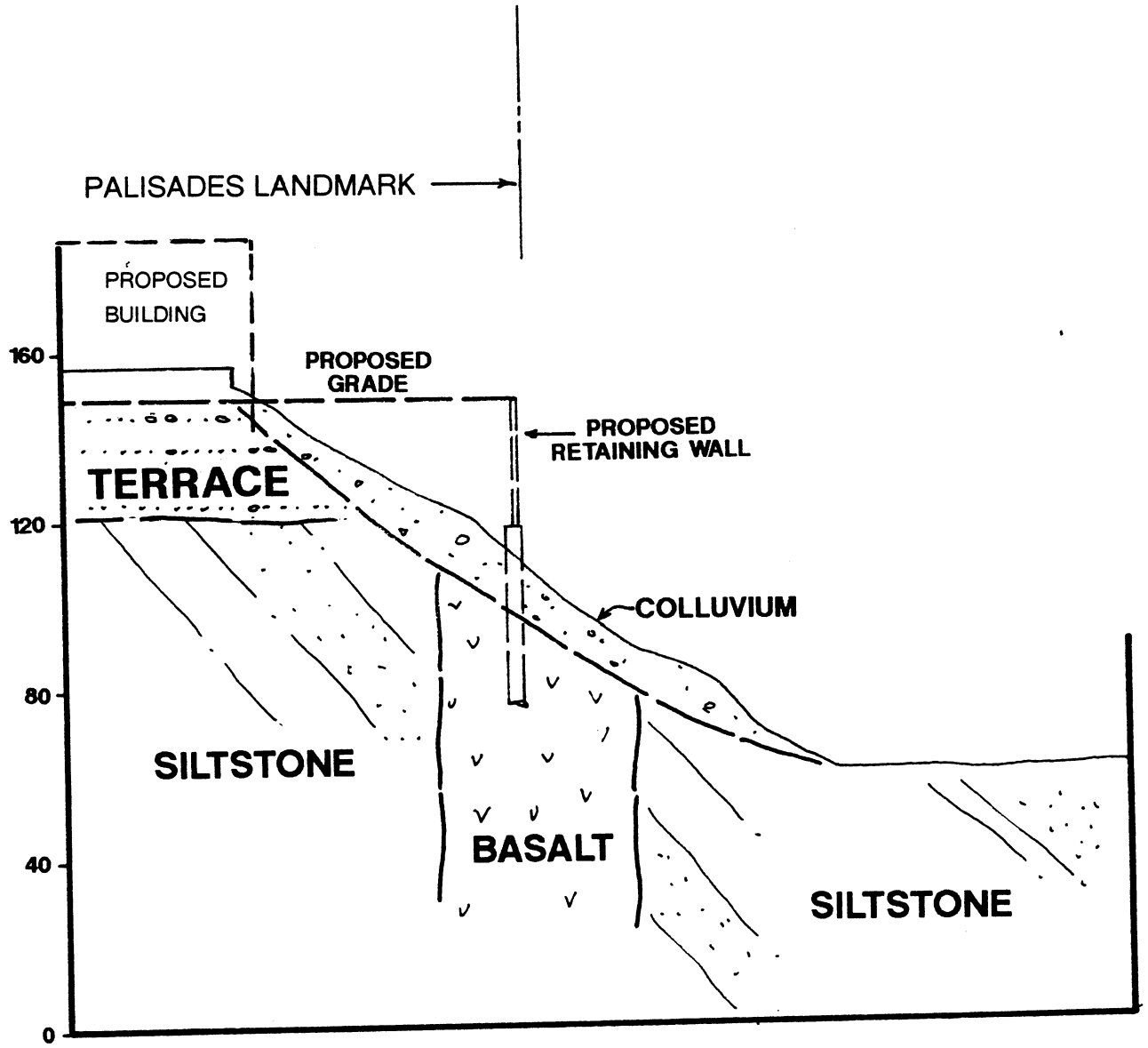
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

SECTION O-O

JB 18457-I PALISADES LANDMARK

CONSULTANT: JAI SCALE: 1" = 40'

NOVEMBER 30, 2000
JUNE 29, 2001



SECTION O-O

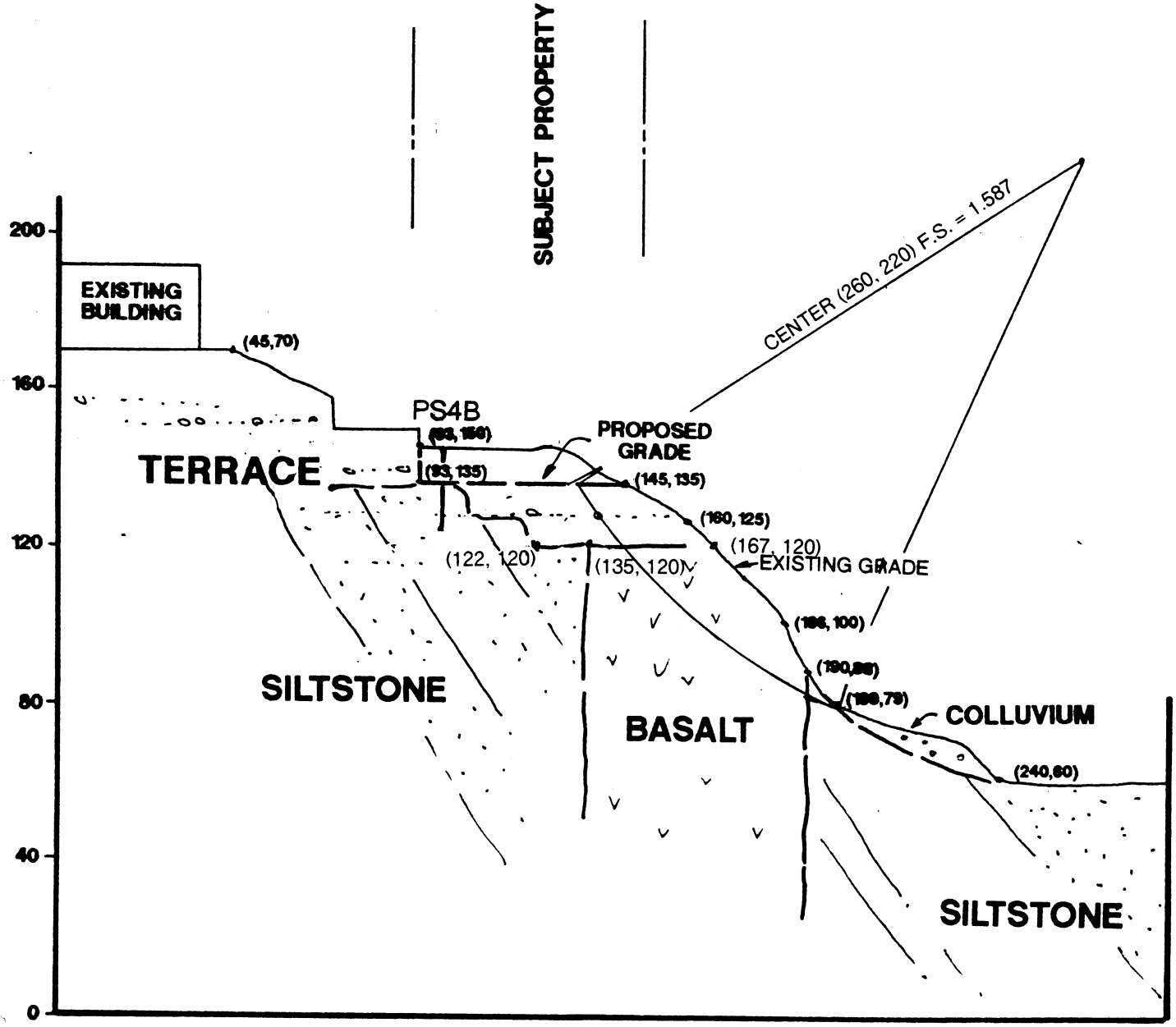
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

SECTION P-P

JB 18457-I PALISADES LANDMARK

CONSULTANT: JAI SCALE: 1" = 40'

NOVEMBER 30, 2000
JUNE 29, 2001



SECTION P-P

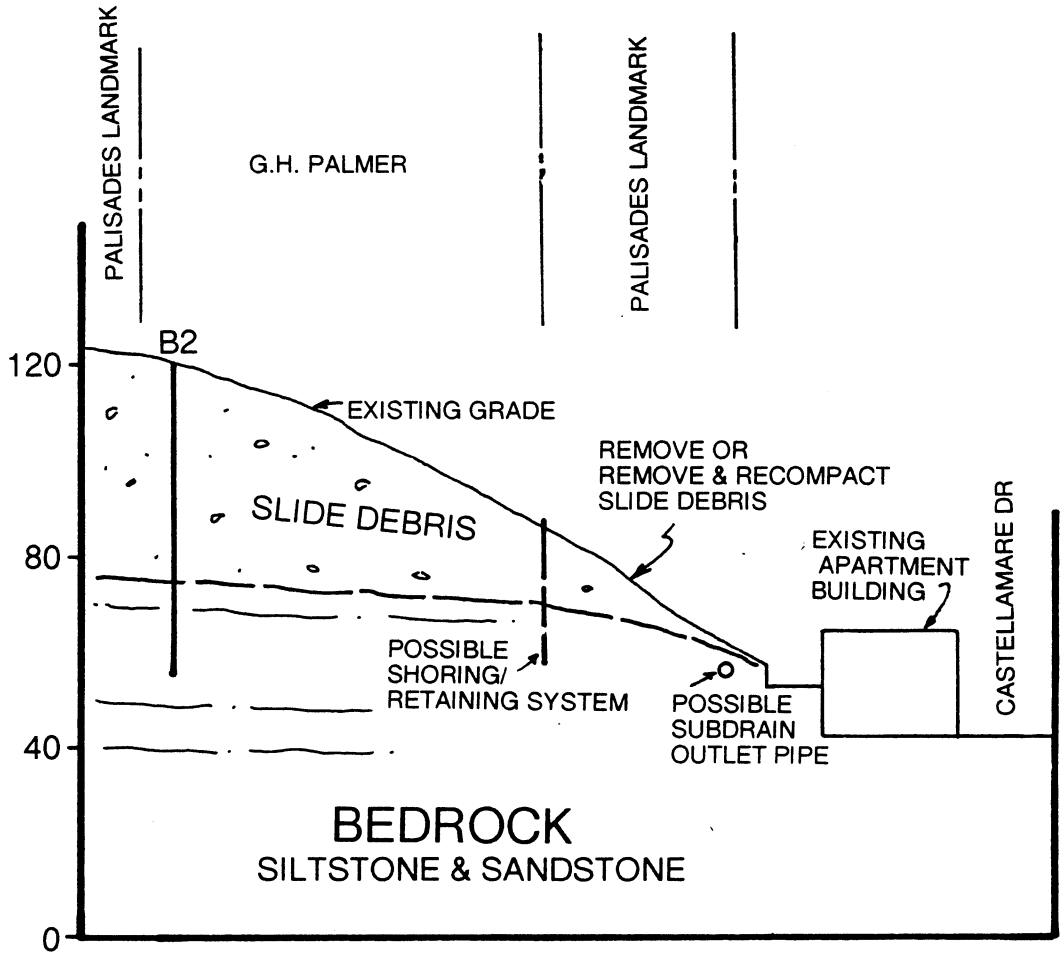
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, SUITE 200, GLENDALE, CA 91206
818•549•9959 Tel 818•543•3747 Fax

SECTION Q-Q

JB 18457-I PALISADES LANDMARK

CONSULTANT: JAI SCALE: 1" = 40'

JUNE 29, 2001



SECTION Q–Q

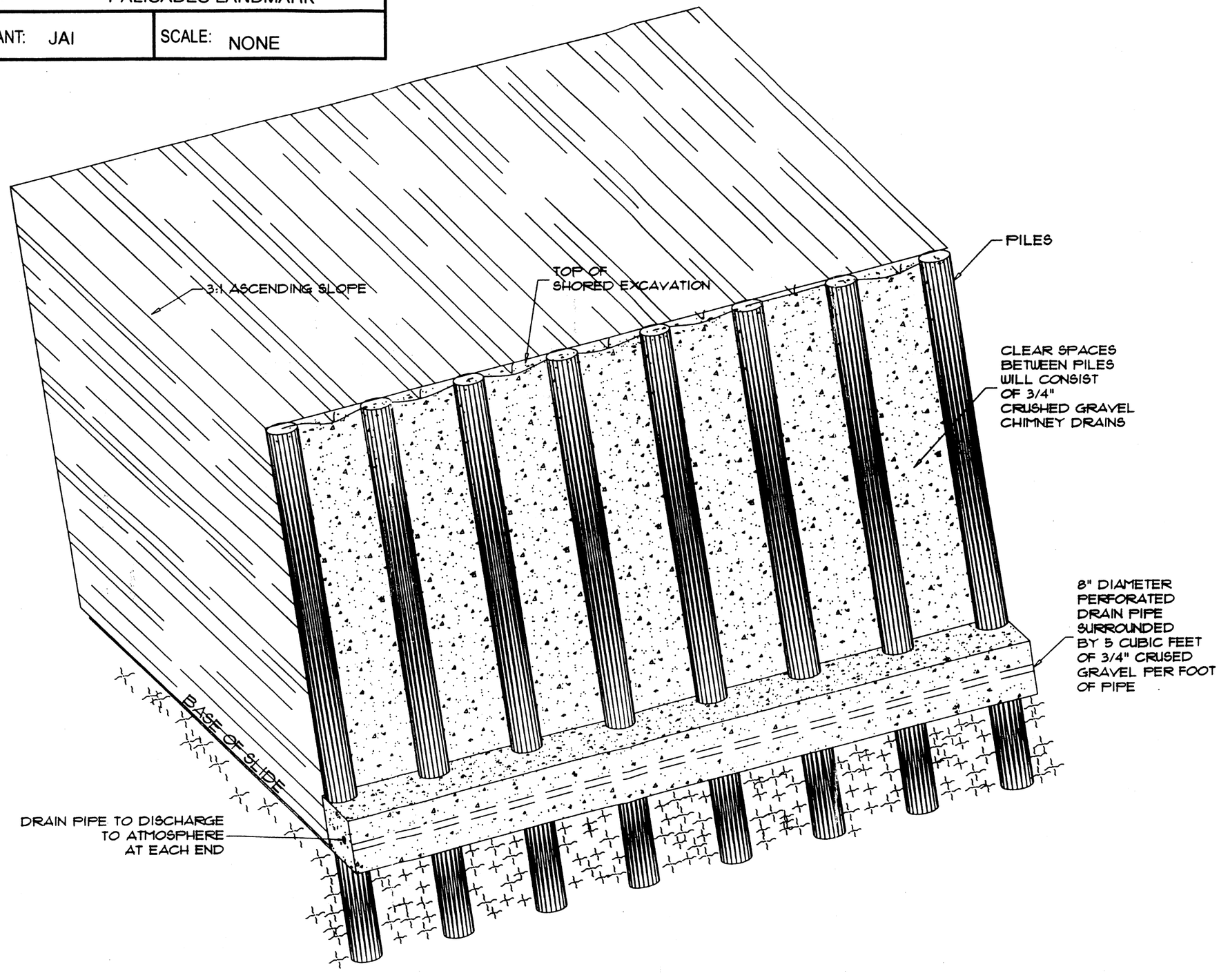
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, GLENDALE, CA 91206
(818) 549-9959 Tel • (818) 543-3747 Fax

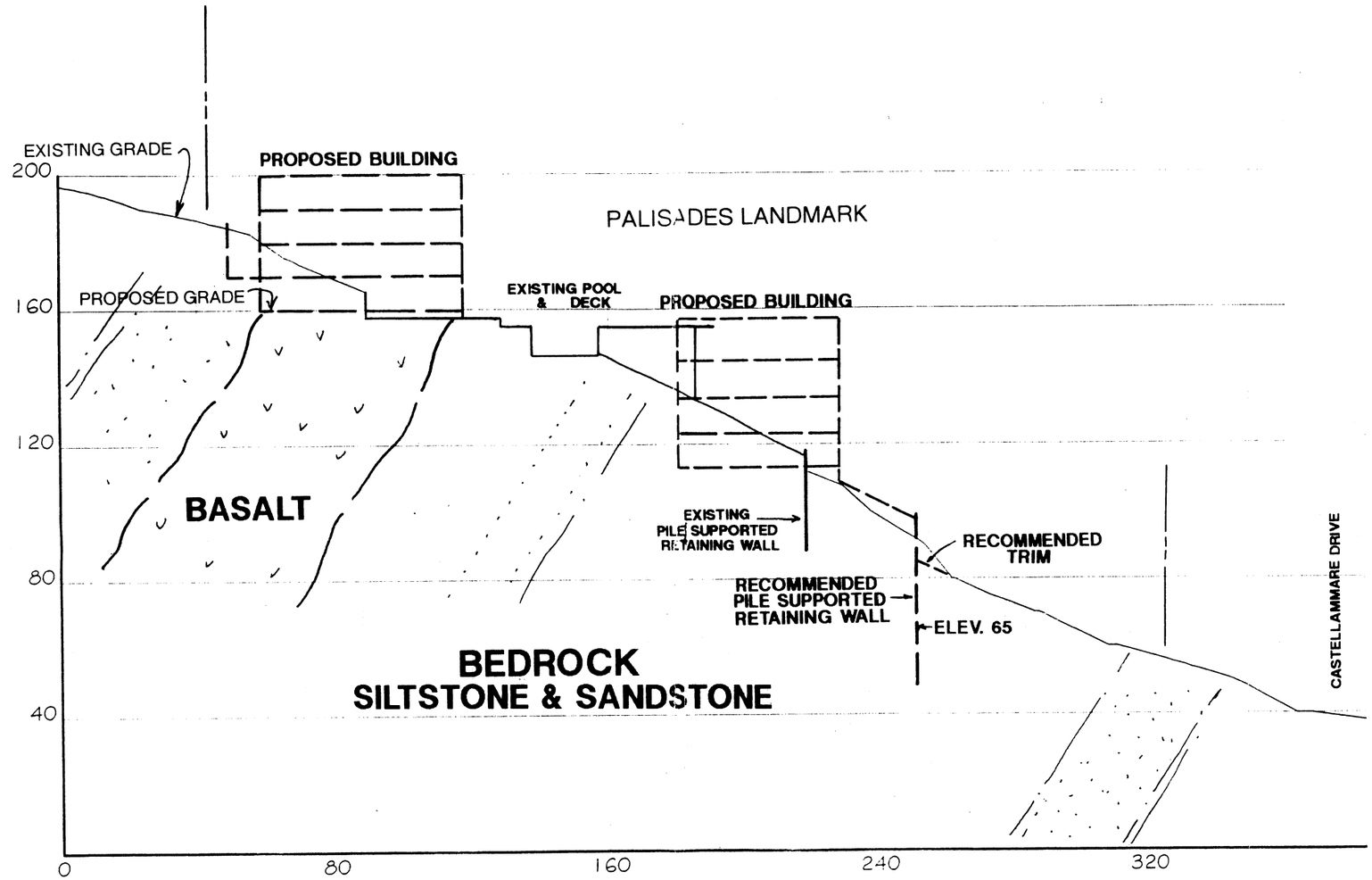
CHIMNEY DRAIN DETAIL

JB: 18457-I PALISADES LANDMARK

CONSULTANT: JAI SCALE: NONE

JUNE 29, 2001





SECTION **J**

JUNE 29, 2001
NOVEMBER 30, 2000
AUGUST 16, 2000
AUGUST 1, 2000

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. Chevy Chase Drive Suite 200, Glendale, CA 91206
(818) 549-9959 Tel (818) 543-3747 Fax

SECTION **J**

JB: 18457-I PALISADES LANDMARK LLC

CONSULTANT: JAI

SCALE: 1" = 40'

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, GLENDALE, CA 91206
(818) 549-9959 Tel • (818) 543-3747 Fax

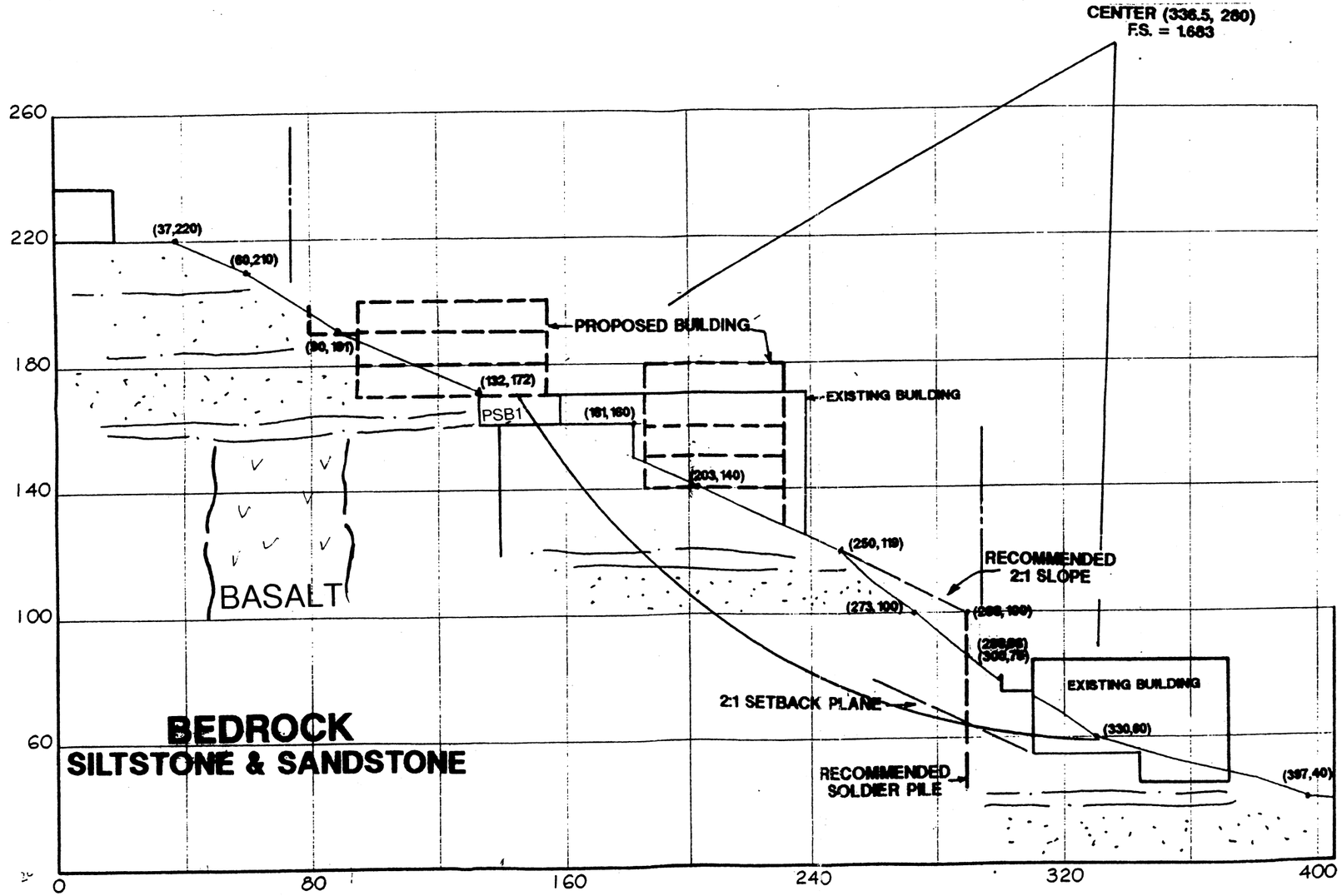
SECTION I–I

JB: 18457–I PALISADES LANDMARK

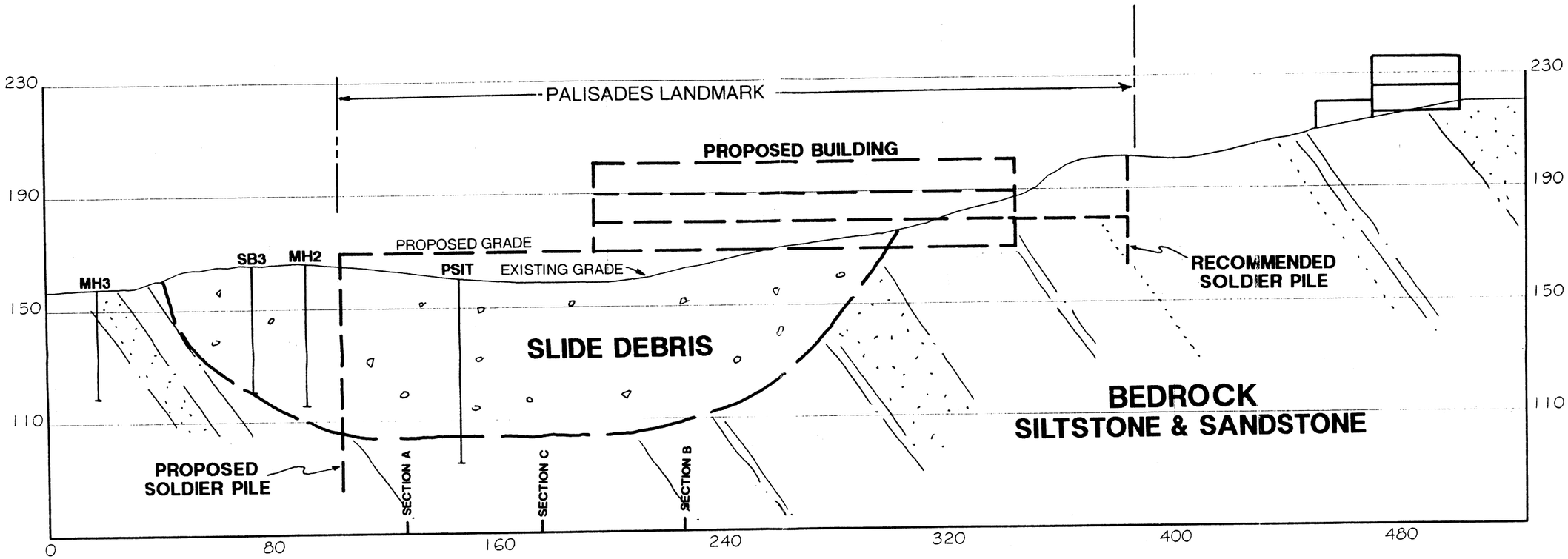
CONSULTANT: JAI

SCALE: 1"=40'

JUNE 29, 2001



SECTION I



SECTION M

JUNE 29, 2001
NOVEMBER 30, 2000
AUGUST 16, 2000
AUGUST 1, 2000

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. Chevy Chase Drive Suite 200, Glendale, CA 91206
(818) 549-9959 Tel (818; 543-3747 Fax

SECTION **M**

JB: 18457-I PALISADES LANDMARK LLC

CONSULTANT: JAI

SCALE: 1" = 40'

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, GLENDALE, CA 91206
(818) 549-9959 Tel • (818) 543-3747 Fax

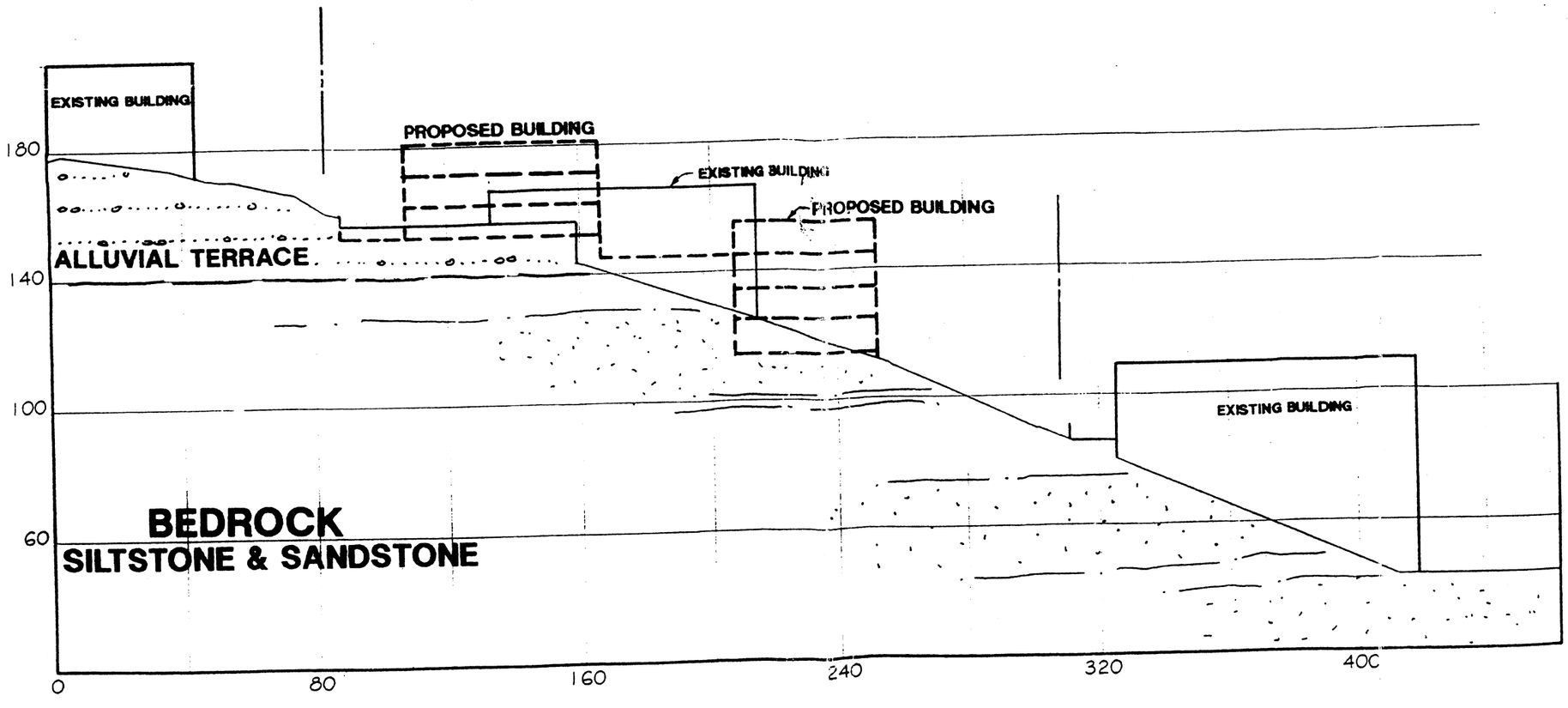
SECTION N–N

JB: 18457–I PALISADES LANDMARK

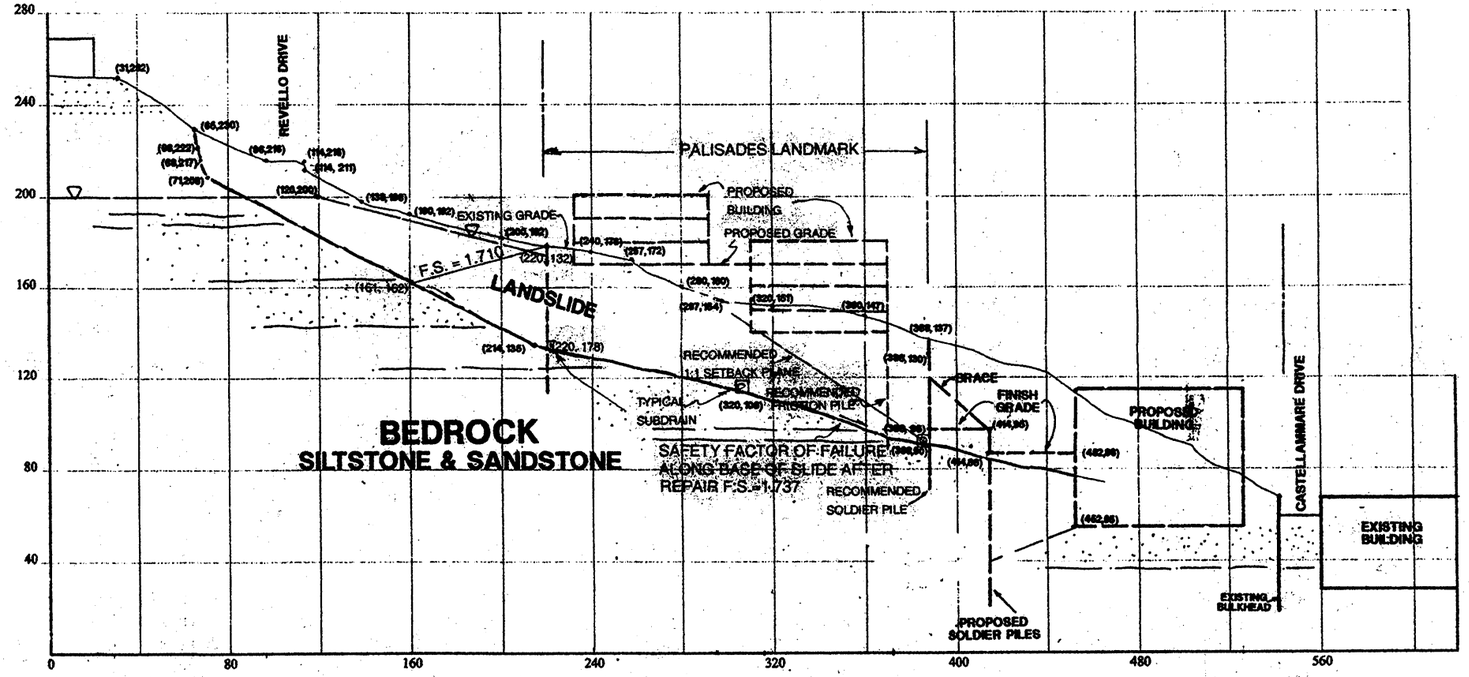
CONSULTANT: JAI

SCALE: 1"=40'

JUNE 29, 2001



SECTION N



SECTION H-H

JUNE 29, 2001

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. Chevy Chase Dr. Suite 200, Glendale, CA 91206
(818) 549-9559 Tel (818) 543-3747 Fax

SECTION H-H

JB: 18457-1 PALISADES LANDMARK LLC.

CONSULTANT: JAI

SCALE: 1" = 40'

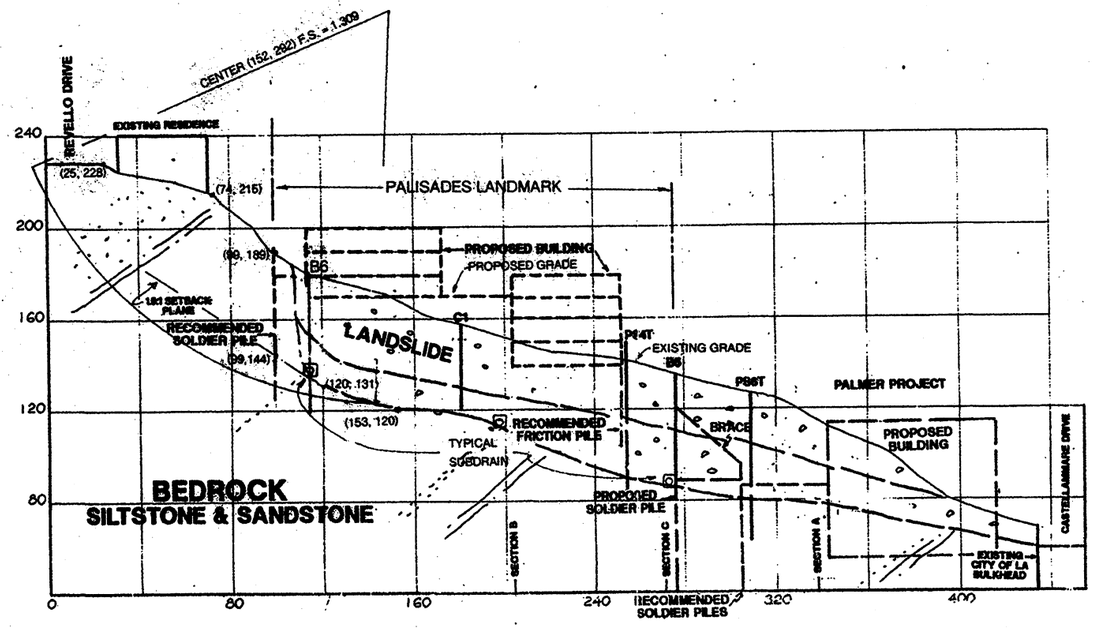
THE J. BYER GROUP, INC.
1461 E. Chevy Chase Dr., Suite 200, Glendale, CA 91206
(818) 549-9659 Tel • (818) 549-3747 Fax

SECTIONS L & K

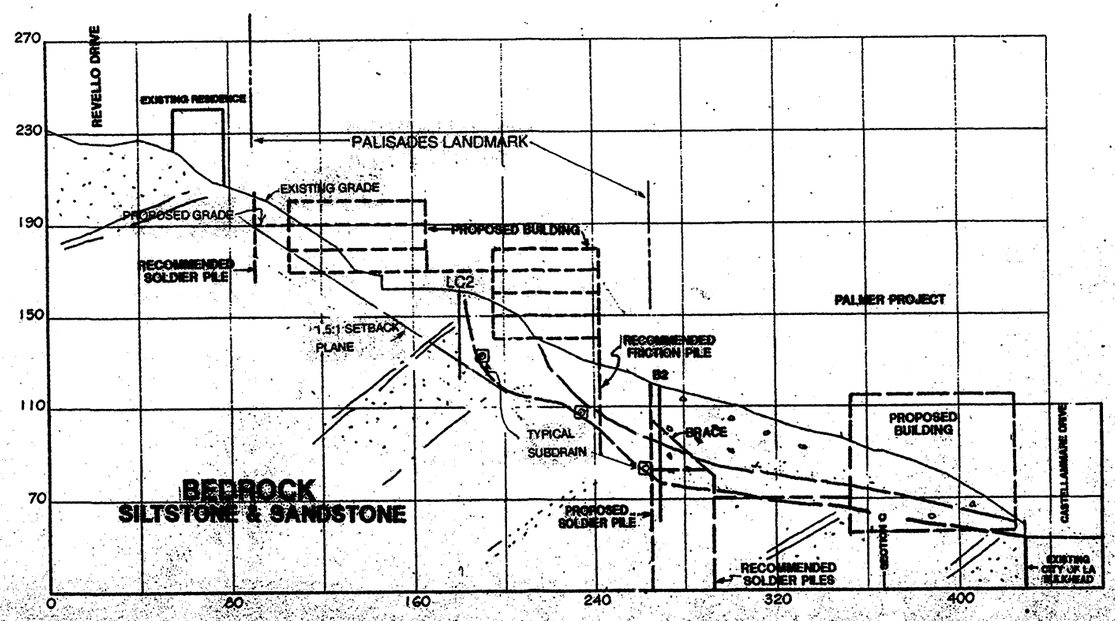
JB: 18457-I PALISADES LANDMARK LLC.

CONSULTANT: JAI | SCALE: 1" = 40'

JUNE 29, 2001



SECTION K



SECTION L

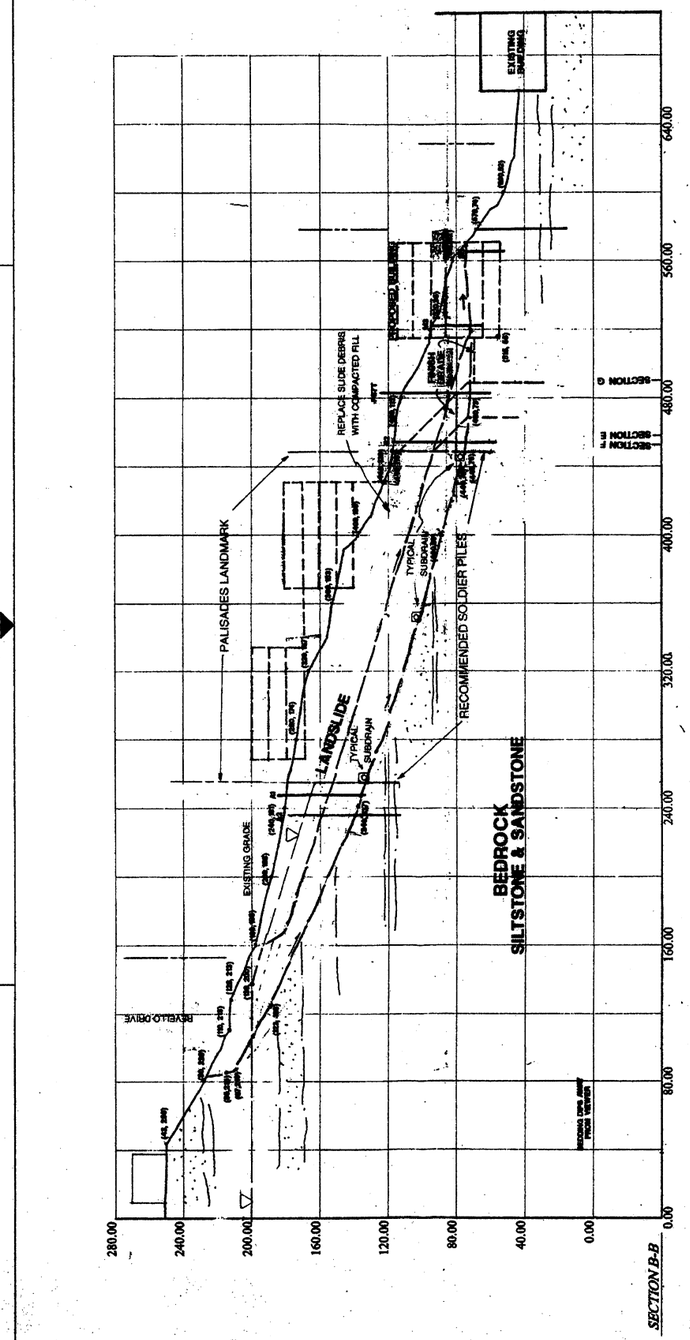
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, Glendale, CA 91206
(818) 549-9559 Tel (818) 545-5747 Fax

SECTIONS A, B, C

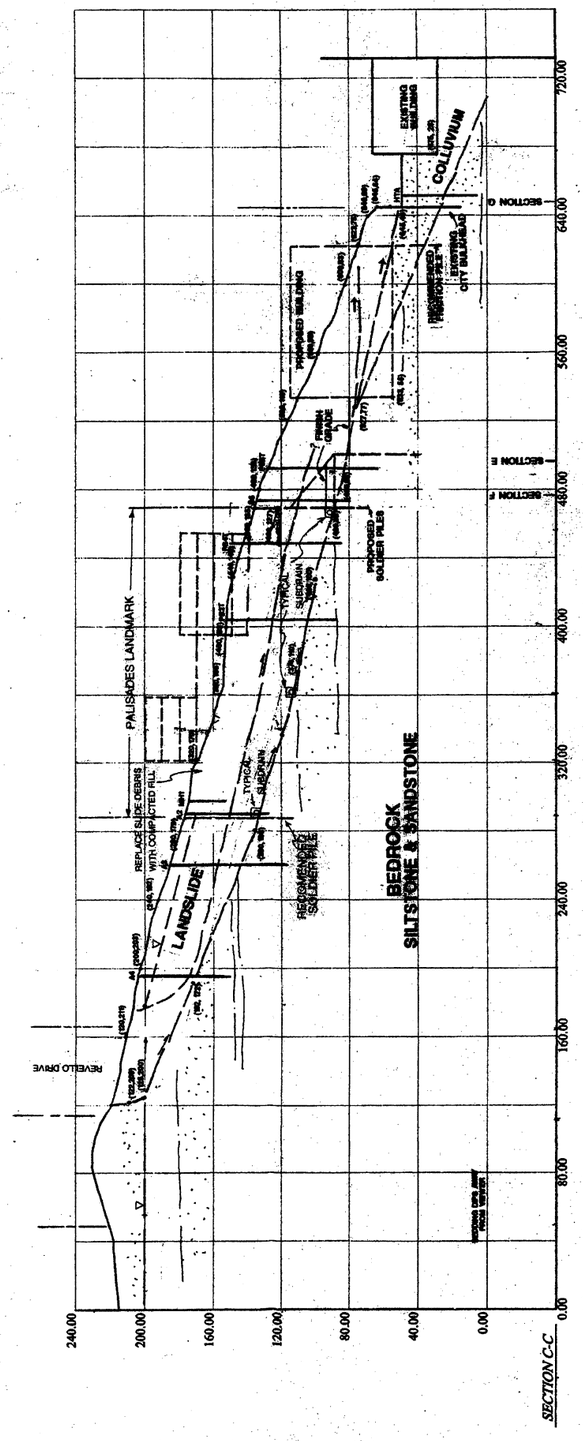
JB: 18457 / PALISADES LANDMARK LLC

CONSULTANT: JAI SCALE: 1" = 40'-0"

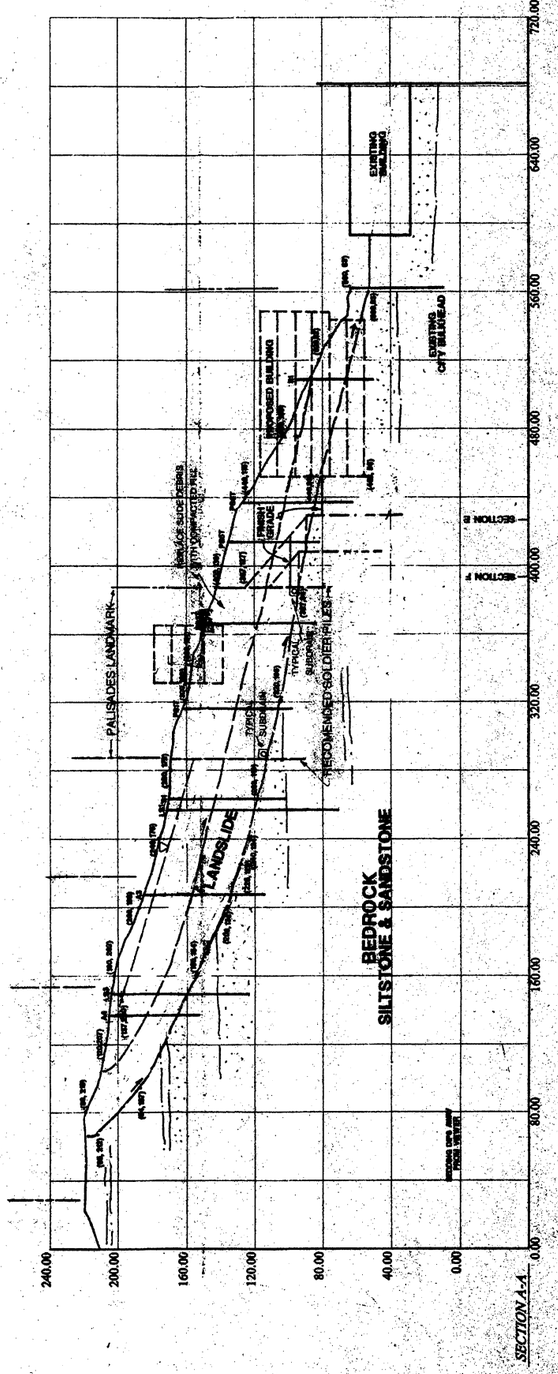
JUNE 29, 2001



SECTION B-B



SECTION C-C



SECTION A-A

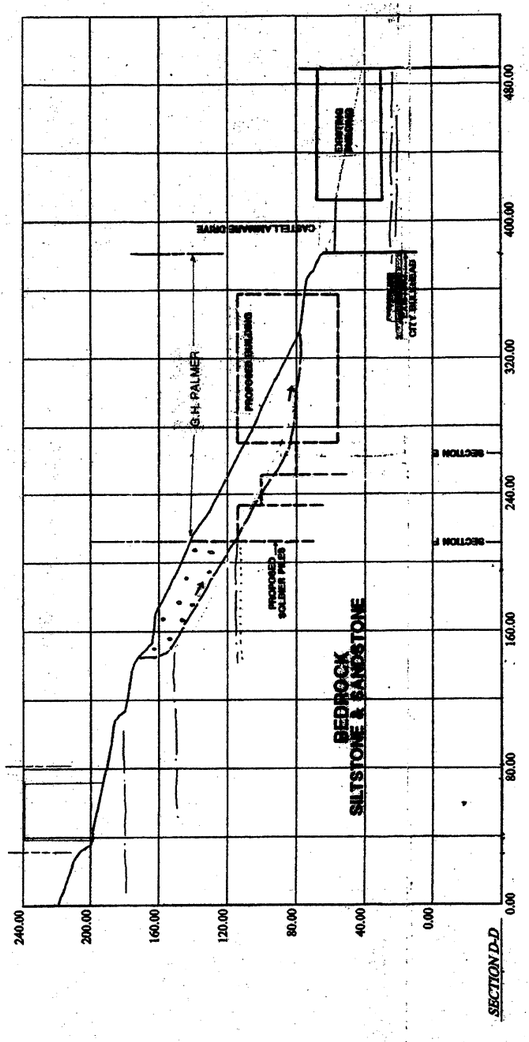
THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, Glendale, CA 91206
(818) 549-9169 Tel (818) 502-0747 Fax

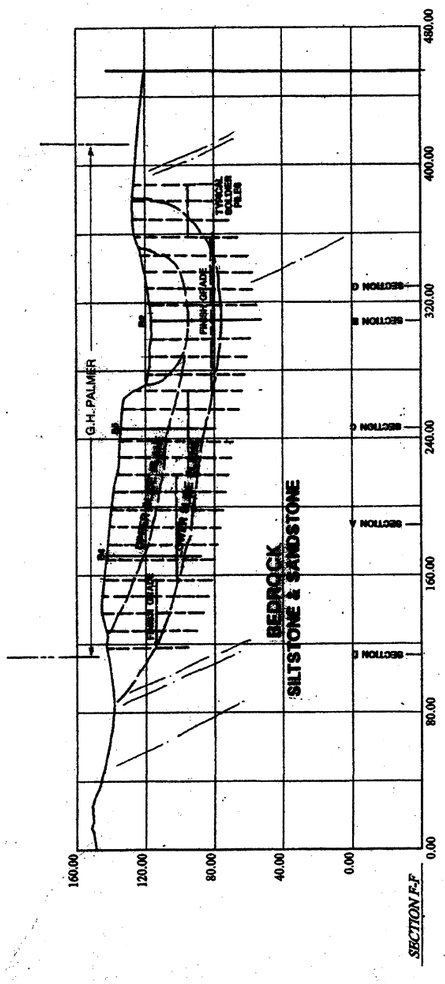
SECTIONS D,E,F & G

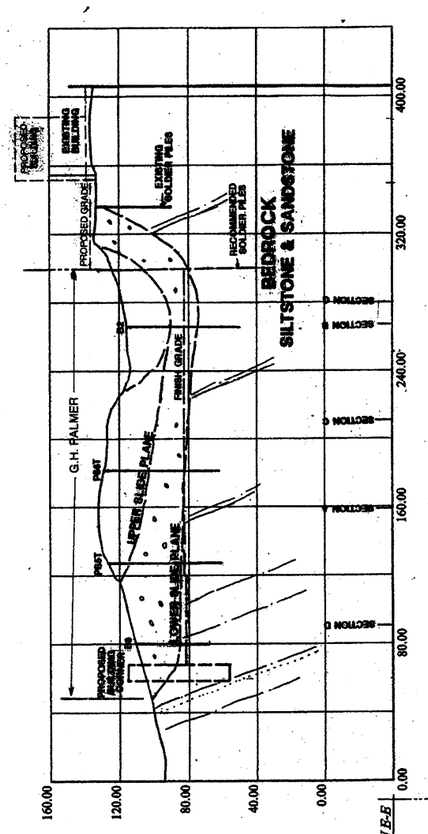
PALISADES LANDMARK, LLC.

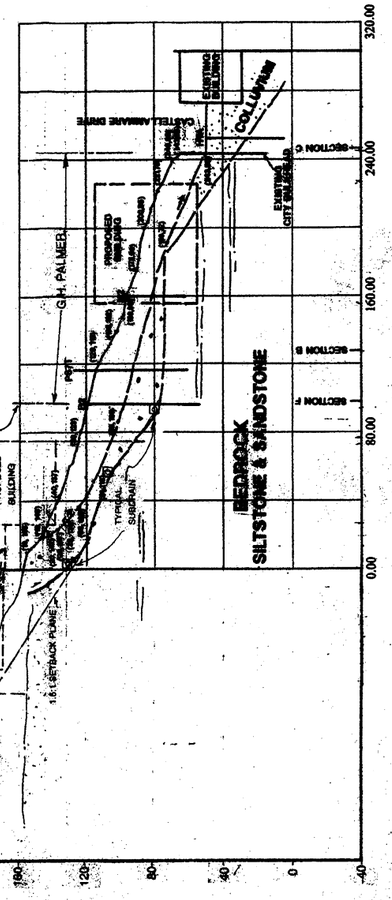
CONSULTANT: IAI | SCALE: 1" = 40'

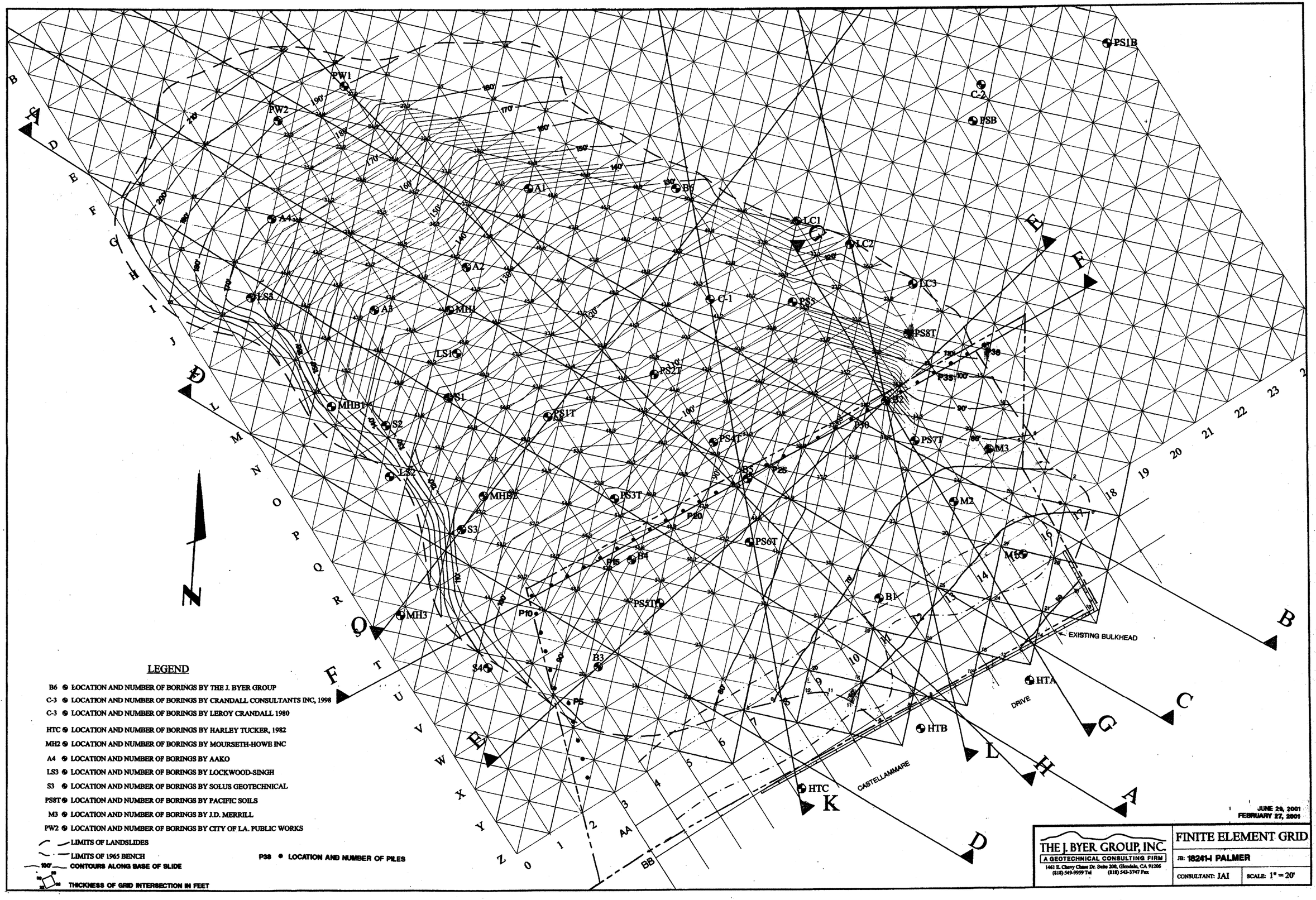
JUNE 29, 2001











LEGEND

- B6 ⊕ LOCATION AND NUMBER OF BORINGS BY THE J. BYER GROUP
- C-3 ⊕ LOCATION AND NUMBER OF BORINGS BY CRANDALL CONSULTANTS INC, 1998
- C-3 ⊕ LOCATION AND NUMBER OF BORINGS BY LEROY CRANDALL 1980
- HTC ⊕ LOCATION AND NUMBER OF BORINGS BY HARLEY TUCKER, 1982
- MH2 ⊕ LOCATION AND NUMBER OF BORINGS BY MOURSETH-HOWE INC
- A4 ⊕ LOCATION AND NUMBER OF BORINGS BY AAKO
- LS3 ⊕ LOCATION AND NUMBER OF BORINGS BY LOCKWOOD-SINGH
- S3 ⊕ LOCATION AND NUMBER OF BORINGS BY SOLUS GEOTECHNICAL
- PS8T ⊕ LOCATION AND NUMBER OF BORINGS BY PACIFIC SOILS
- M3 ⊕ LOCATION AND NUMBER OF BORINGS BY J.D. MERRILL
- PW2 ⊕ LOCATION AND NUMBER OF BORINGS BY CITY OF LA. PUBLIC WORKS

LIMITS OF LANDSLIDES

LIMITS OF 1965 BENCH

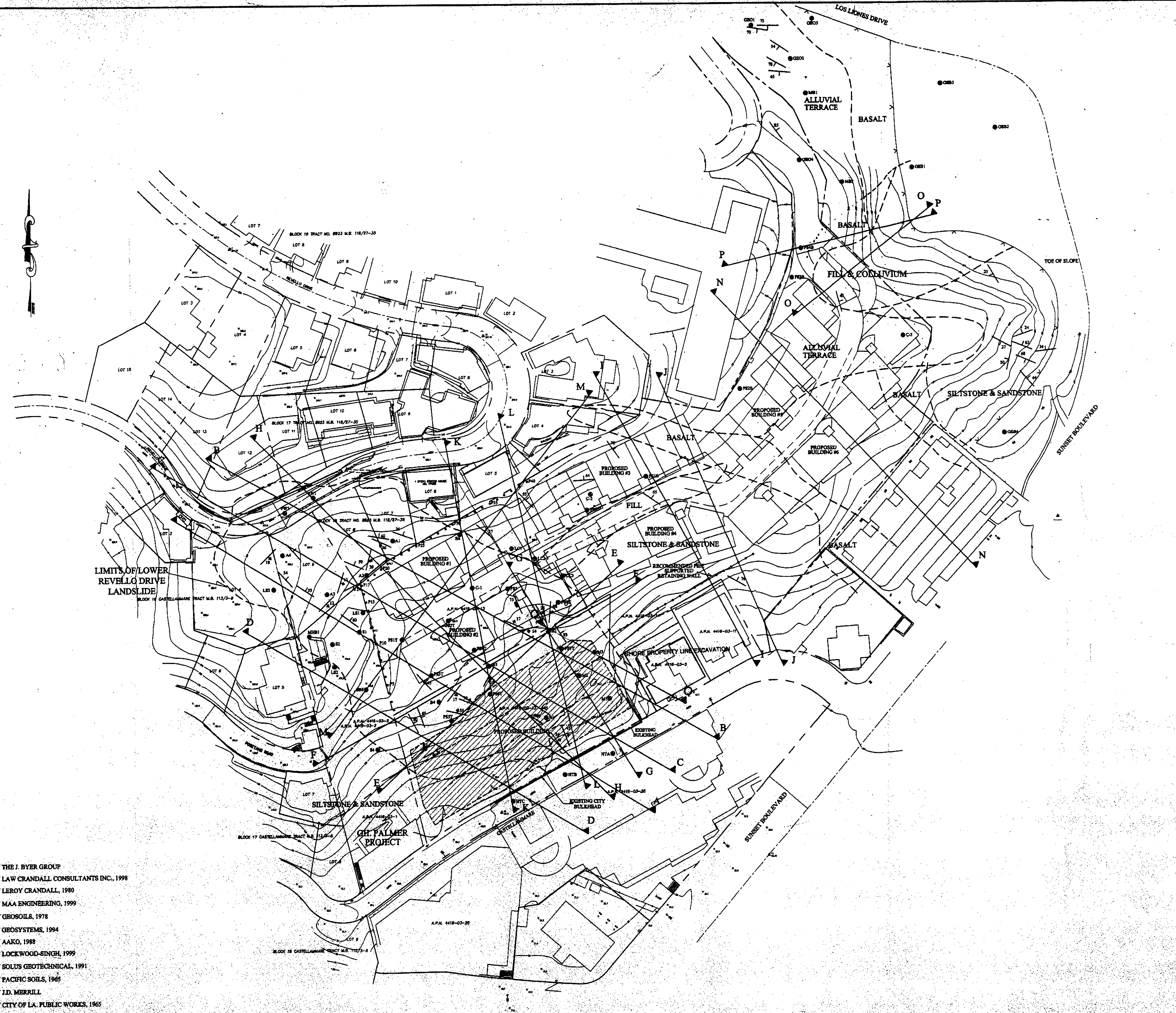
100' CONTOURS ALONG BASE OF SLIDE

30 30 30 THICKNESS OF GRID INTERSECTION IN FEET

P38 ● LOCATION AND NUMBER OF PILES

JUNE 29, 2001
FEBRUARY 27, 2001

THE J. BYER GROUP, INC. A GEOTECHNICAL CONSULTING FIRM 1461 E. Chevy Chase Dr. Suite 200, Glendale, CA 91206 (818) 549-9939 Tel (818) 543-5747 Fax	FINITE ELEMENT GRID
	JB: 18241-1 PALMER
CONSULTANT: JAI	SCALE: 1" = 20'



LEGEND

B6 ● LOCATION AND NUMBER OF BORINGS BY THE J. BYER GROUP
C-3 ● LOCATION AND NUMBER OF BORINGS BY LAW CRANDALL CONSULTANTS INC., 1998
LC3 ● LOCATION AND NUMBER OF BORINGS BY LEROY CRANDALL, 1980
MAA2 ● LOCATION AND NUMBER OF BORINGS BY MAA ENGINEERING, 1999
GSB4 ● LOCATION AND NUMBER OF BORINGS BY GEOSOILS, 1978
GEO1 ● LOCATION AND NUMBER OF BORINGS BY GEOSYSTEMS, 1994
A4 ● LOCATION AND NUMBER OF BORINGS BY AAKO, 1988
LS3 ● LOCATION AND NUMBER OF BORINGS BY LOCKWOOD-SINGH, 1999
SB3 ● LOCATION AND NUMBER OF BORINGS BY SOLUS GEOTECHNICAL, 1991
PS8T ● LOCATION AND NUMBER OF BORINGS BY PACIFIC SOILS, 1965
M3 ● LOCATION AND NUMBER OF BORINGS BY J.D. MERRILL
PW2 ● LOCATION AND NUMBER OF BORINGS BY CITY OF LA. PUBLIC WORKS, 1965
30 STRIKE AND DIP OF SHEAR
65 STRIKE AND DIP OF BEDDING
75 STRIKE AND DIP OF JOINT
GEOLOGIC CONTACT
P38 ● LOCATION AND NUMBER OF RECOMMENDED SOLDIER PILES
LIMITS OF 1965 BENCH

JUNE 28, 2001

THE J. BYER GROUP, INC.
A GEOTECHNICAL CONSULTING FIRM
1461 E. CHEVY CHASE DRIVE, Glendale, CA 91206
(818) 549-9959 Tel (818) 543-3747 Fax

GEOLOGIC MAP

JB 18457-I PALISADES LANDMARK LLC

CONSULTANT: JAI | SCALE: 1" = 40'