

TO: ABALONE COVE TECHNICAL PANEL

VOLUME II OF II

SUBJECT: TRIAL 3-DIMENSIONAL STABILITY CALCULATION

MARCH 16, 1992

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

R. T. Frankian & Associates Inc., Burbank, CA

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CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: Abalone Cove
Data File: 82025(V).CLA Analysis by: SDR Date: 03-07-92
Data Set: TN3 - Water 20' above / Break at 60 deg

RUN IDENTIFICATION LABEL: TN3 - Water 20' above / break at 60 deg

Number of Active Columns	561	Axis of Rotation Y-coordinate	783.60
Max. No. Columns in Y-dir.	23	Axis of Rotation Z-coordinate	4258.46
Slide Volume	2.89E+08	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.76E+10	Unbalanced Transverse Force .	1.76E+09
Sliding Surface Area ...	3.04E+06	Z-coord. of unbalanced force	412.81
Earthquake Acceleration	0.00	Negative Norm. Forces 0.00 % OF WEIGHT	

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.207
Janbu 1.195 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	Side Materia	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	Bottom Mater	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	Toeberm Mate	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

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R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - Abalone Cove
 DATA FILE - 82025(V).CLA
 DATA SET - TN3 - Water 20' above / Break at 60 deg
 ANALYSIS BY SDR
 DATE: 03-07-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION)	100
MESH START Y-COORDINATE	10
MESH END Y-COORDINATE	2790
ROW WIDTH	50
TRANSVERSE MESH WIDTH	1800
NUMBER OF MATERIALS	3
NUMBER OF DISCONTINUITIES	0
NUMBER OF PIEZOMETRIC SURFACES	1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS. RATIO* B-BAR	
			HOR.	VERT.	HOR.	VERT.		
A/ MATERIALS:								
1	Side Materia	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	Bottom Mater	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	Toeberm Mate	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	201.00
300.00	212.00
350.00	245.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
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0.00	200.00
200.00	201.00
300.00	212.00
350.00	245.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	201.00
420.00	270.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 2 X = 100

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	185.00
209.00	185.00
240.00	200.00
350.00	220.00
400.00	260.00
530.00	268.00
550.00	270.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00
2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

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<u>Engineering</u>	<u>Consulting</u>

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
209.00	185.00
240.00	200.00
350.00	220.00
400.00	260.00
530.00	268.00
550.00	270.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00
2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
150.00	185.00
430.00	280.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00
2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 3 X = 200

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00

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Geotechnical	Engineering
Engineering	Consulting

1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
270.00	230.00
440.00	280.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 4 X = 300

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1270.00	100.00
1570.00	370.00

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<u>Engineering</u>	<u>Geology</u>

1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

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MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
390.00	220.00
430.00	270.00
670.00	285.00
940.00	342.00
1230.00	340.00
1570.00	370.00
1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
280.00	235.00
415.00	280.00
670.00	285.00
940.00	342.00
1230.00	340.00
1570.00	370.00
1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
740.00	200.00
920.00	280.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 5 X = 400

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1500.00	100.00

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1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
260.00	185.00
300.00	200.00
450.00	270.00
500.00	272.00
600.00	262.00
650.00	286.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
138.00	185.00
280.00	245.00
420.00	280.00
650.00	286.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
820.00	200.00
900.00	230.00
1070.00	260.00
1760.00	280.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 6 X = 700

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Geotechnical	Engineering
Engineering	Geology

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2100.00	100.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
400.00	220.00
450.00	270.00
650.00	285.00
750.00	265.00
780.00	286.00
1200.00	353.00
1250.00	386.00
1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
165.00	185.00
270.00	238.00
415.00	280.00
780.00	286.00
1200.00	353.00
1250.00	386.00
1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
954.00	200.00
1698.00	242.00
2200.00	350.00
2250.00	360.00
2800.00	400.00

CROSS-SECTION NUMBER 7 X = 1000

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
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0.00	100.00
1965.00	100.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
185.00	185.00
200.00	200.00
250.00	202.00
350.00	236.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00
1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
120.00	185.00
180.00	212.00
240.00	240.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00
1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
750.00	210.00
1400.00	298.00
1650.00	320.00
2200.00	388.00
2300.00	400.00
2800.00	400.00

CROSS-SECTION NUMBER 8 X = 1300

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00

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2000.00	100.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
225.00	195.00
230.00	205.00
280.00	210.00
410.00	242.00
490.00	250.00
900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
210.00	210.00
250.00	240.00
410.00	242.00
490.00	250.00
900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
570.00	240.00
920.00	300.00
1220.00	320.00
1780.00	360.00
2180.00	400.00
2800.00	400.00

CROSS-SECTION NUMBER 9 X = 1400

MATERIAL NO. 1

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Engineering	Geology

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1500.00	100.00
1690.00	510.00
1840.00	510.00
1950.00	523.00
2330.00	560.00
2380.00	576.00
2800.00	604.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
160.00	185.00
170.00	200.00
265.00	200.00
310.00	220.00
400.00	220.00
480.00	242.00
930.00	358.00
1070.00	360.00
1300.00	430.00
1400.00	430.00
1690.00	510.00
1840.00	510.00
2330.00	568.00
2380.00	576.00
2800.00	604.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
160.00	185.00
170.00	200.00
258.00	210.00
330.00	240.00
480.00	242.00
930.00	358.00
1070.00	360.00
1300.00	430.00
1400.00	430.00
1690.00	510.00
1840.00	510.00
2330.00	568.00
2380.00	576.00
2800.00	604.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
400.00	200.00
1150.00	320.00
2030.00	400.00
2800.00	400.00

CROSS-SECTION NUMBER 10 X = 1600

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<u>Engineering</u>	<u>Geology</u>

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00
330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00
2300.00	560.00
2360.00	578.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00
330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00
2300.00	560.00
2360.00	578.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00
330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00

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2300.00	560.00
2360.00	578.00
2800.00	600.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00

CROSS-SECTION NUMBER 11 X = 1800

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00
200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00
800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1500.00	490.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00
200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00
800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00

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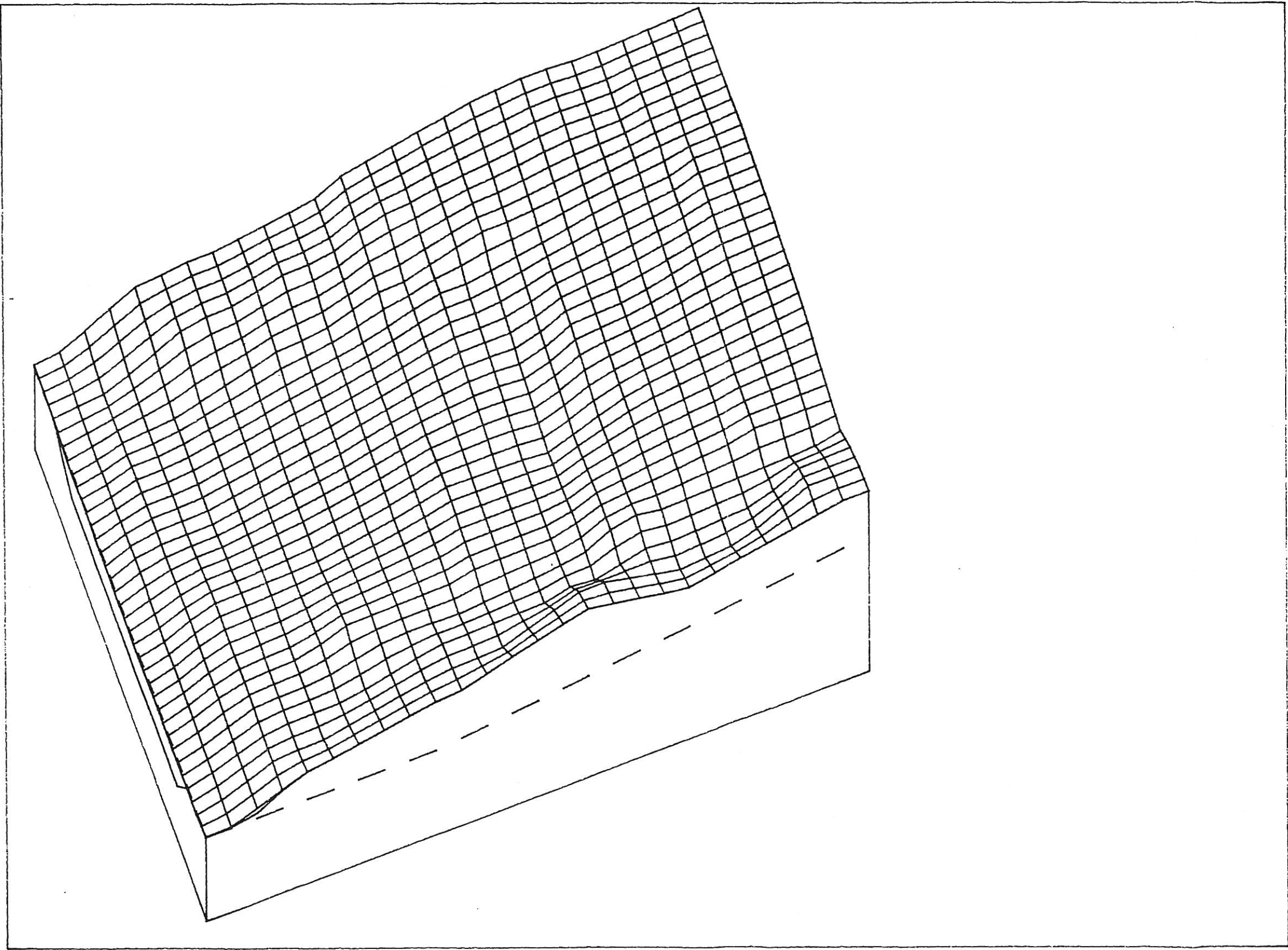
<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00
800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

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PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

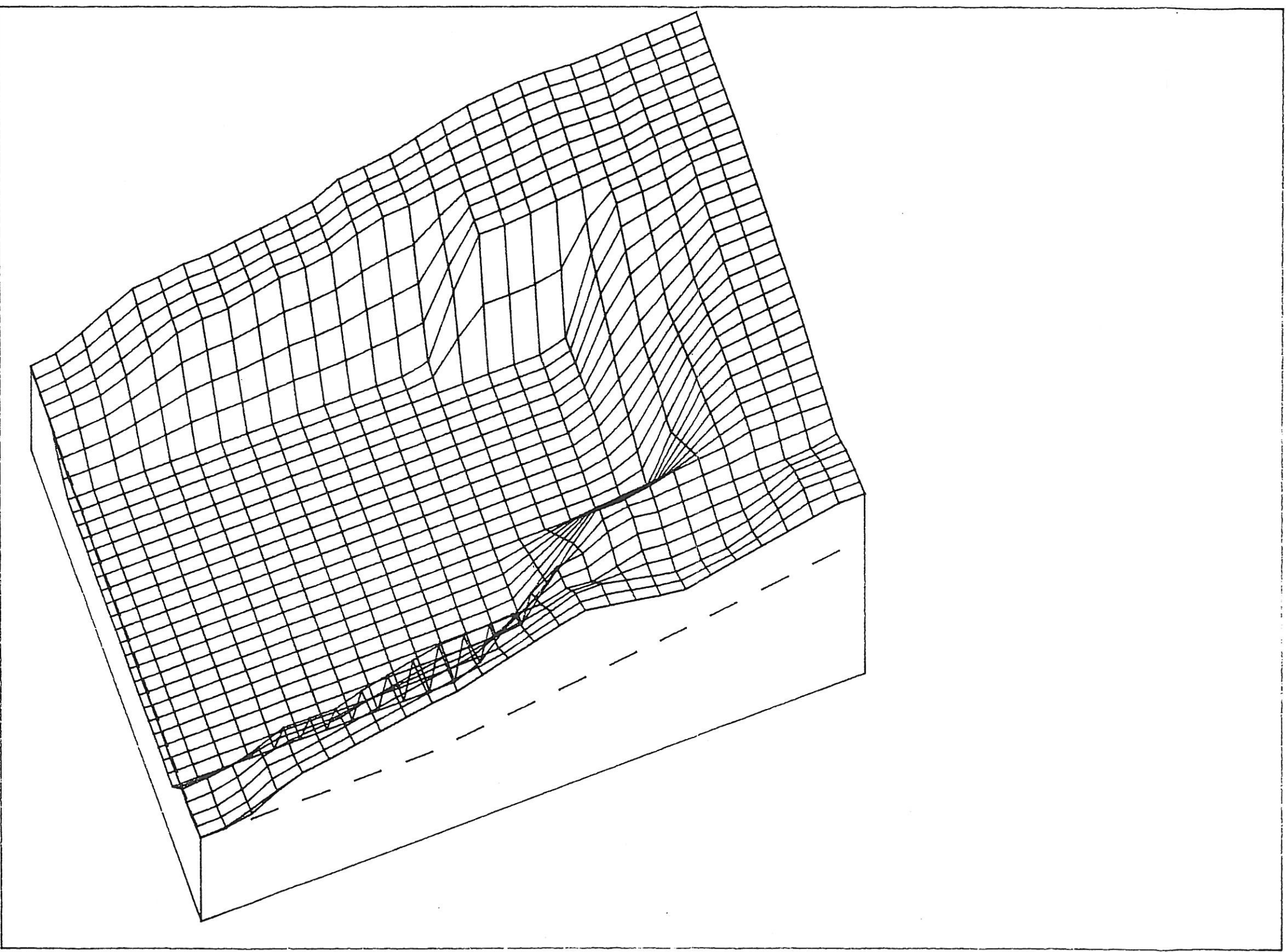
GROUND SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92

SCALE:

PLATE: 4-15

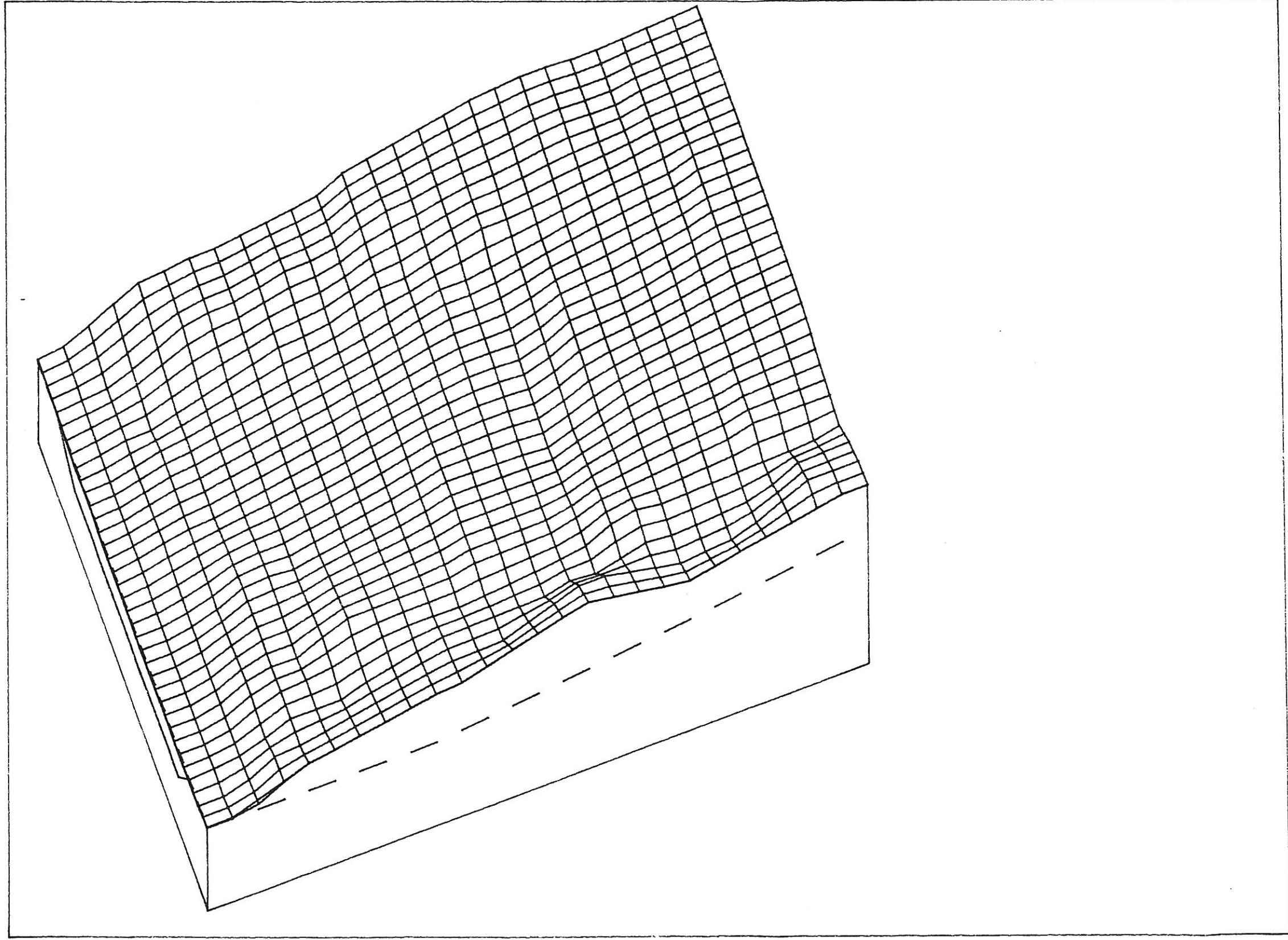


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
MATERIAL ONE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-16



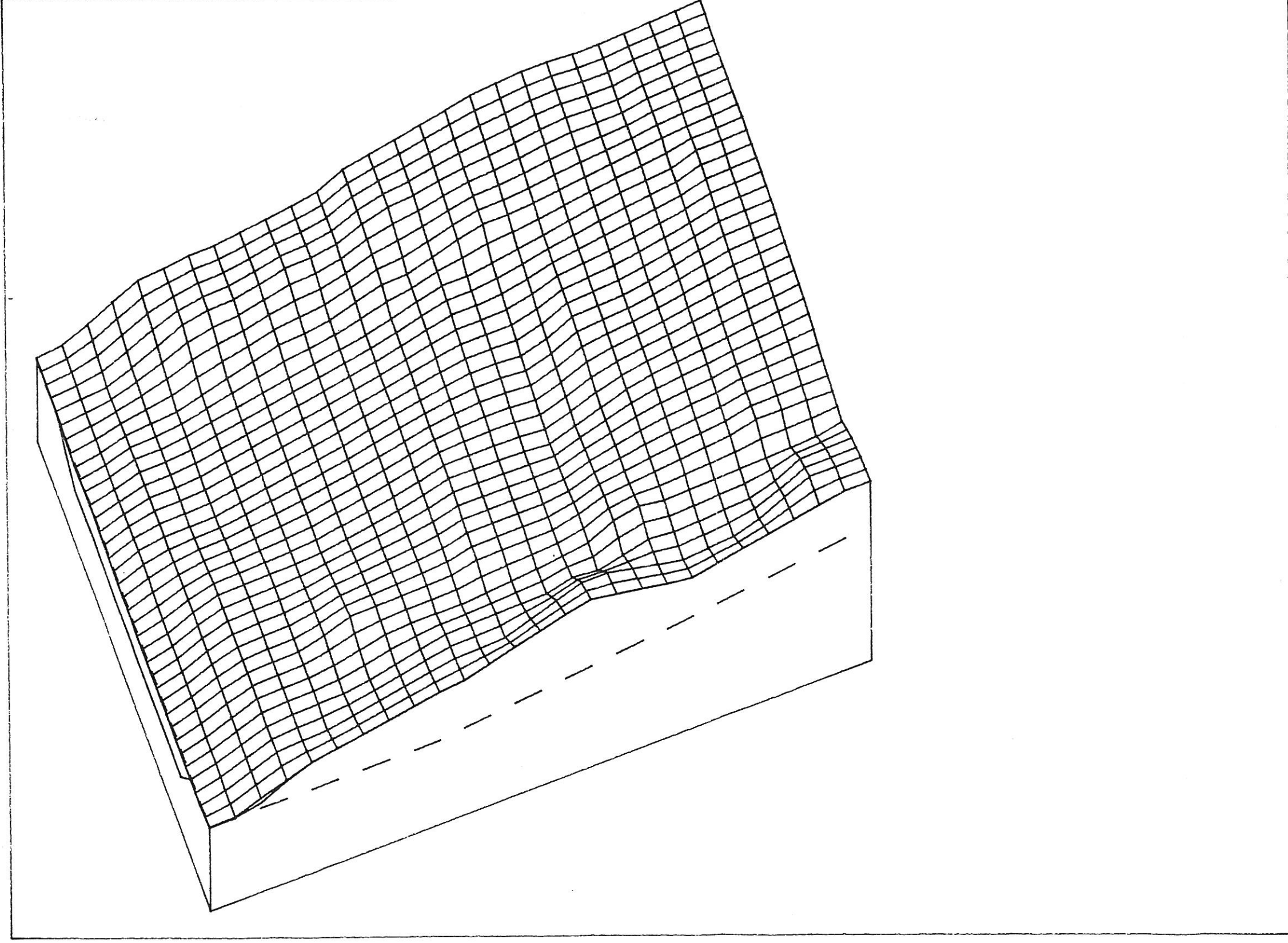
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
MATERIAL T

R.T. FRANKIAN & ASS'

DATE: 03-05-92

SCALE:



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

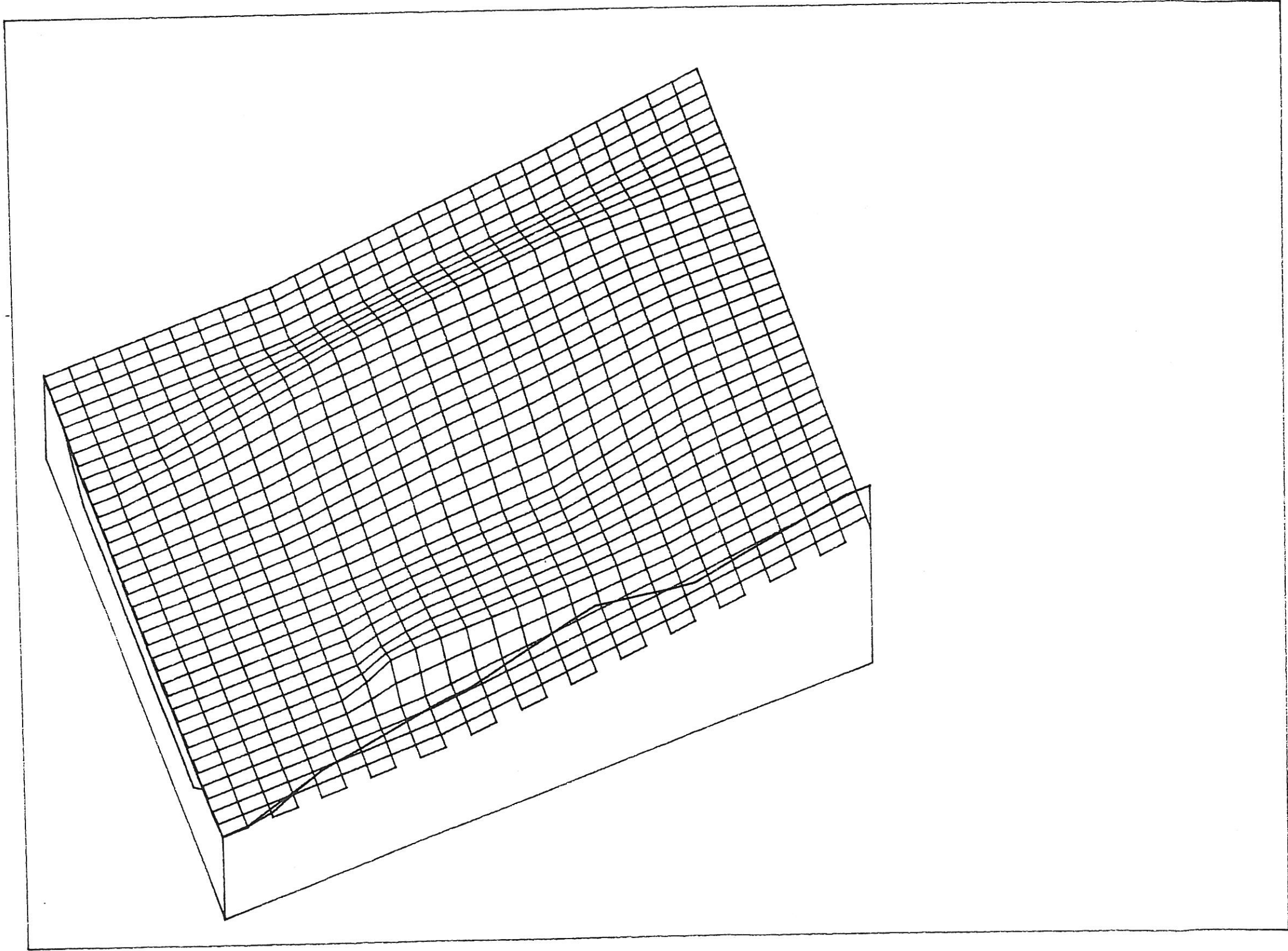
MATERIAL THREE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92

SCALE:

PLATE: 4-18



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

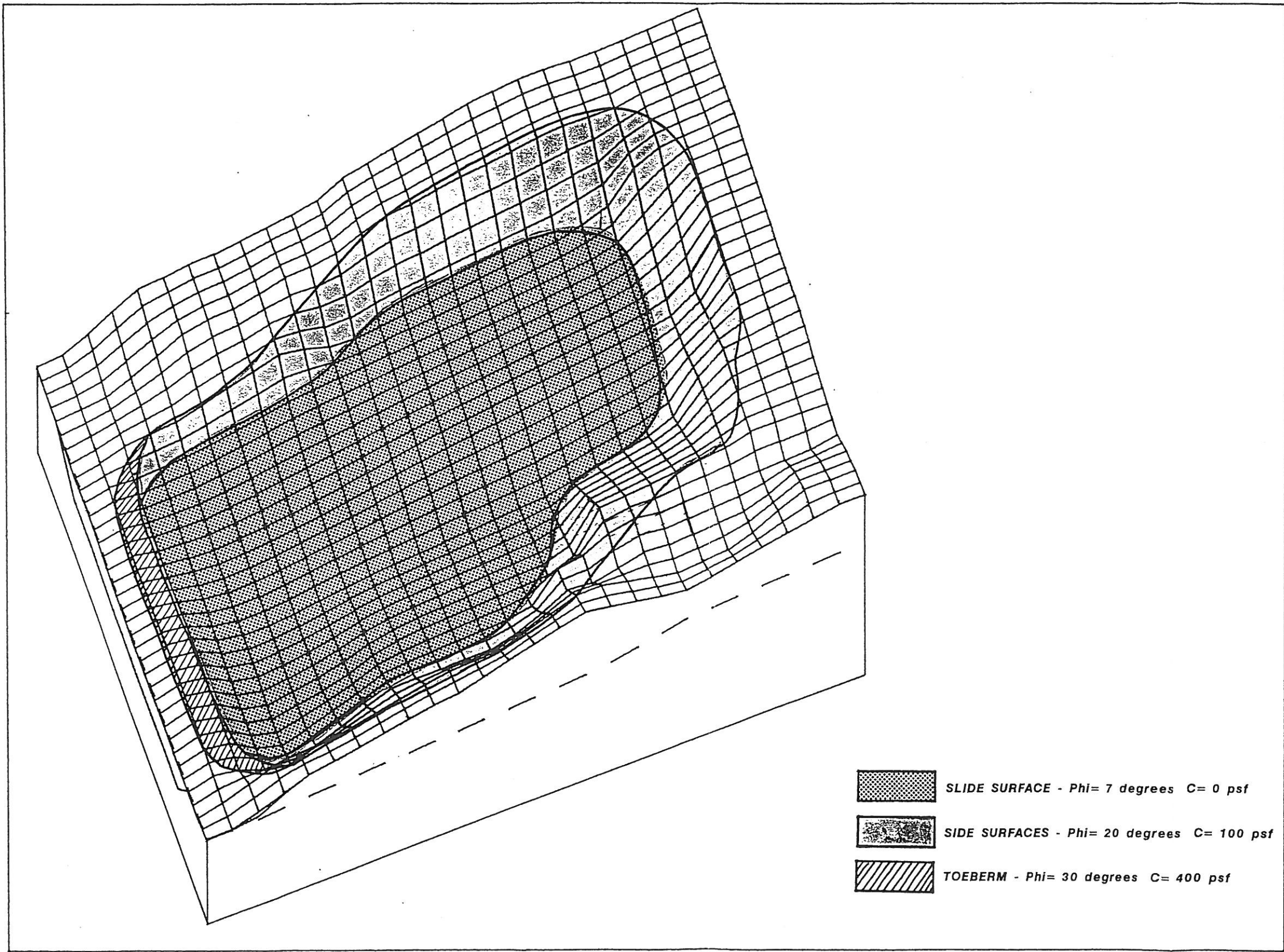
Use with TRIAL NO. SN-4
PIEZOMETRIC SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92

SCALE:

PLATE: 4-19



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

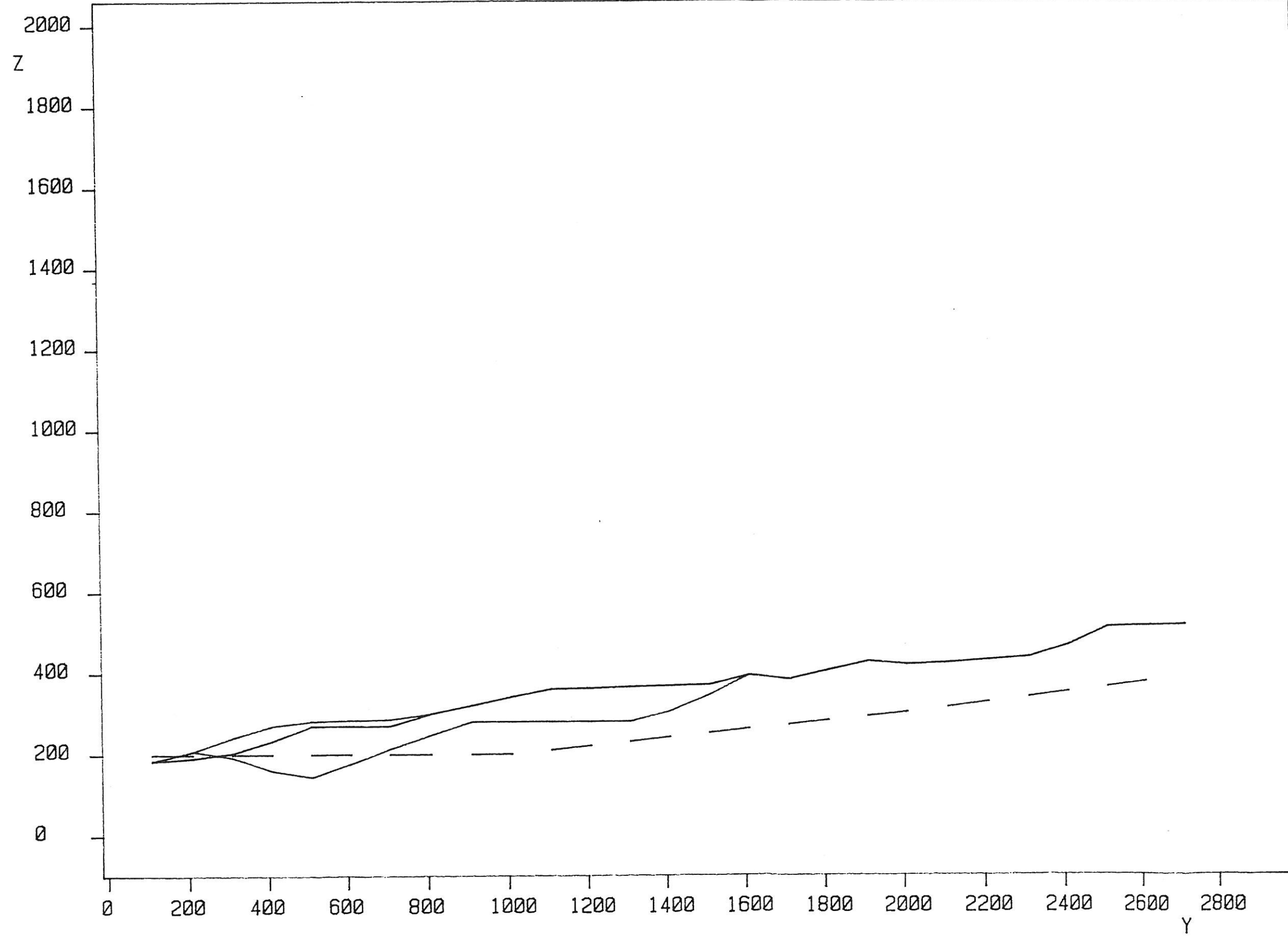
Use with Trial No. SN-4
SLIDING SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92

SCALE:

PLATE: 4-20

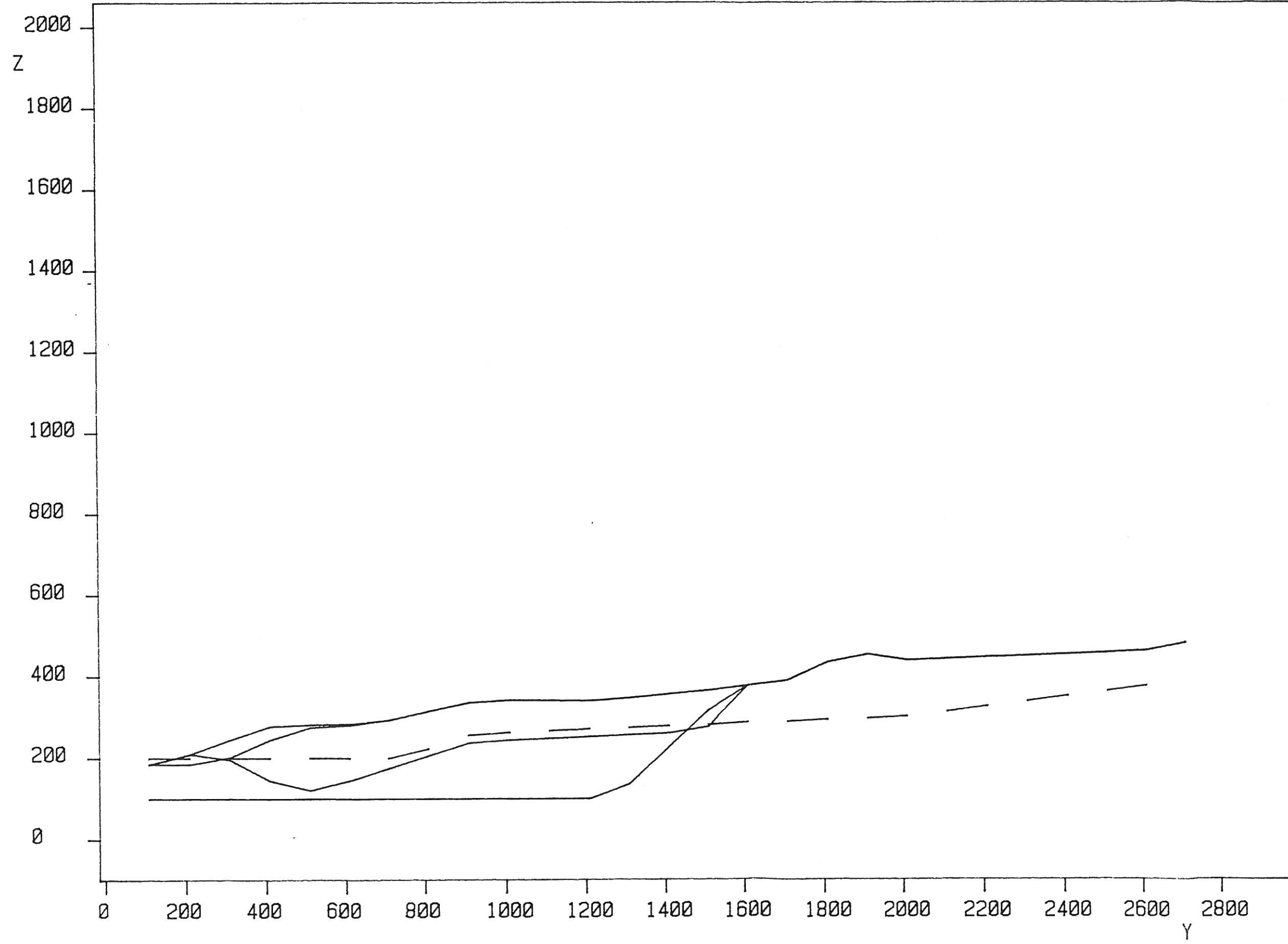


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
 $X = 200$

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-21

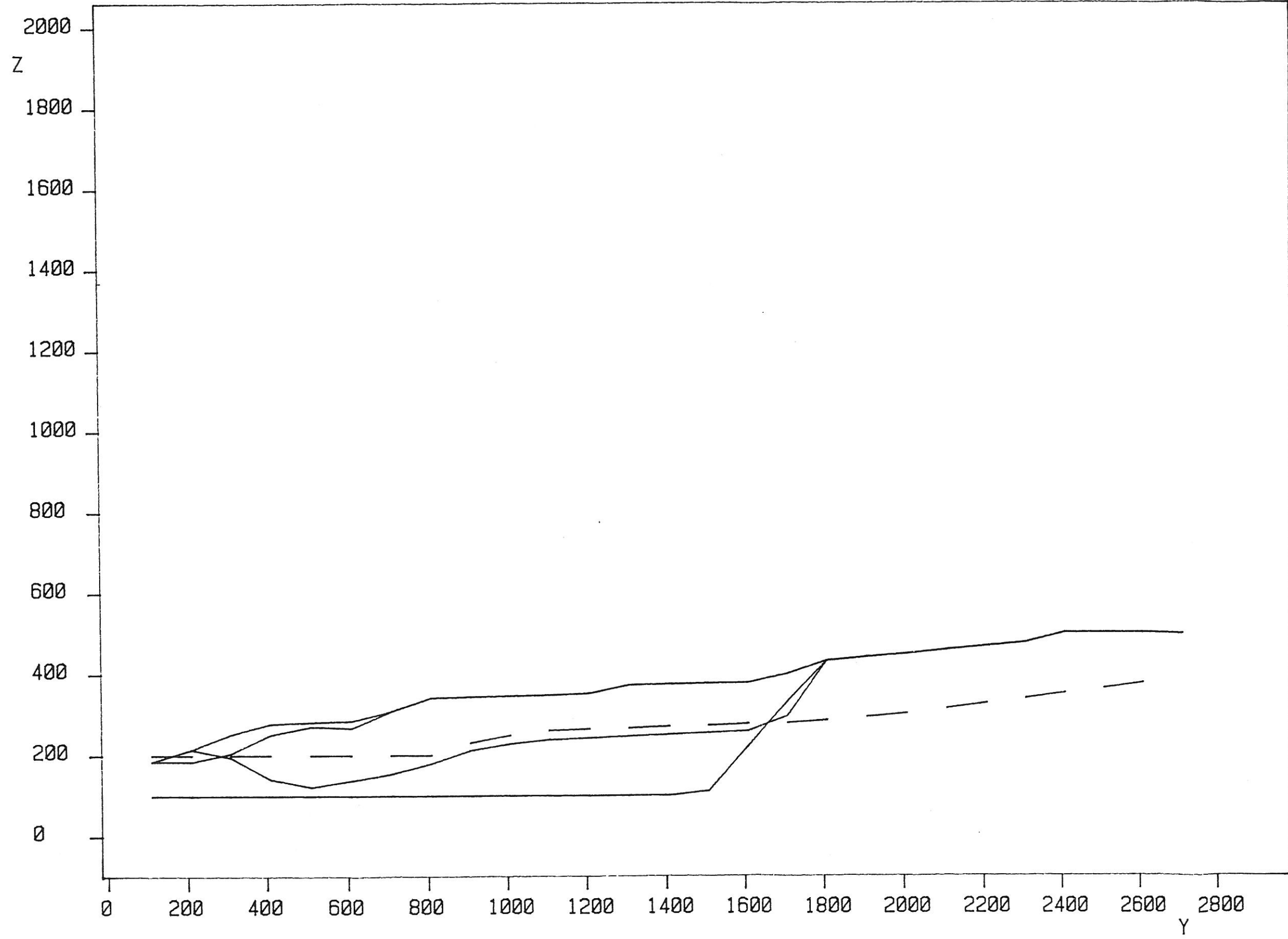


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 300

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-22

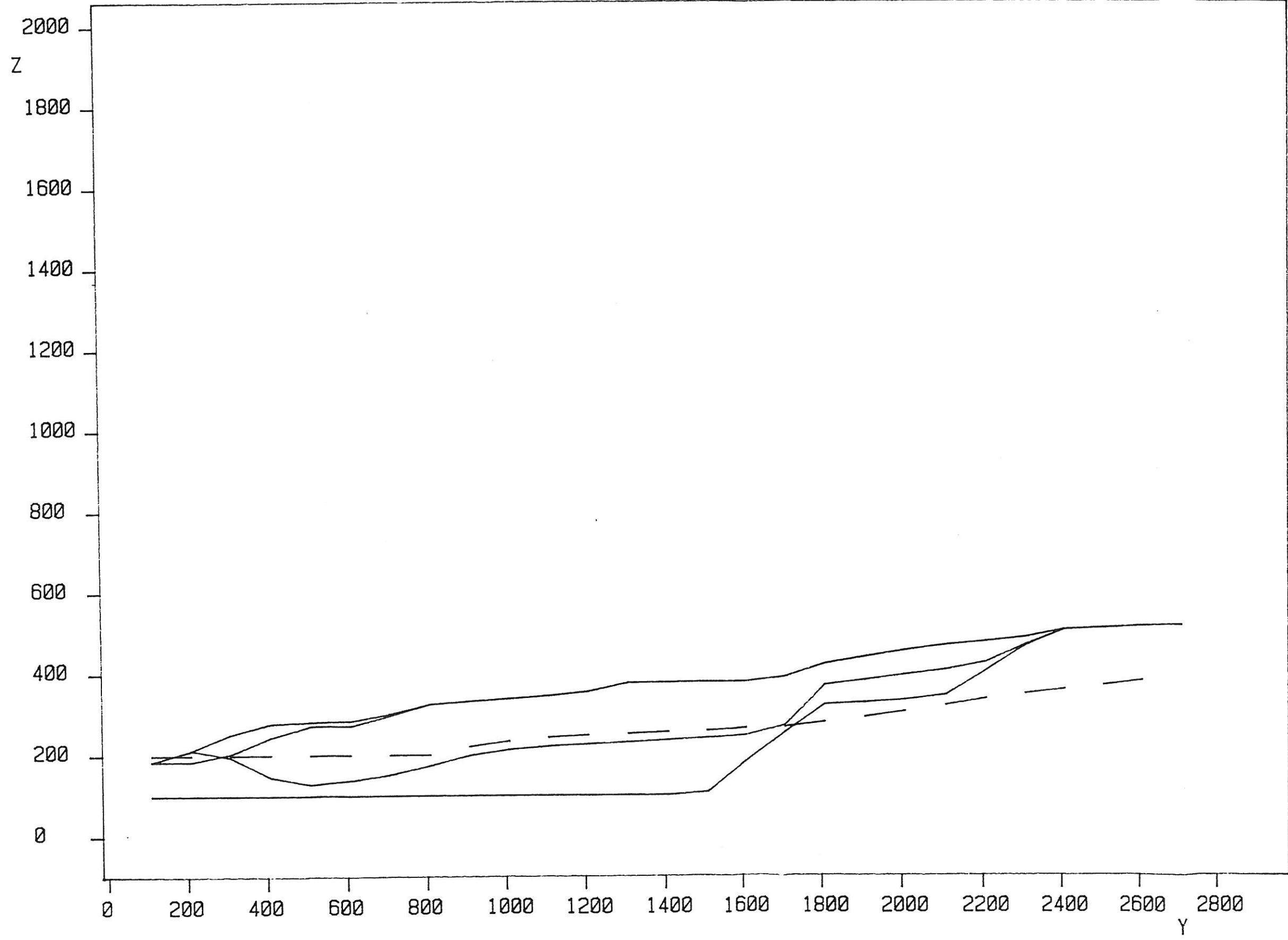


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 400

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-23

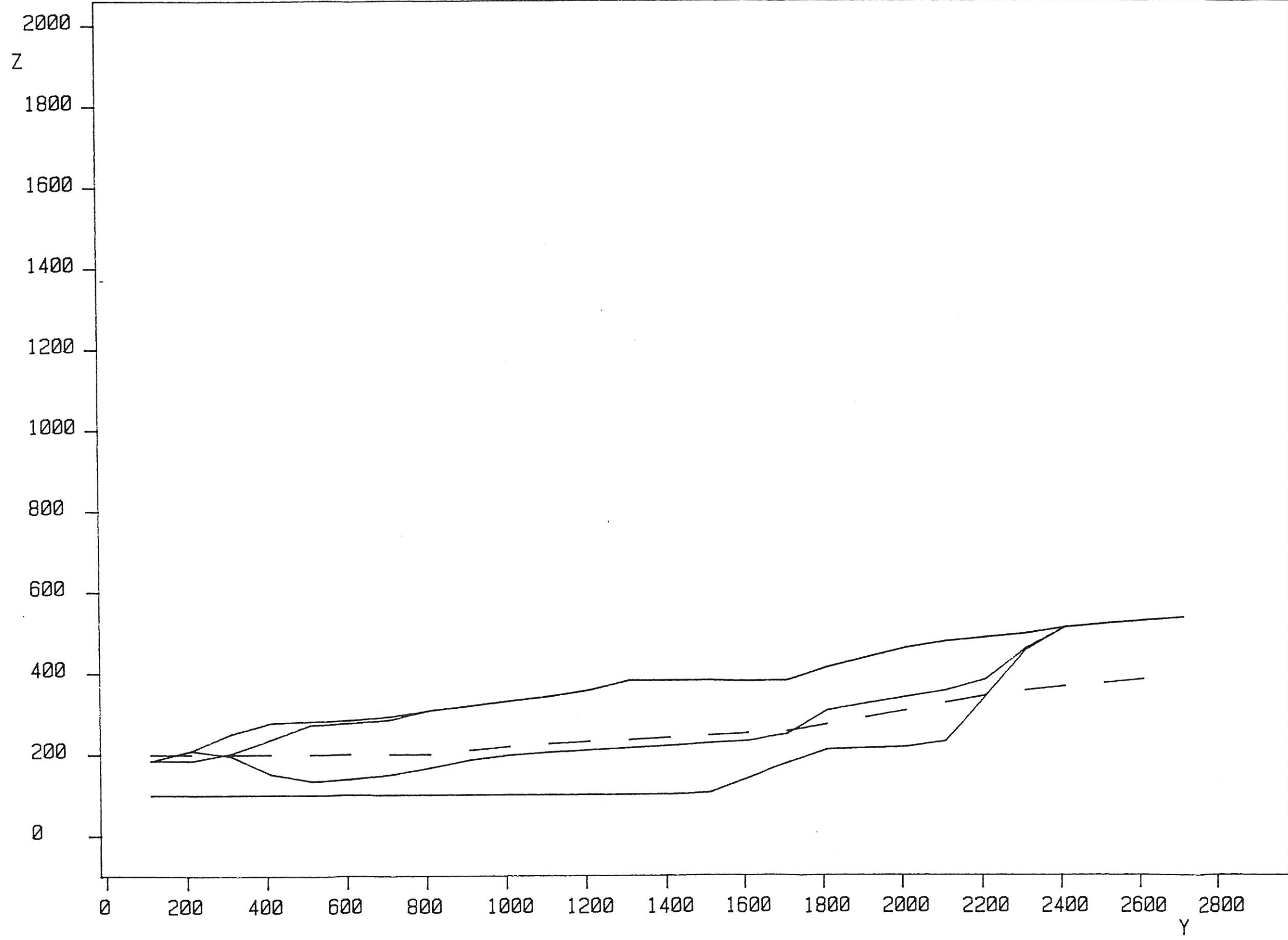


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 500

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-24



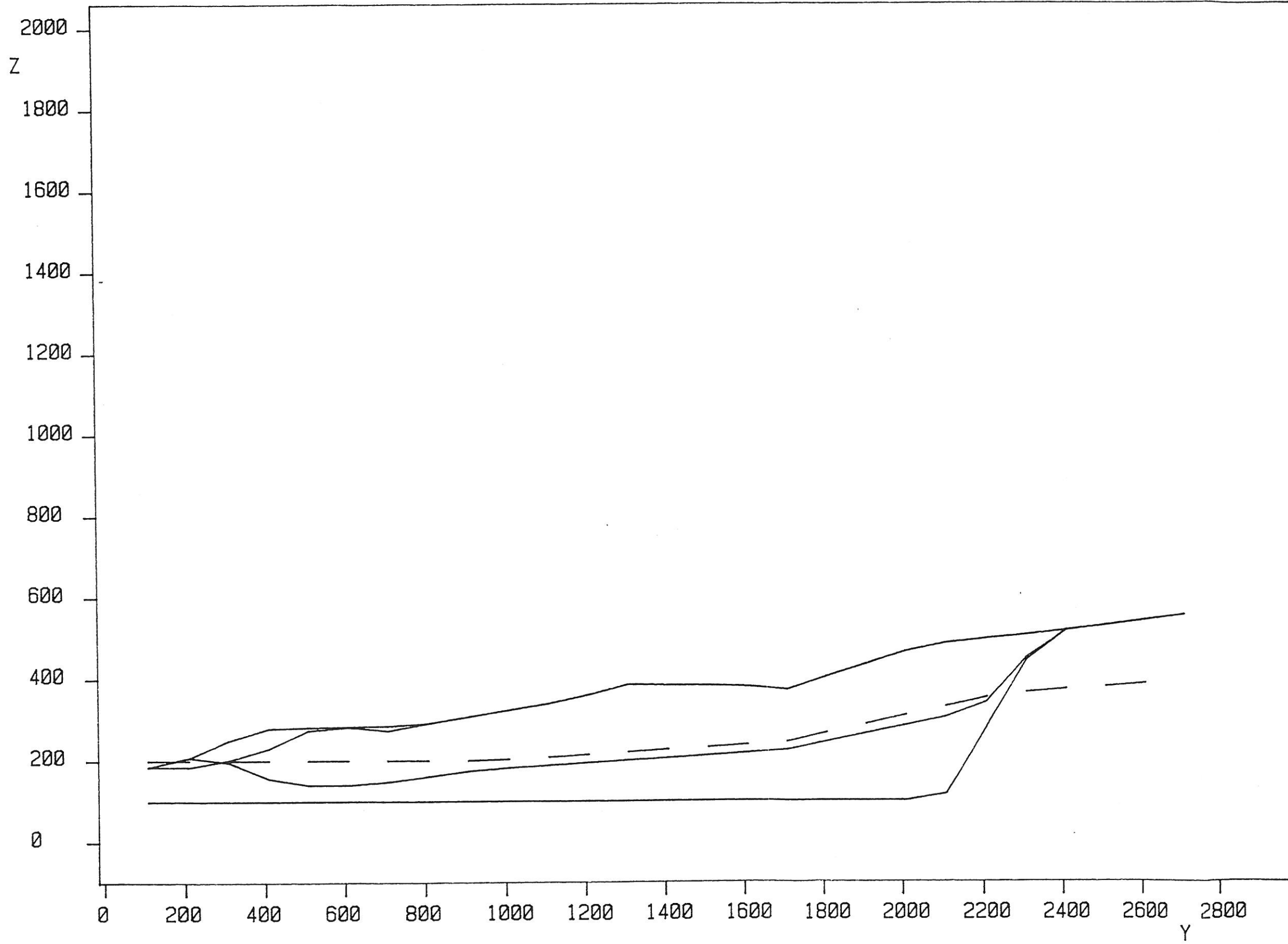
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

X = 600

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-25

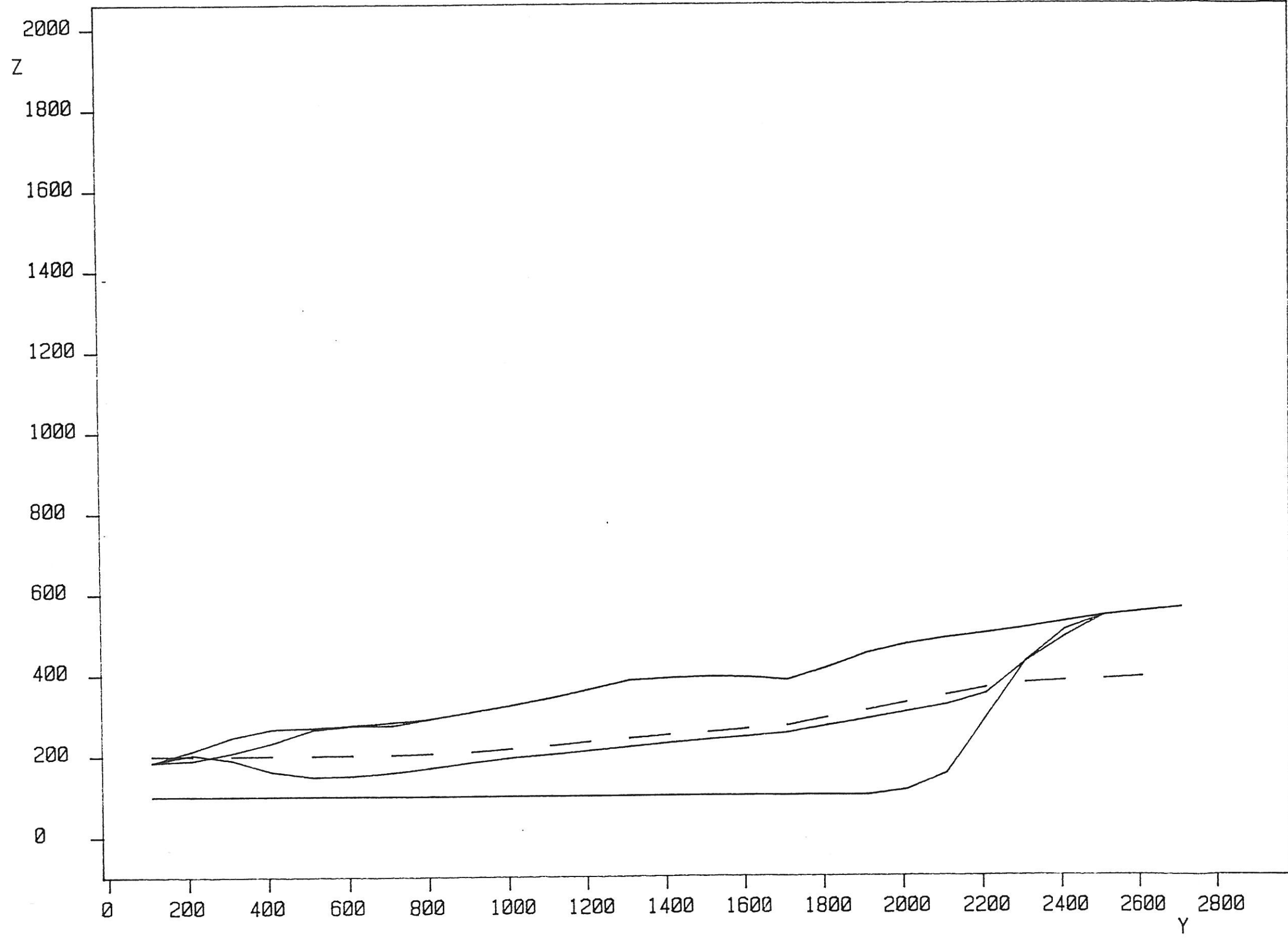


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 700

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-26

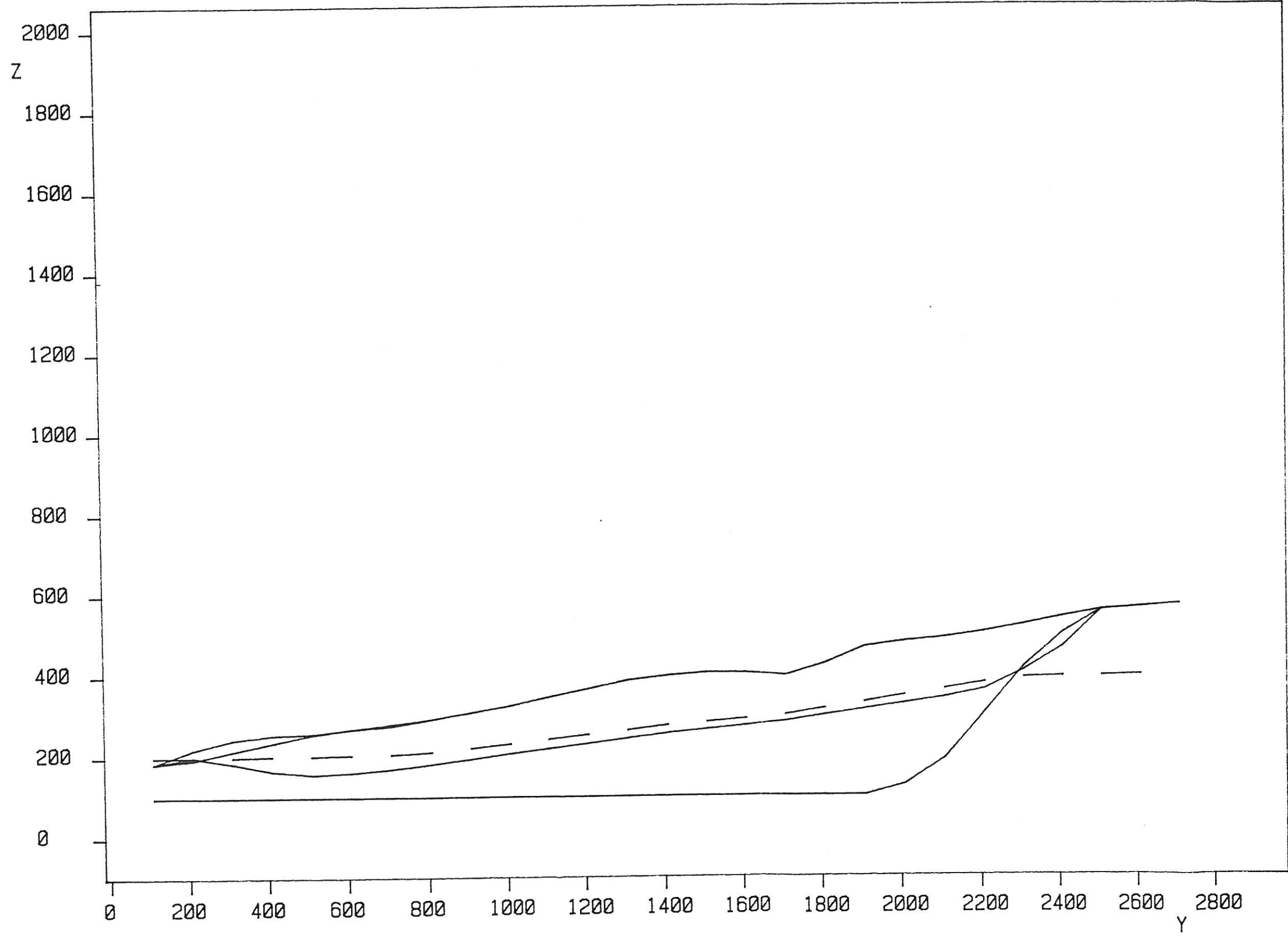


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 800

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92
SCALE:
PLATE: 4-27



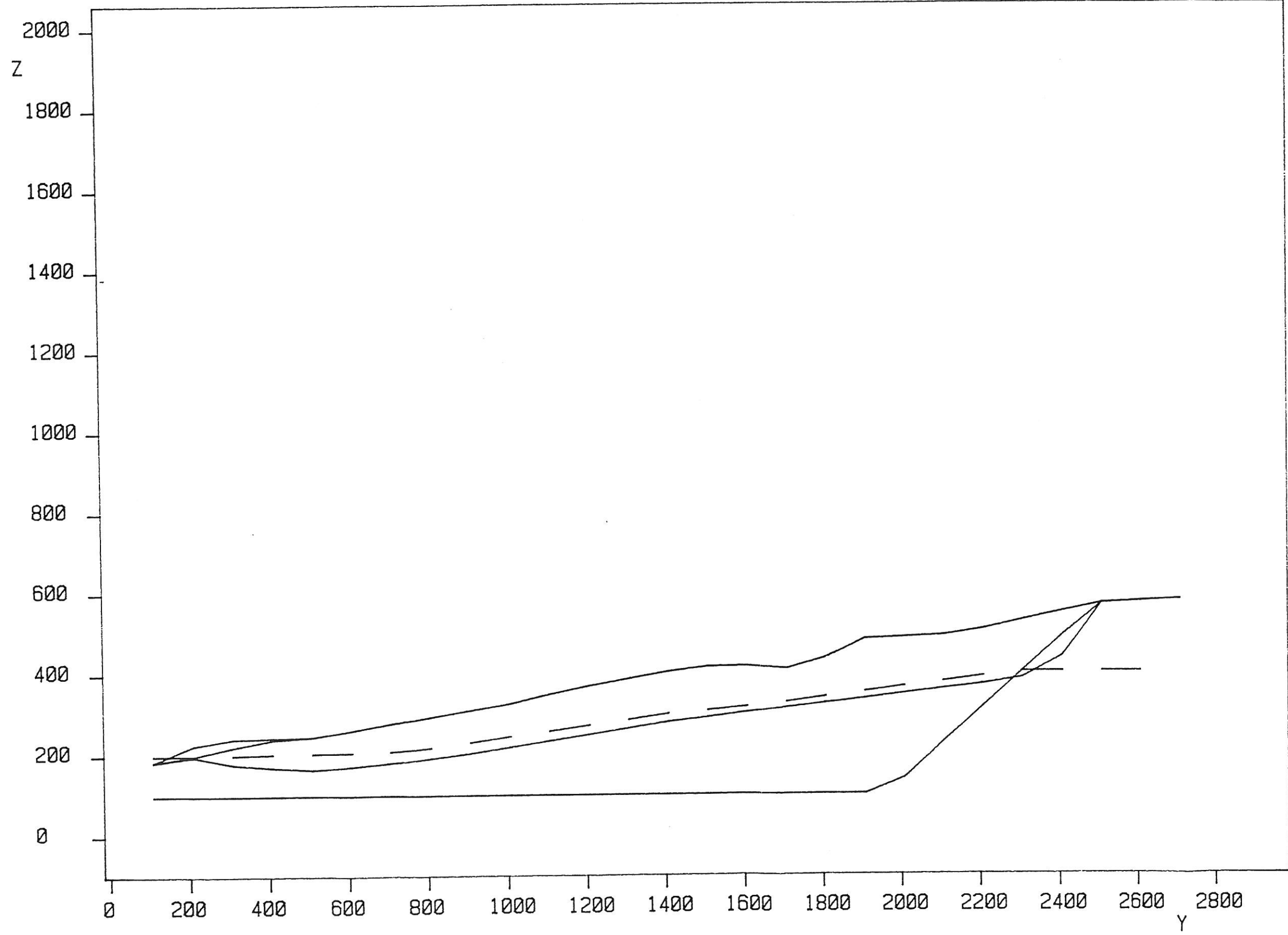
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

X = 900

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-28



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

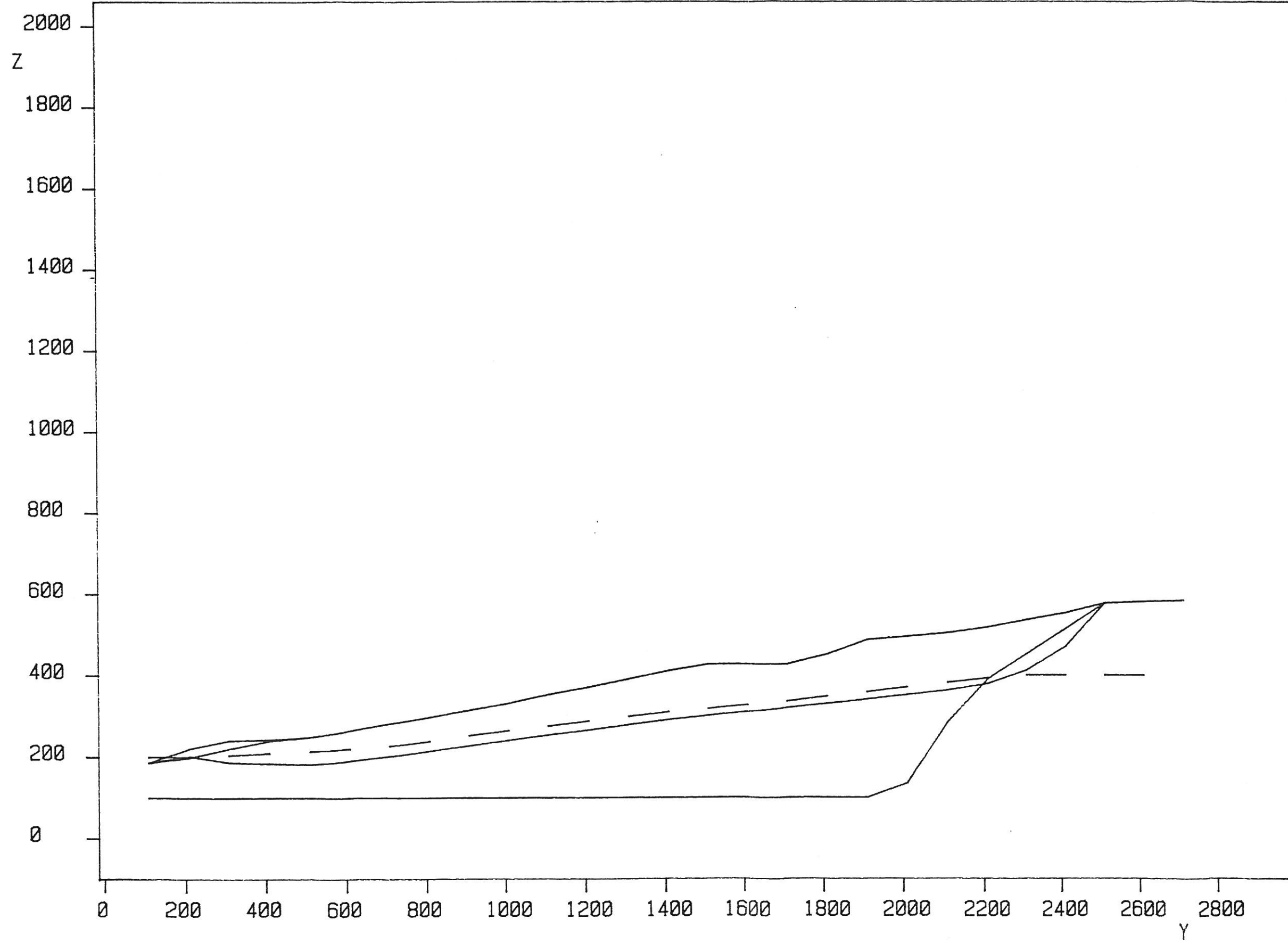
X = 1000

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92

SCALE:

PLATE: 4-29



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4

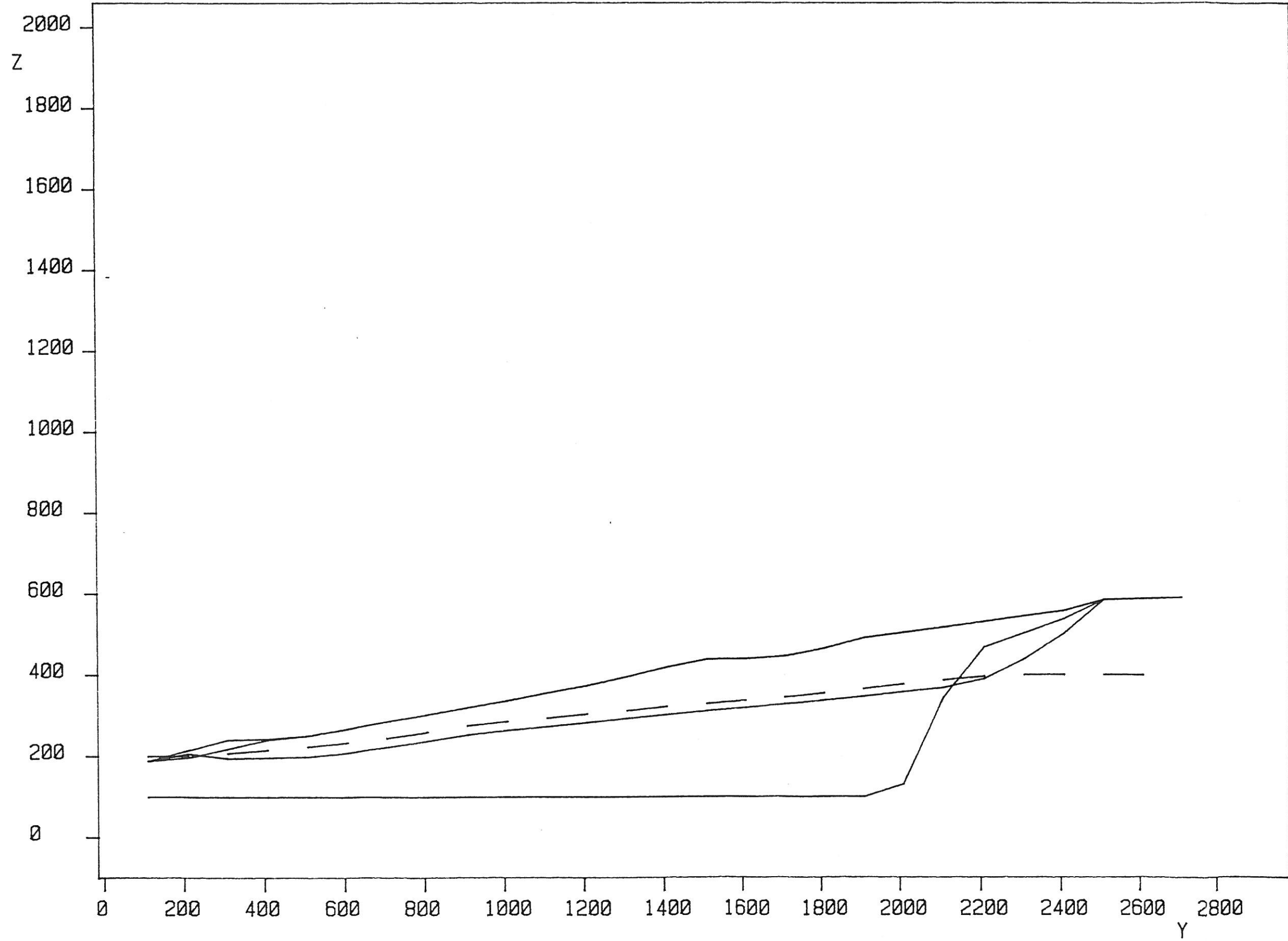
X = 1100

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92

SCALE:

PLATE: 4-30

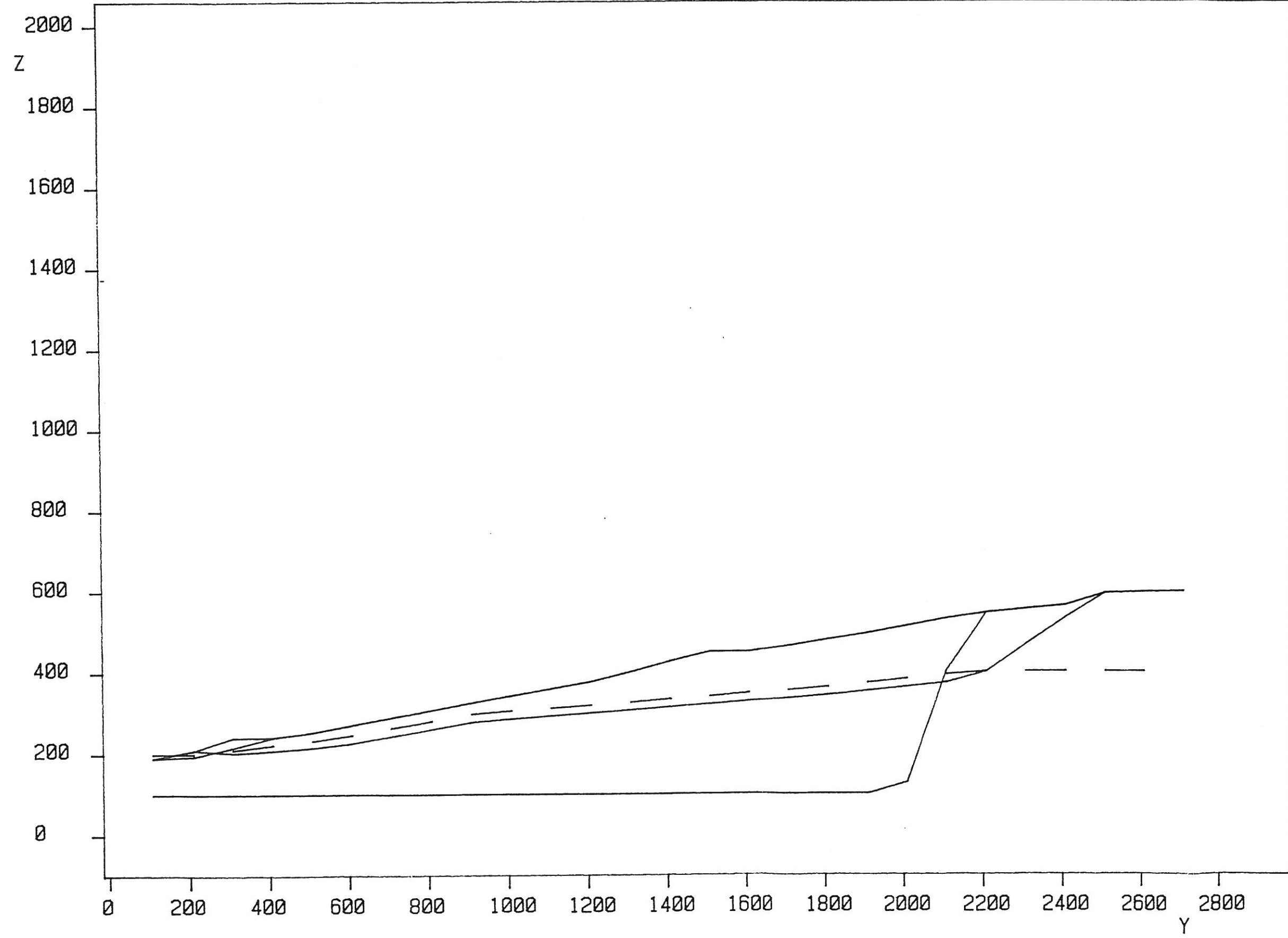


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 1200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-31

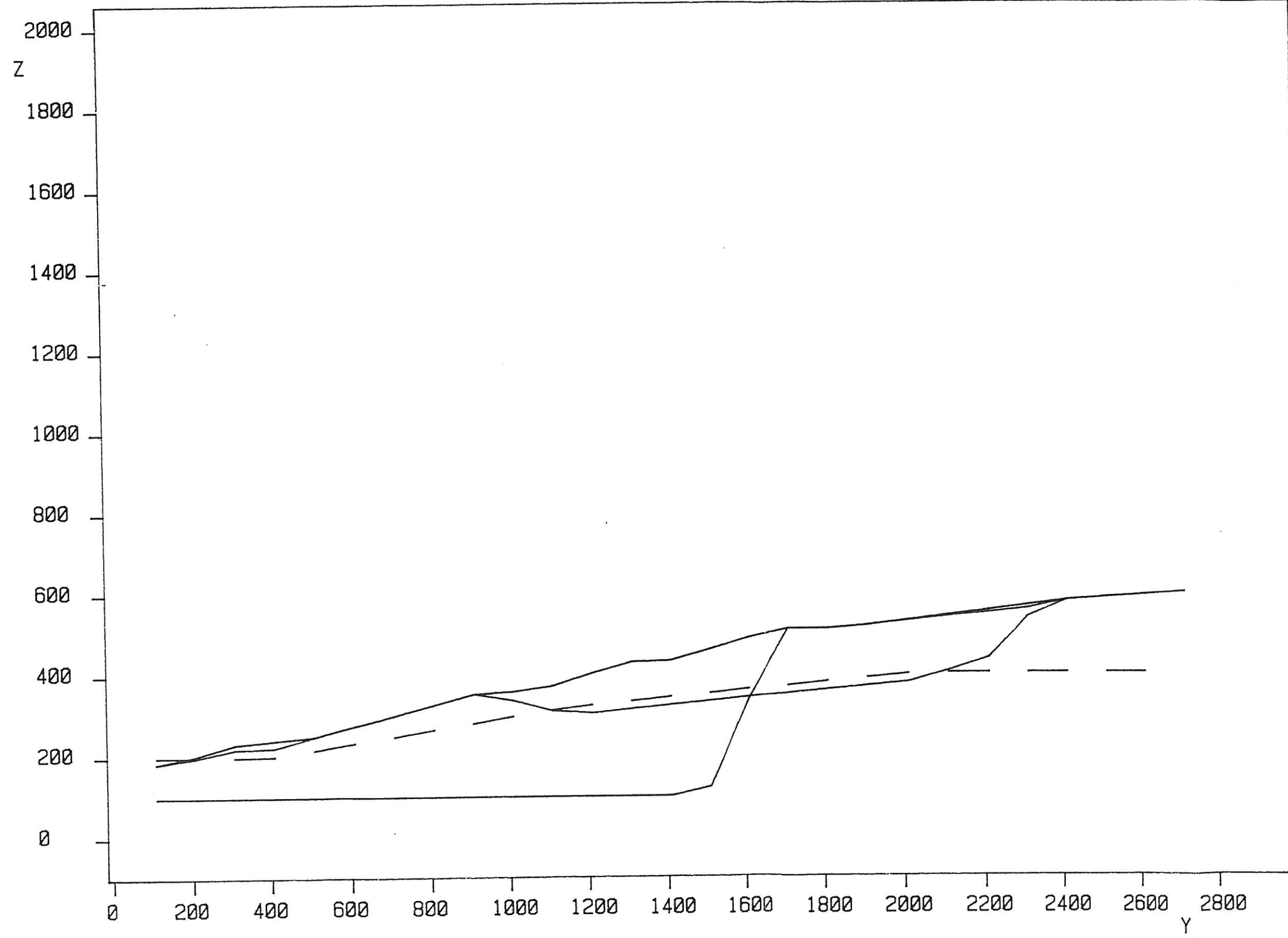


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
 $X = 1300$

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-32



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-4
X = 1400

R.T. FRANKIAN & ASSOCIATES

DATE: 03-05-92 SCALE: PLATE: 4-33

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: Abalone Cove
 Data File: 82025(W).CLA Analysis by: SDR Date: 03-06-92
 Data Set: TN3 - Nov/Dec Water and 60 deg break through Berm

RUN IDENTIFICATION LABEL: TN3 w/ Nov/Dec Water - 60 deg break

Number of Active Columns	561	Axis of Rotation Y-coordinate	783.60
Max. No. Columns in Y-dir.	23	Axis of Rotation Z-coordinate	4258.46
Slide Volume	2.89E+08	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.76E+10	Unbalanced Transverse Force .	1.76E+09
Sliding Surface Area ...	3.04E+06	Z-coord. of unbalanced force	412.88
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.183
 Janbu 1.173 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR

A/ MATERIALS:								
1	Side Materia	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	Bottom Mater	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	Toeberm Mate	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - Abalone Cove
 DATA FILE - 82025(W).CLA
 DATA SET - TN3 - Nov/Dec Water and 60 deg break through Berm
 ANALYSIS BY SDR
 DATE: 03-06-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION)	100
MESH START Y-COORDINATE	10
MESH END Y-COORDINATE	2790
ROW WIDTH	50
TRANSVERSE MESH WIDTH	1800
NUMBER OF MATERIALS	3
NUMBER OF DISCONTINUITIES	0
NUMBER OF PIEZOMETRIC SURFACES	1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	VERT.	FRICTION HOR.	VERT.	PORE-PRESS. RATIO* B-BAR

A/ MATERIALS:							
1	Side Materia	130.00	100.0	100.0	20.0	20.0	-1.00 0.00
2	Bottom Mater	130.00	0.0	0.0	7.0	7.0	-1.00 0.00
3	Toeberm Mate	135.00	400.0	400.0	30.0	30.0	-1.00 0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	201.00
300.00	212.00
350.00	245.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
--------------	--------------

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

0.00	200.00
200.00	201.00
300.00	212.00
350.00	245.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	201.00
420.00	270.00
435.00	270.00
500.00	295.00
900.00	356.00
1050.00	380.00
1100.00	380.00
1600.00	503.00
2000.00	440.00
2600.00	548.00
2800.00	548.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
500.00	220.00
950.00	240.00
1330.00	260.00
1665.00	280.00
2000.00	340.00
2350.00	360.00
2800.00	385.00

CROSS-SECTION NUMBER 2 X = 100

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	185.00
209.00	185.00
240.00	200.00
350.00	220.00
400.00	260.00
530.00	268.00
550.00	270.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

5-4

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
209.00	185.00
240.00	200.00
350.00	220.00
400.00	260.00
530.00	268.00
550.00	270.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00
2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
150.00	185.00
430.00	280.00
600.00	282.00
1050.00	360.00
1070.00	366.00
1300.00	370.00
1650.00	480.00
2000.00	410.00
2250.00	430.00
2500.00	540.00
2800.00	540.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
240.00	200.00
550.00	220.00
1000.00	240.00
1700.00	280.00
1960.00	340.00
2330.00	360.00
2800.00	390.00

CROSS-SECTION NUMBER 3 X = 200

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
270.00	230.00
440.00	280.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
290.00	200.00
550.00	220.00
1000.00	240.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1420.00	260.00
1700.00	280.00
1950.00	340.00
2800.00	390.00

5-6

CROSS-SECTION NUMBER 4 X = 300

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1270.00	100.00
1570.00	370.00
1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
390.00	220.00
430.00	270.00
670.00	285.00
940.00	342.00
1230.00	340.00
1570.00	370.00
1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
280.00	235.00
415.00	280.00
670.00	285.00
940.00	342.00
1230.00	340.00
1570.00	370.00
1710.00	390.00
1850.00	452.00
1960.00	453.00
2000.00	438.00
2600.00	460.00
2800.00	500.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
--------------	--------------

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

0.00	200.00
300.00	200.00
550.00	220.00
1000.00	240.00
1450.00	260.00
1750.00	280.00
1960.00	340.00
2250.00	360.00
2650.00	380.00
2800.00	390.00

CROSS-SECTION NUMBER 5 X = 400

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1500.00	100.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
260.00	185.00
300.00	200.00
450.00	270.00
500.00	272.00
600.00	262.00
650.00	286.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
138.00	185.00
280.00	245.00
420.00	280.00
650.00	286.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
320.00	200.00
550.00	220.00
1000.00	240.00
1450.00	260.00
1780.00	280.00
1970.00	340.00
2230.00	360.00
2680.00	380.00
2800.00	390.00

CROSS-SECTION NUMBER 6 X = 700

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2100.00	100.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
400.00	220.00
450.00	270.00
650.00	285.00
750.00	265.00
780.00	286.00
1200.00	353.00
1250.00	386.00
1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
165.00	185.00
270.00	238.00
415.00	280.00
780.00	286.00
1200.00	353.00
1250.00	386.00
1600.00	380.00

R. T. FRANKIAN & ASSOCIATES

1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

5-9

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
310.00	200.00
600.00	220.00
970.00	240.00
1380.00	260.00
1800.00	280.00
2060.00	340.00
2430.00	380.00
2800.00	415.00

CROSS-SECTION NUMBER 7 X = 1000

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1965.00	100.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
185.00	185.00
200.00	200.00
250.00	202.00
350.00	236.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00
1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
120.00	185.00
180.00	212.00
240.00	240.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

5-10

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
230.00	200.00
850.00	240.00
1170.00	260.00
1560.00	280.00
1920.00	340.00
2150.00	380.00
2370.00	400.00
2570.00	460.00
2800.00	485.00

CROSS-SECTION NUMBER 8 X = 1300

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2000.00	100.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
225.00	195.00
230.00	205.00
280.00	210.00
410.00	242.00
490.00	250.00
900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
210.00	210.00
250.00	240.00
410.00	242.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

490.00	250.00
900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
420.00	220.00
1040.00	300.00
1530.00	340.00
1900.00	380.00
2150.00	400.00
2510.00	500.00
2800.00	500.00

CROSS-SECTION NUMBER 9 X = 1400

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1500.00	100.00
1690.00	510.00
1840.00	510.00
1950.00	523.00
2330.00	560.00
2380.00	576.00
2800.00	604.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
160.00	185.00
170.00	200.00
265.00	200.00
310.00	220.00
400.00	220.00
480.00	242.00
930.00	358.00
1070.00	360.00
1300.00	430.00
1400.00	430.00
1690.00	510.00
1840.00	510.00
2330.00	568.00
2380.00	576.00
2800.00	604.00

MATERIAL NO. 3

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

Y-COORDINATE	Z-COORDINATE
0.00	185.00
160.00	185.00
170.00	200.00
258.00	210.00
330.00	240.00
480.00	242.00
930.00	358.00
1070.00	360.00
1300.00	430.00
1400.00	430.00
1690.00	510.00
1840.00	510.00
2330.00	568.00
2380.00	576.00
2800.00	604.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
170.00	200.00
300.00	220.00
880.00	300.00
1600.00	360.00
2060.00	400.00
2350.00	480.00
2530.00	500.00
2800.00	515.00

CROSS-SECTION NUMBER 10 X = 1600

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00
330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00
2300.00	560.00
2360.00	578.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00
2300.00	560.00
2360.00	578.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	200.00
210.00	210.00
235.00	218.00
330.00	220.00
640.00	356.00
870.00	366.00
960.00	406.00
1175.00	411.00
1370.00	486.00
1570.00	500.00
1630.00	520.00
1870.00	540.00
2070.00	570.00
2300.00	560.00
2360.00	578.00
2800.00	600.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
120.00	200.00
240.00	220.00
570.00	300.00
950.00	360.00
1740.00	400.00
2110.00	480.00
2620.00	500.00
2800.00	515.00

CROSS-SECTION NUMBER 11 X = 1800

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00
200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1500.00	490.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00
200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00
800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	200.00
100.00	205.00
200.00	214.00
250.00	230.00
500.00	348.00
650.00	360.00
700.00	370.00
800.00	370.00
1200.00	420.00
1250.00	450.00
1300.00	470.00
1750.00	552.00
1800.00	563.00
2050.00	585.00
2250.00	572.00
2800.00	600.00

PIEZO SURFACE NO 1

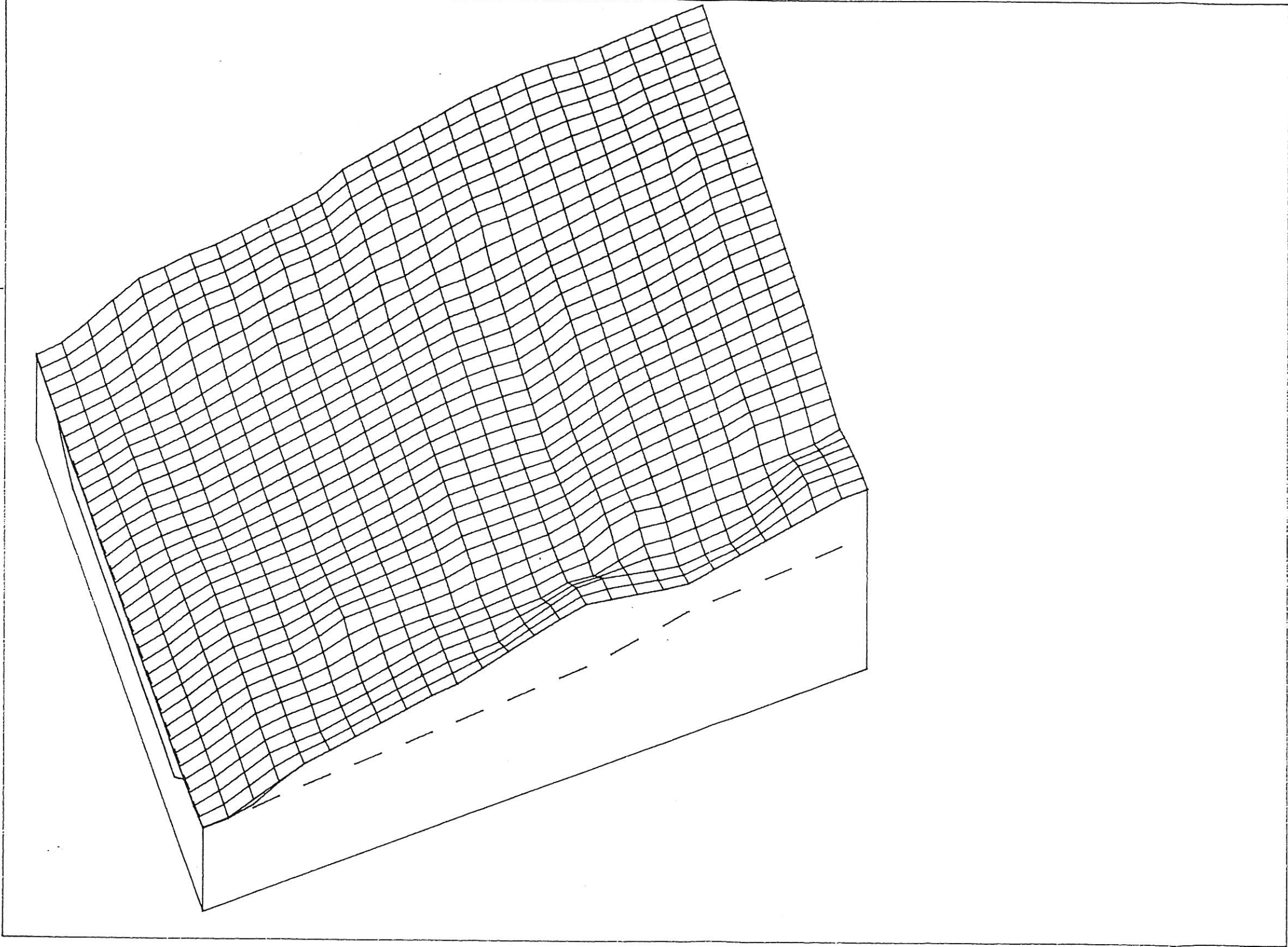
Y-COORDINATE	Z-COORDINATE
0.00	200.00
80.00	200.00
130.00	220.00
350.00	300.00
1660.00	360.00
1800.00	480.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2720.00
2800.00

500.00
515.00



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

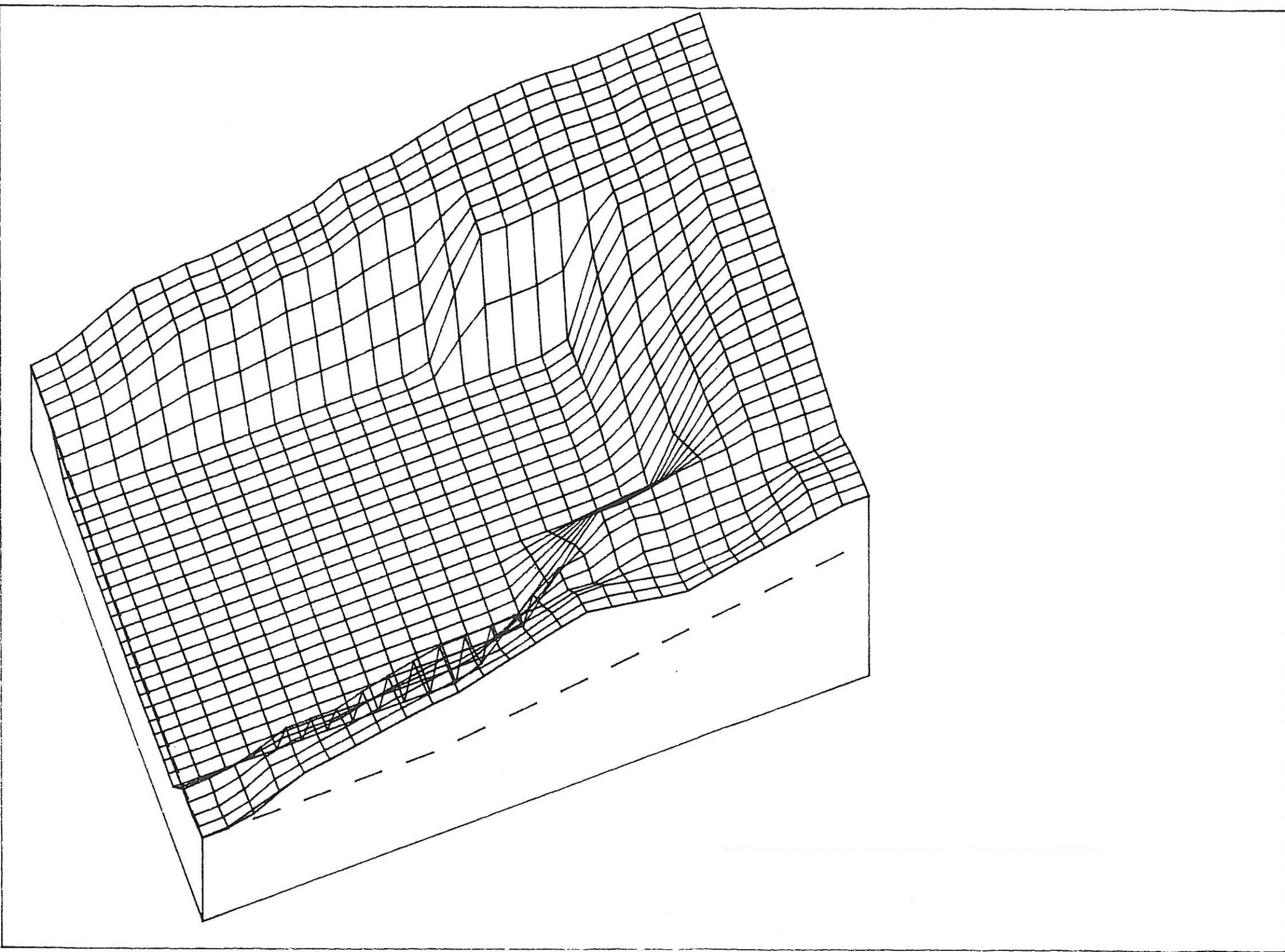
Use with TRIAL NO. SN-5
GROUND SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE:
03-06-92

SCALE:

PLATE: 5-16

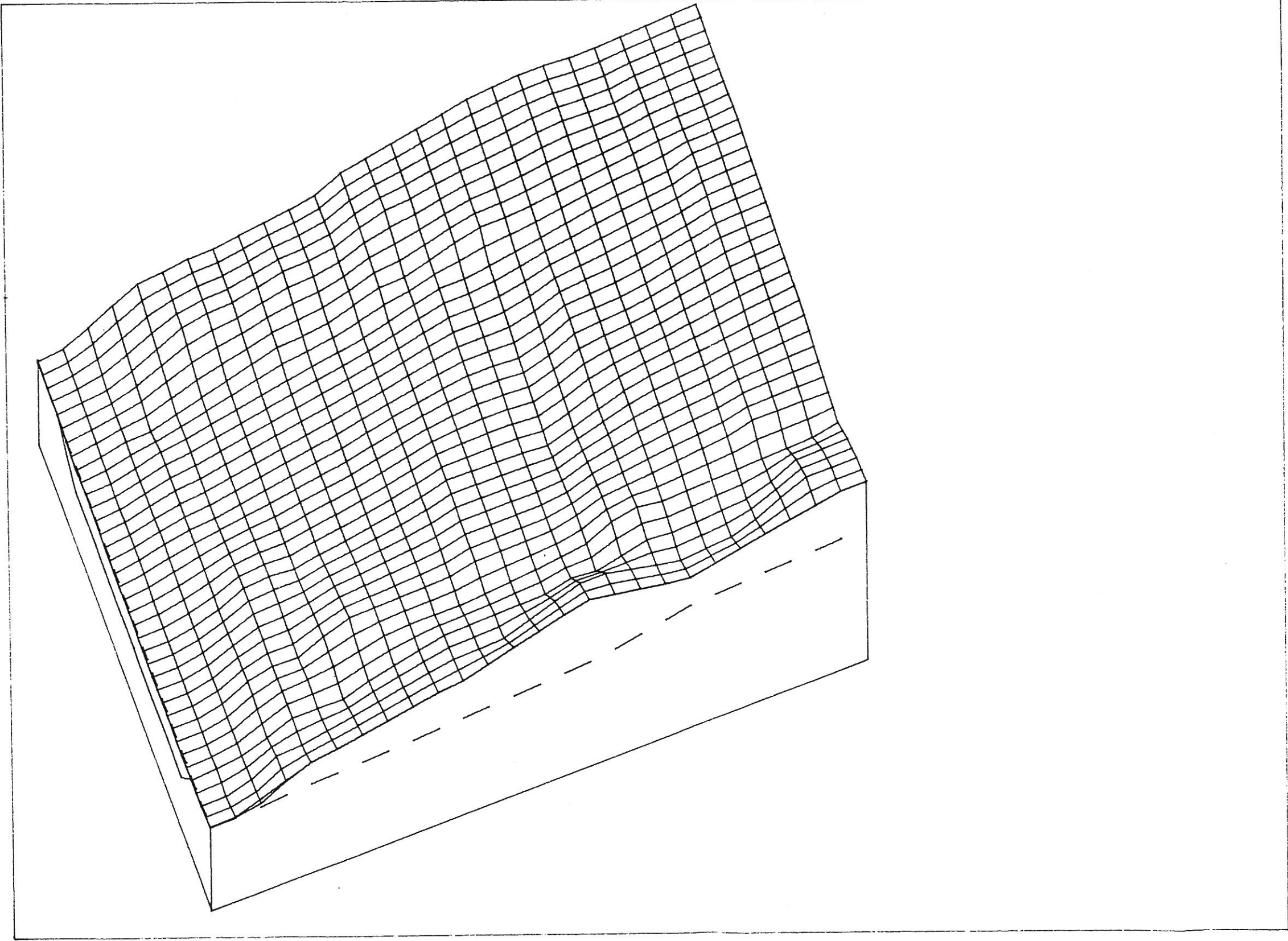


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
MATERIAL ONE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: 5-17



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

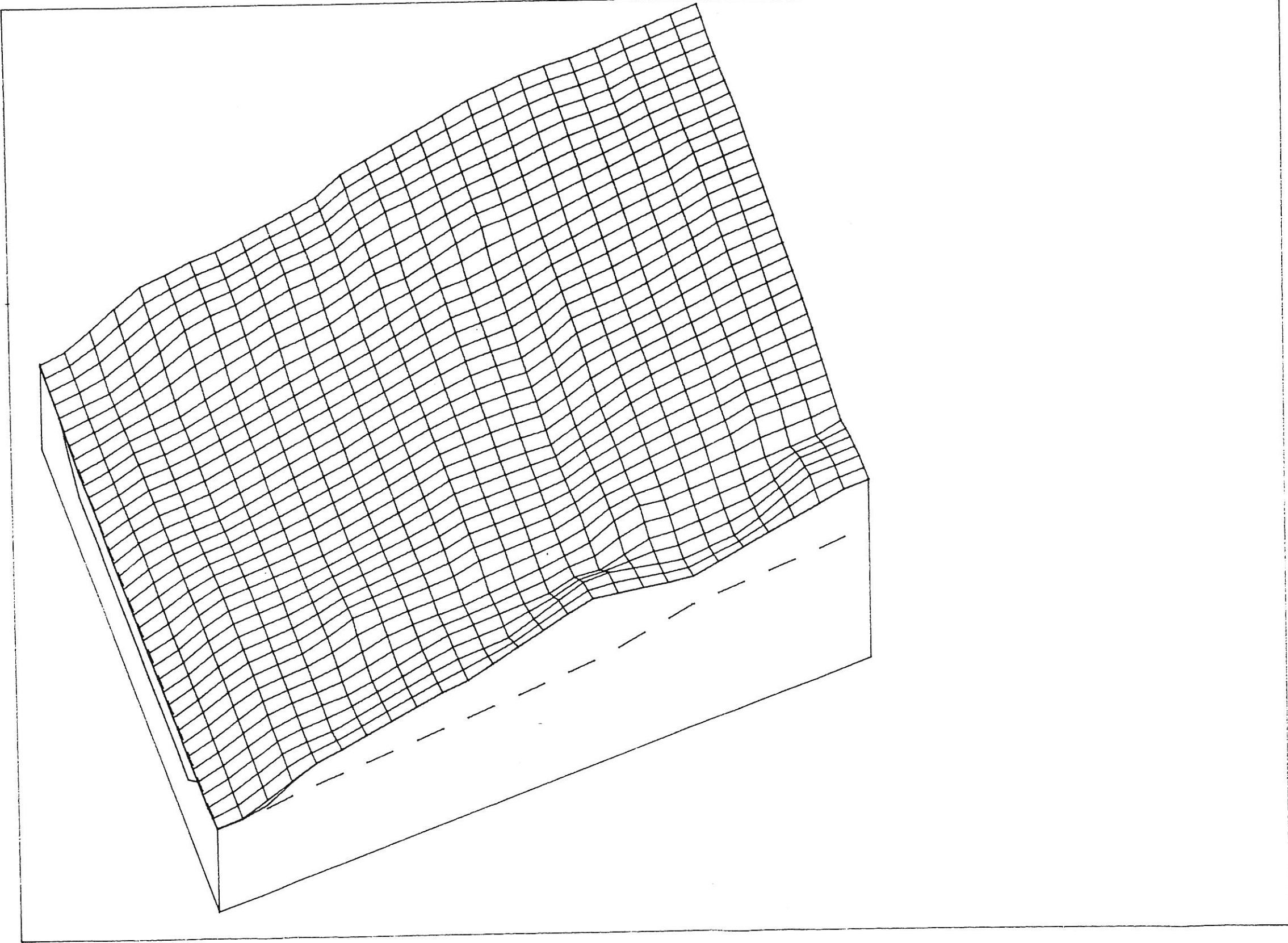
Use with TRIAL NO. SN-5
MATERIAL TWO

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92

SCALE:

PLATE: 5-18



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

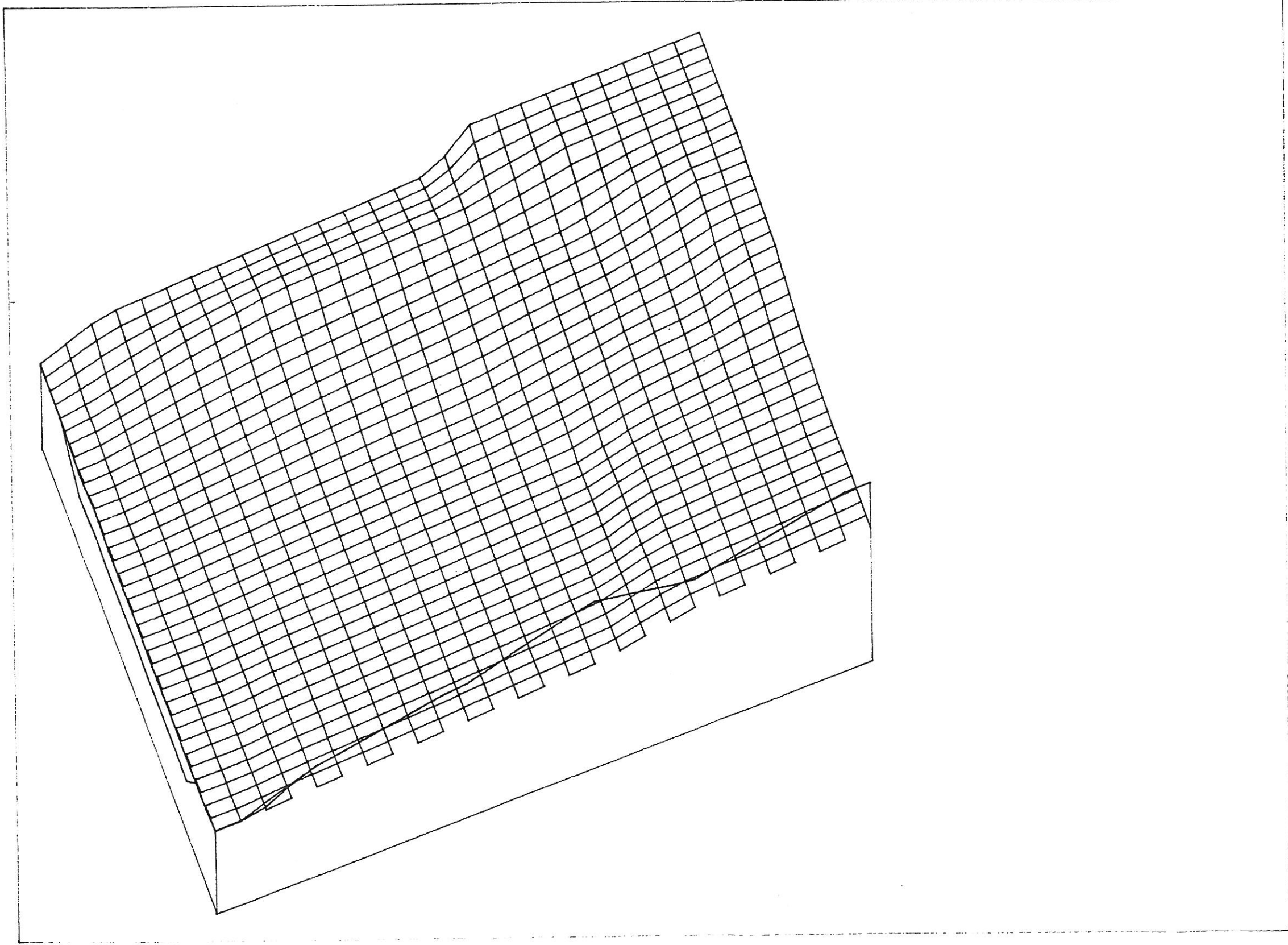
Use with TRIAL NO. SN-5
MATERIAL THREE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92

SCALE:

PLATE: 5-19



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

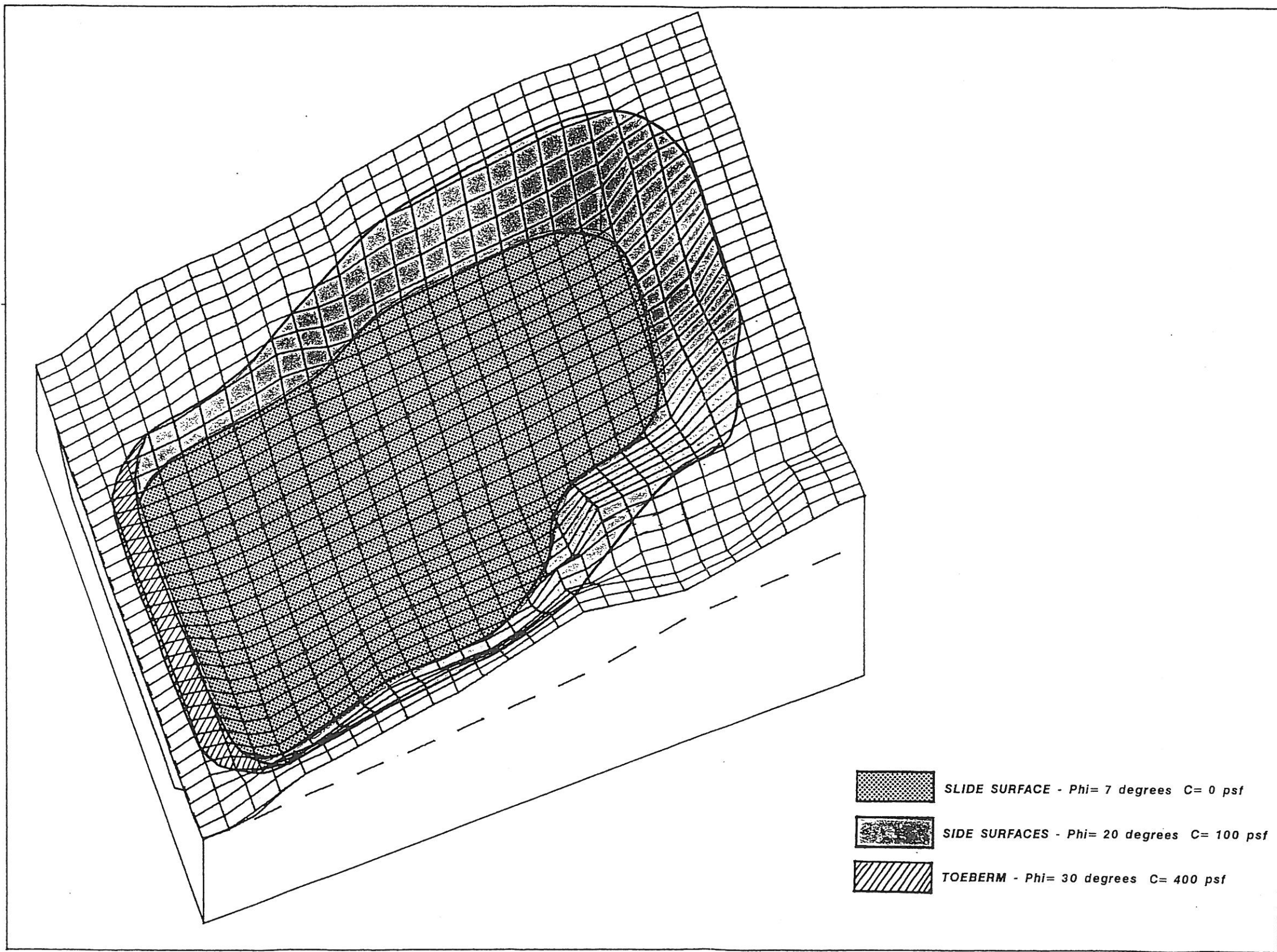
Use with TRIAL NO. SN-5
PIEZOMETRIC SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92

SCALE:

PLATE: 5-20

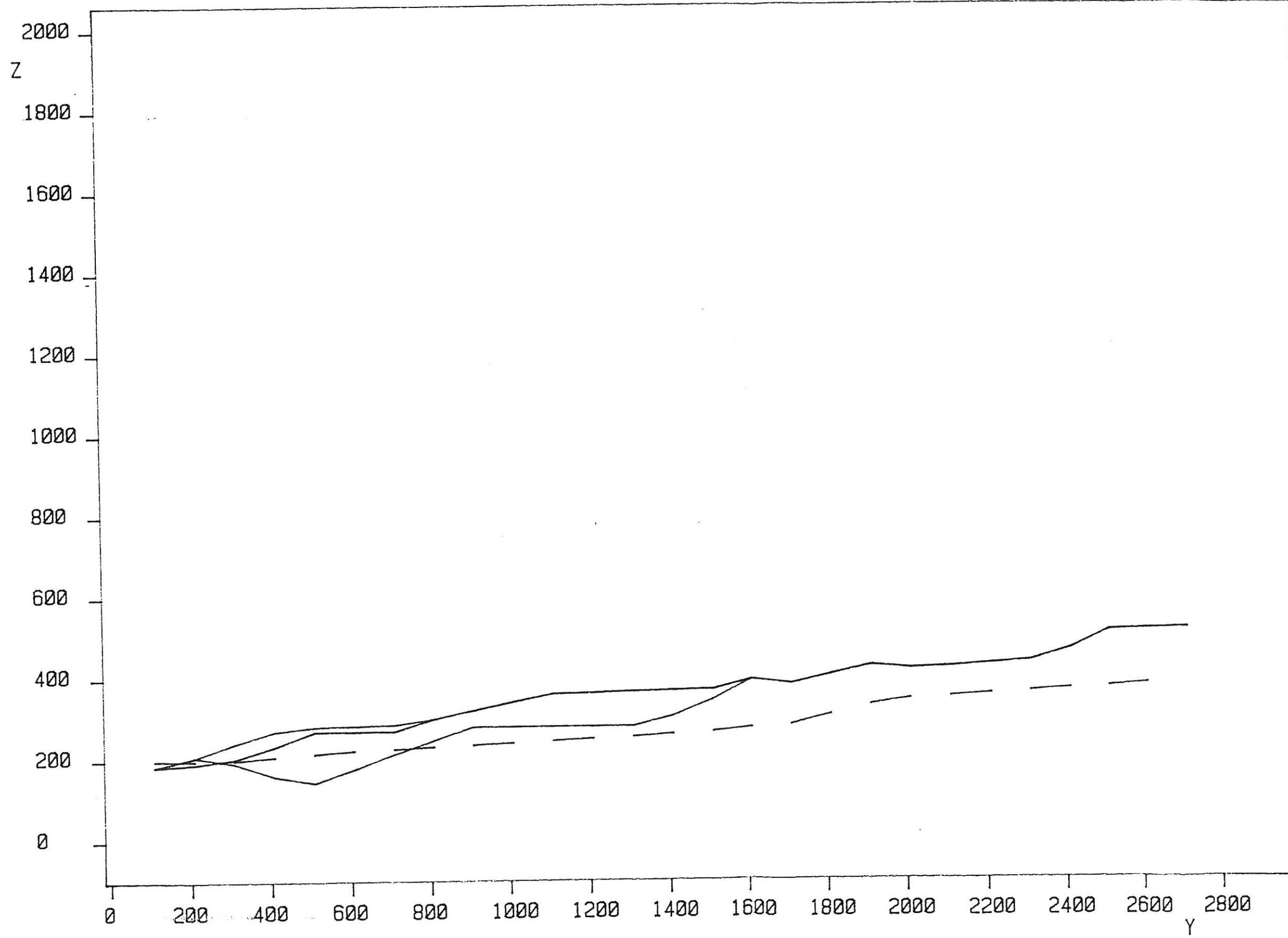


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with Trial No. SN-5
SLIDING SURFACE

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-21



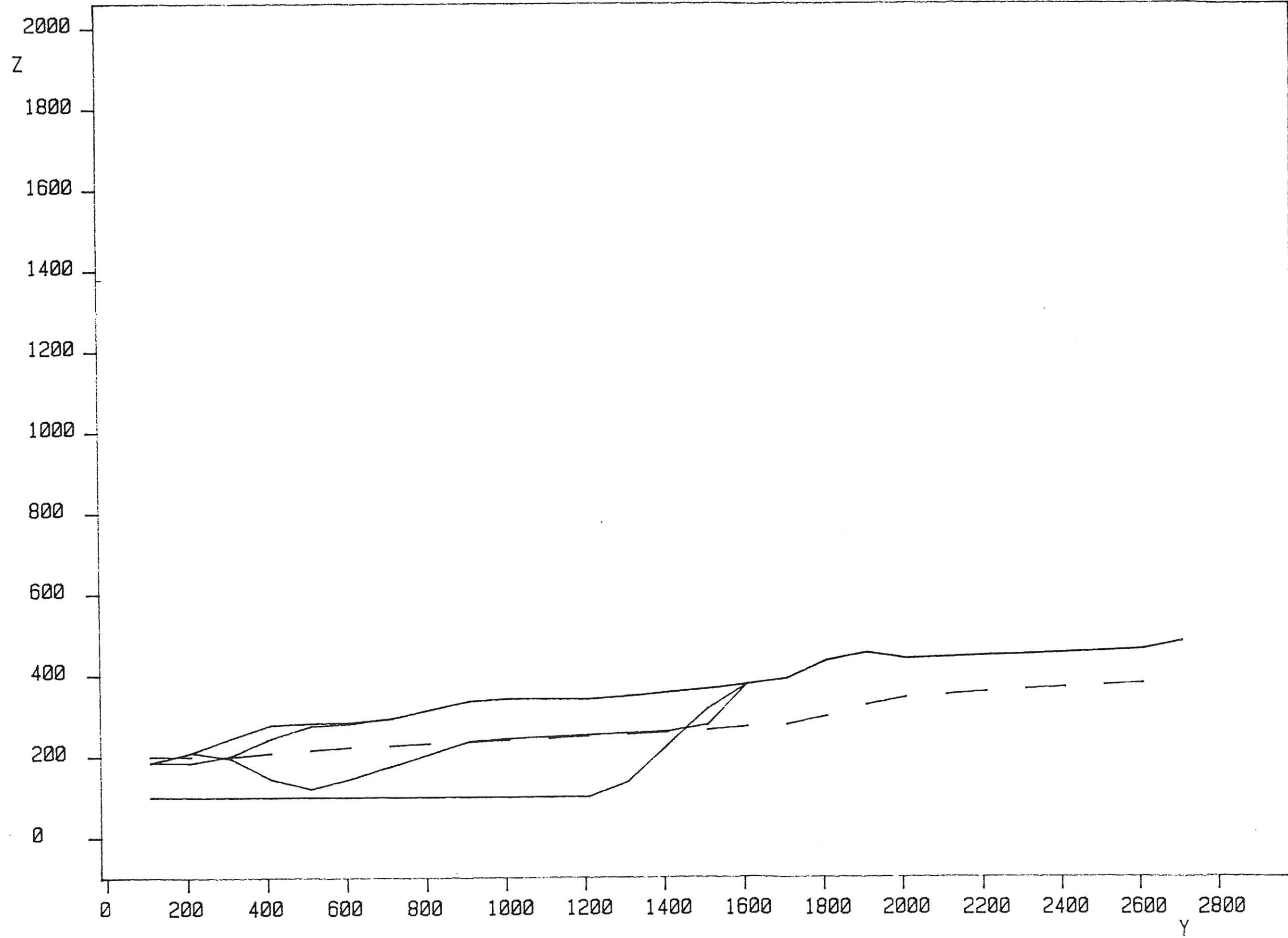
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5

X = 200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: 5-22 PLATE: 5-22



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5

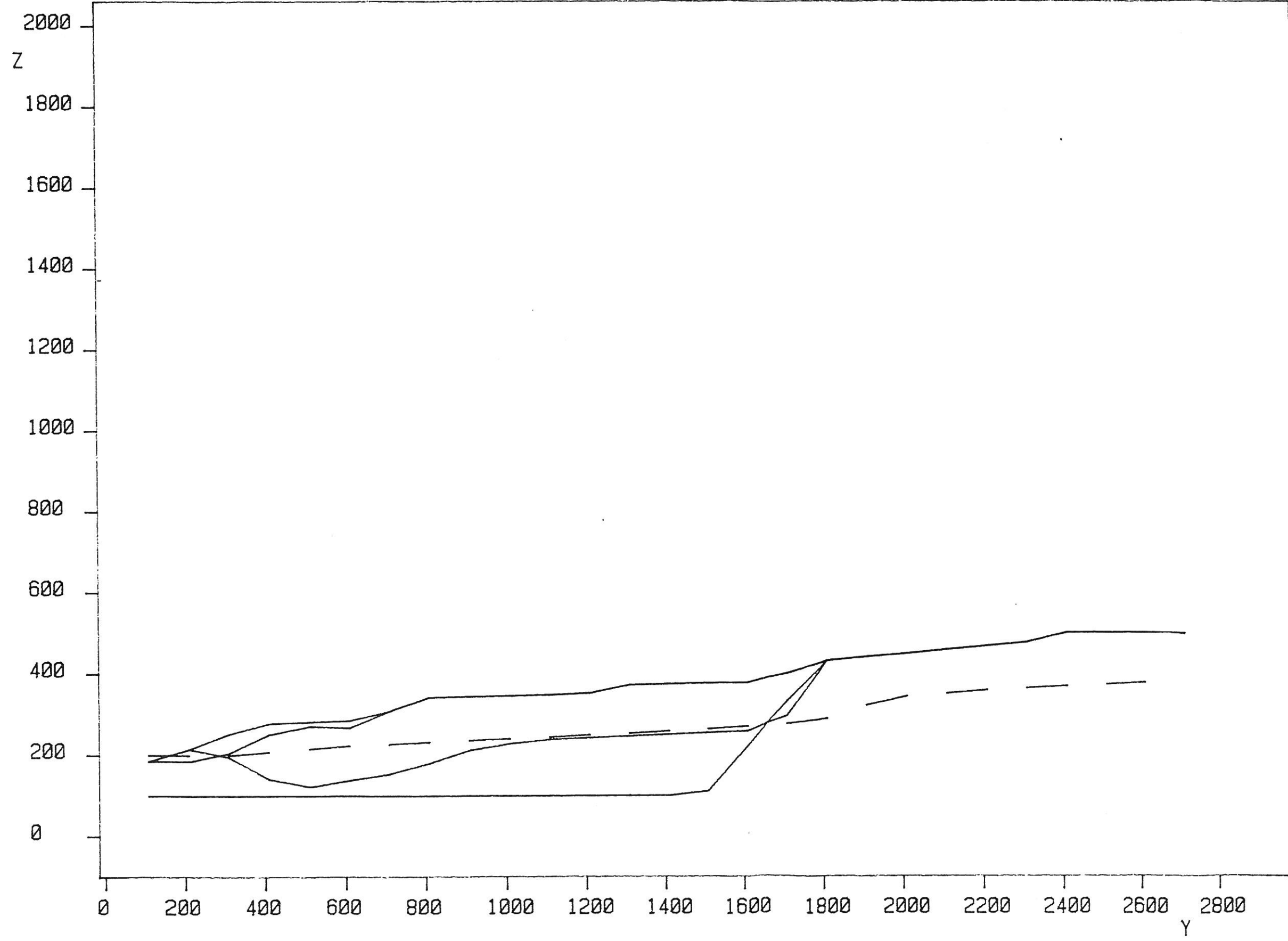
X = 300

R.T. FRANKIAN & ASSOCIATES

DATE:
03-06-92

SCALE:

PLATE: 5-23

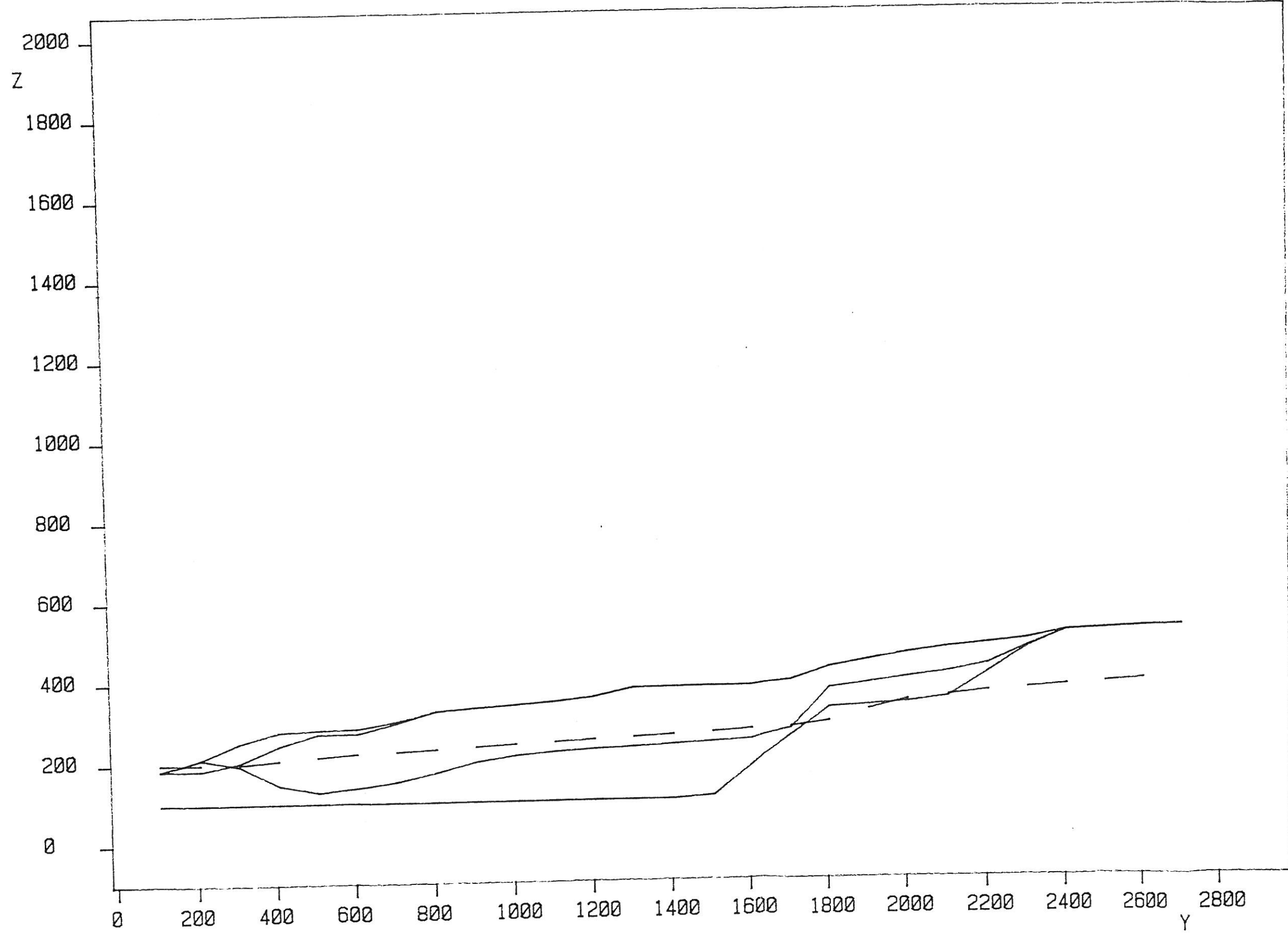


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 400

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-24



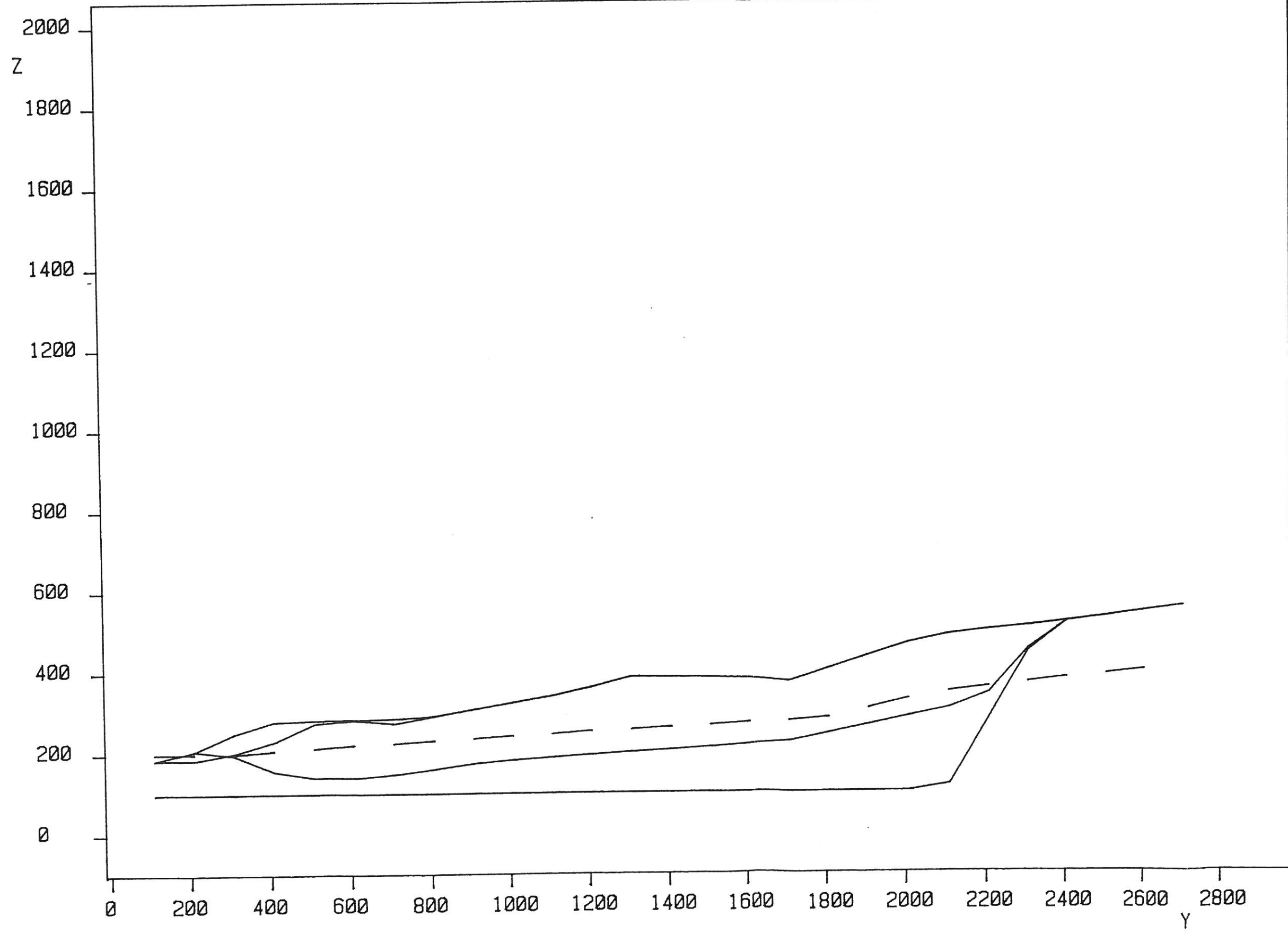
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 500

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE:

PLATE: 5-25



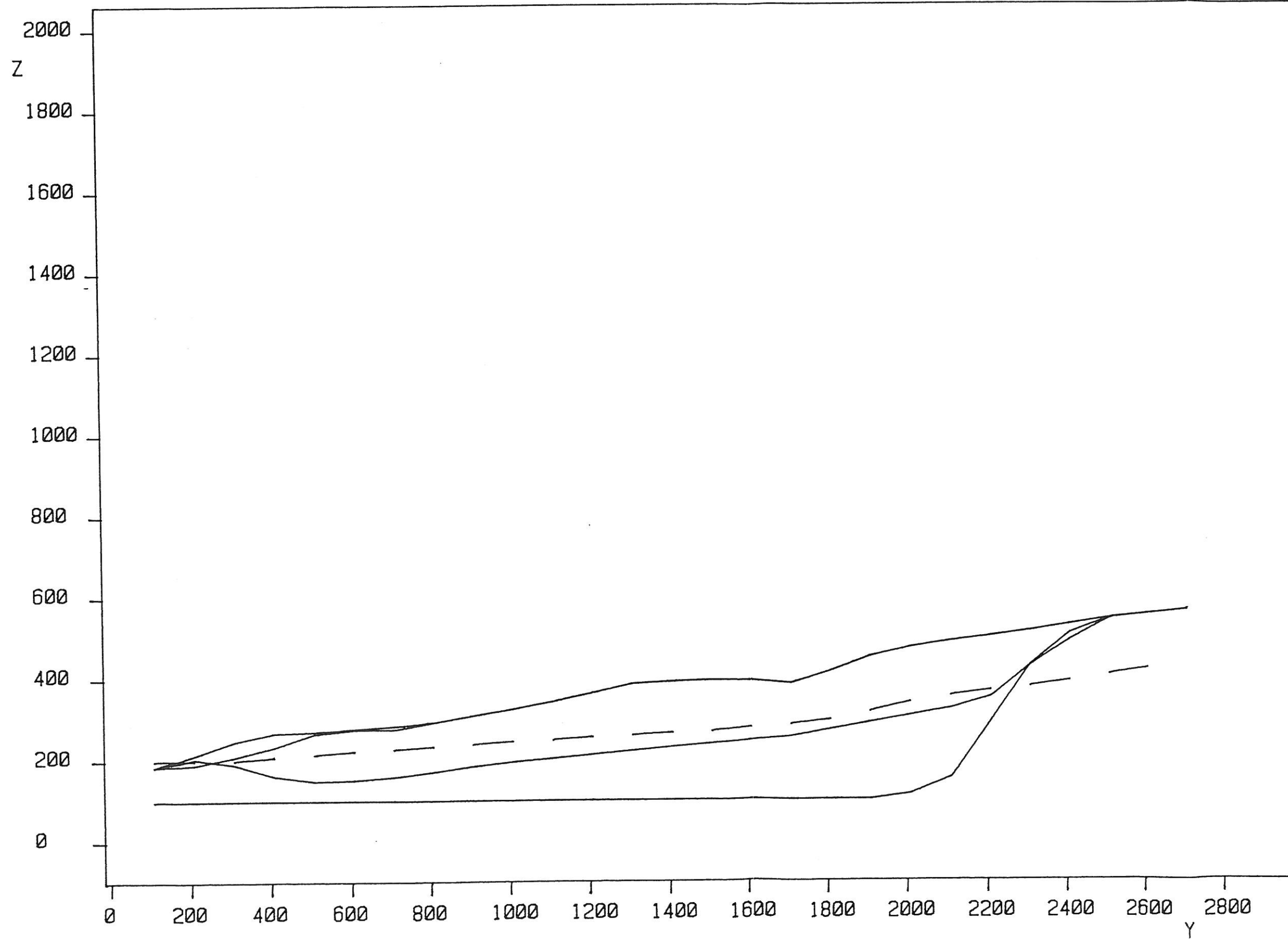
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO., SN-5

X = 700

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: 5-27



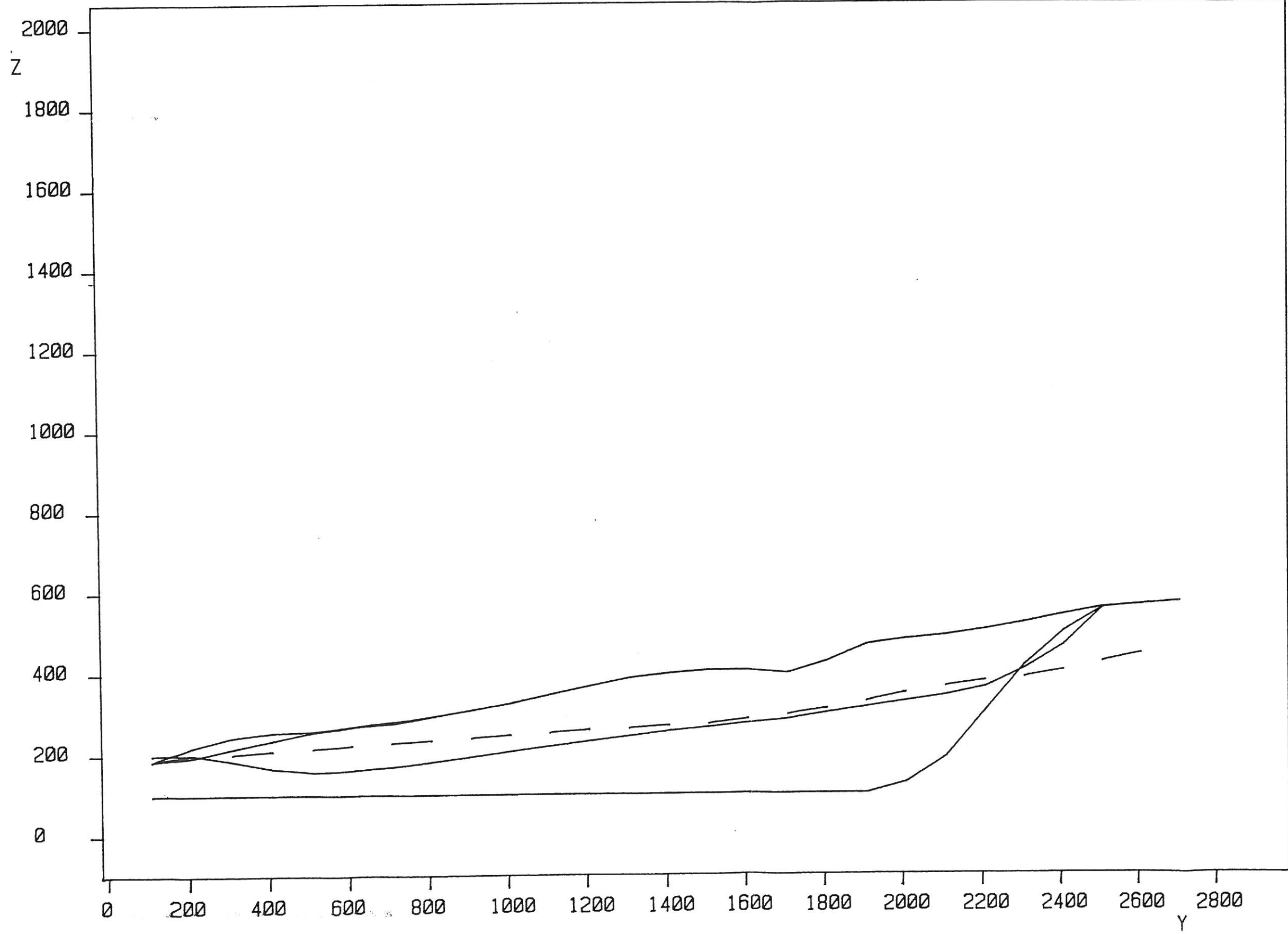
RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5

X = 800

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-28

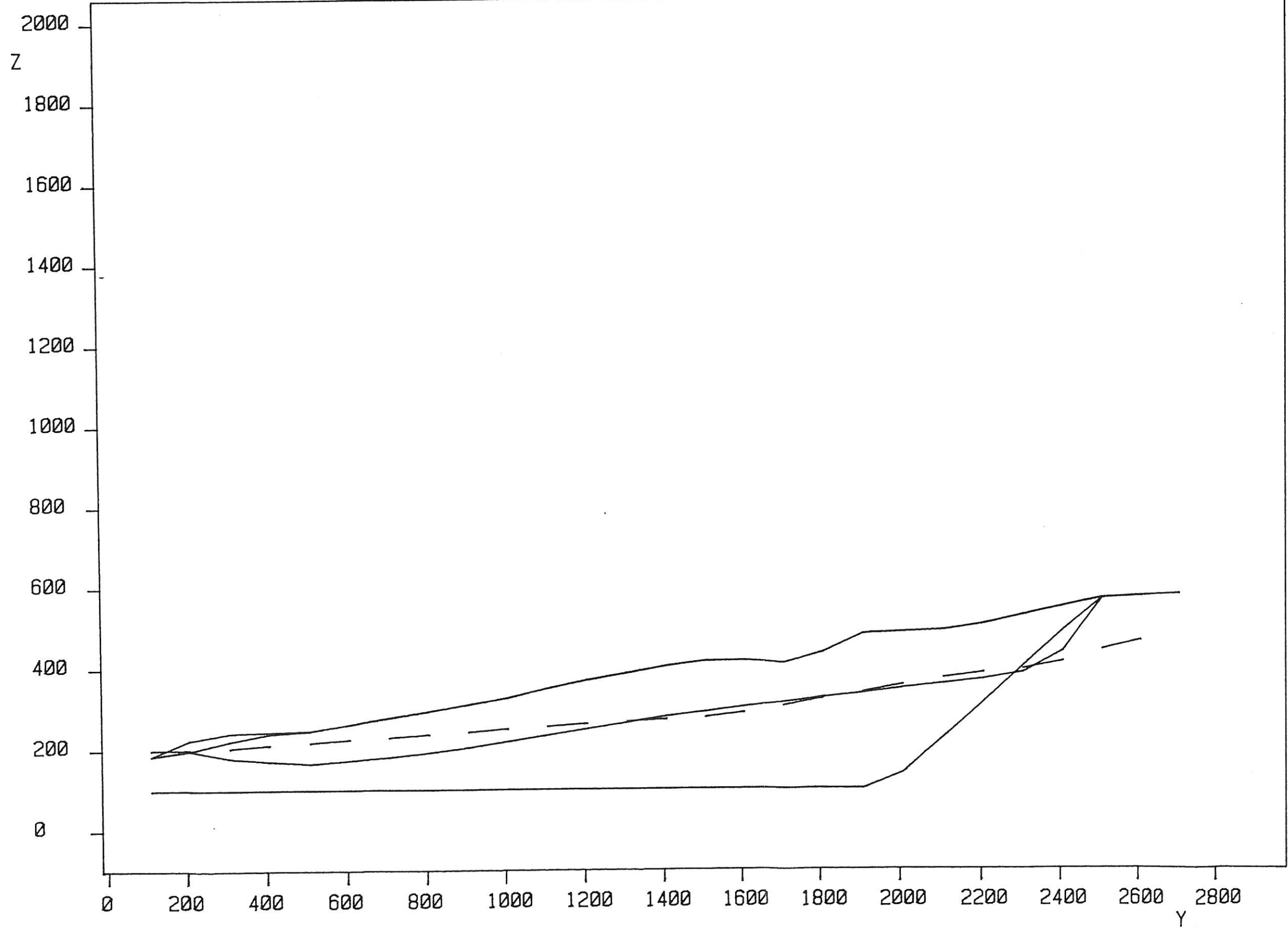


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 900

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-29

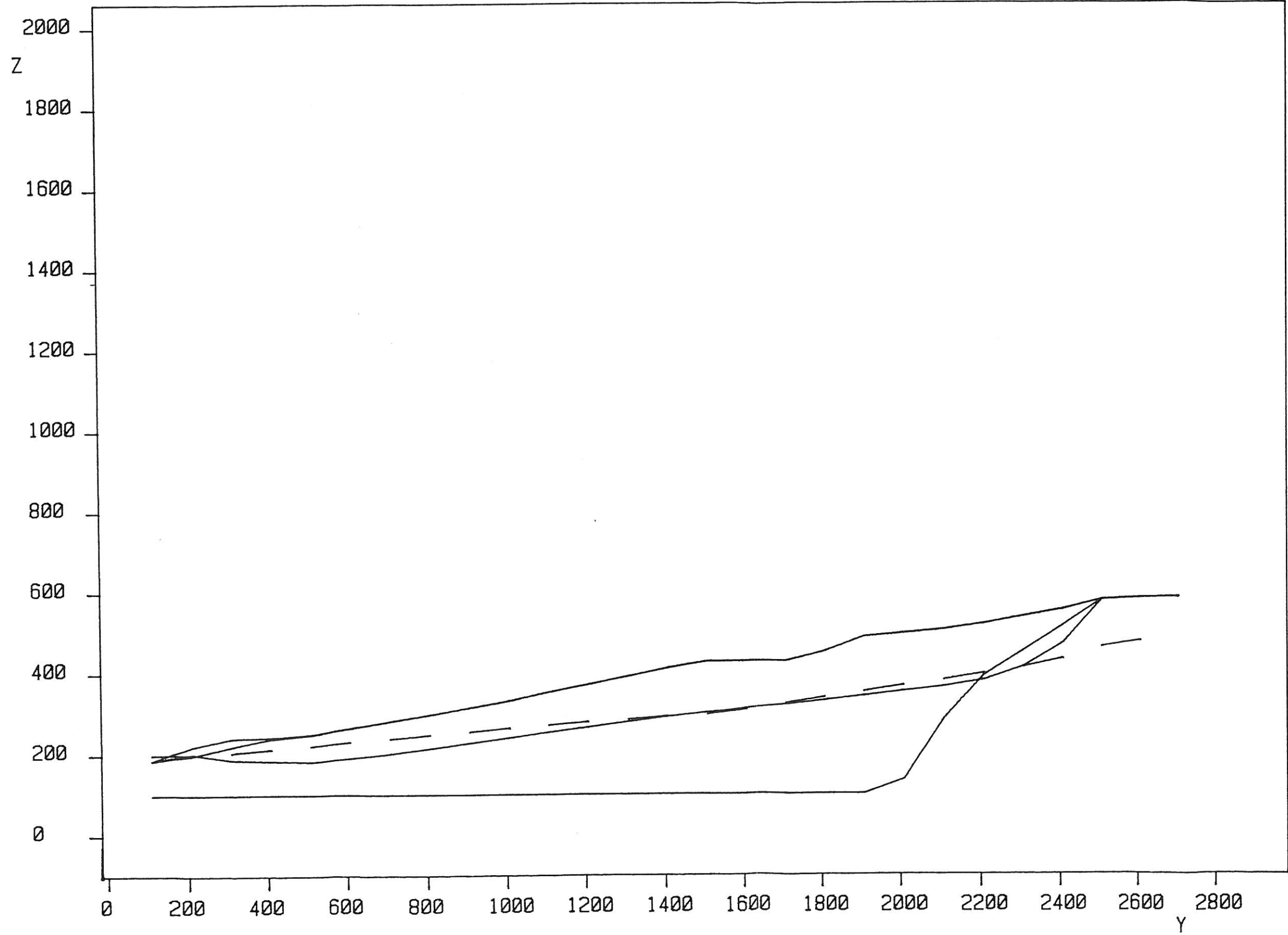


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 1000

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-30

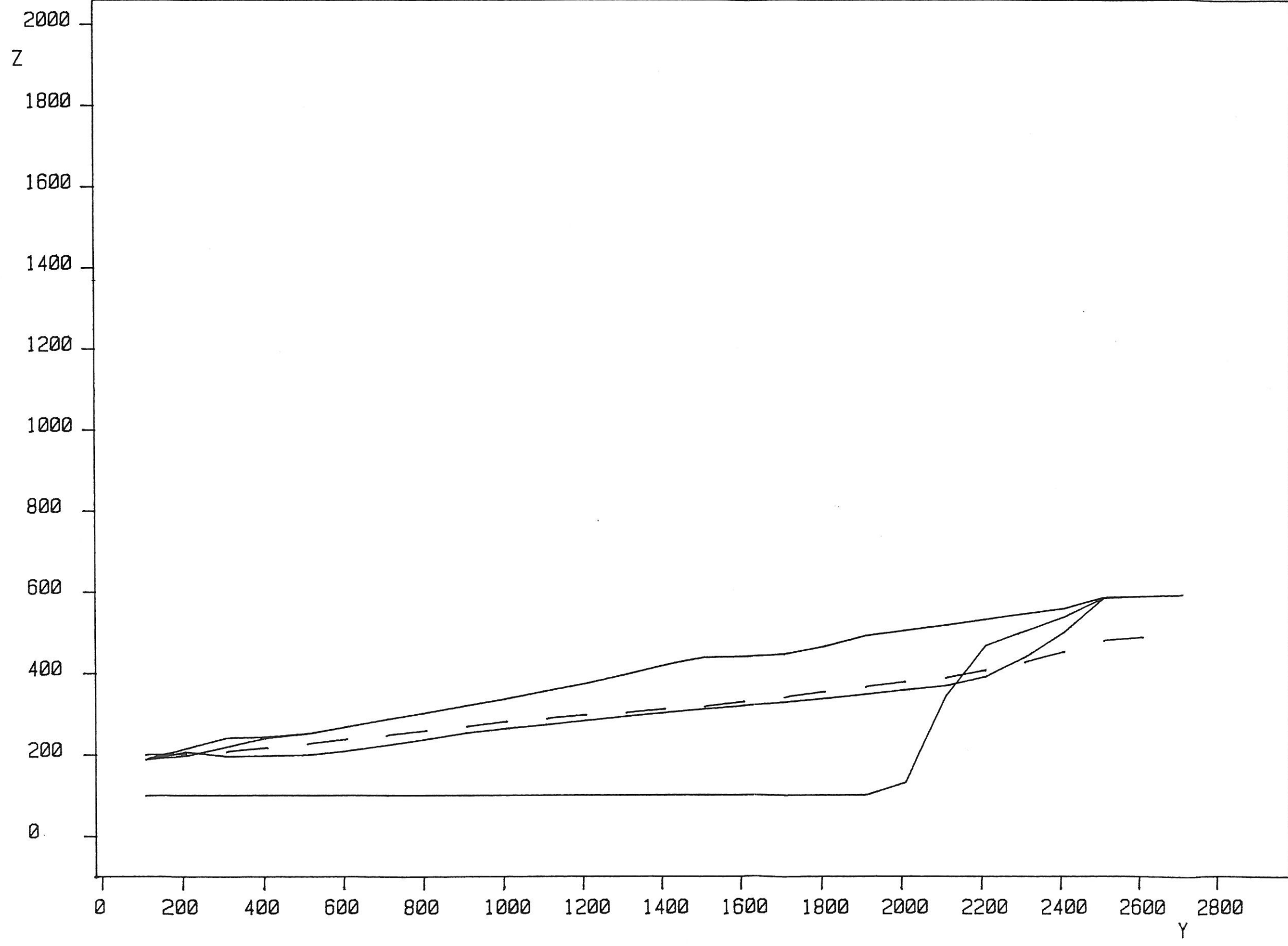


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 1100

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: 5-31 PLATE: 5-31

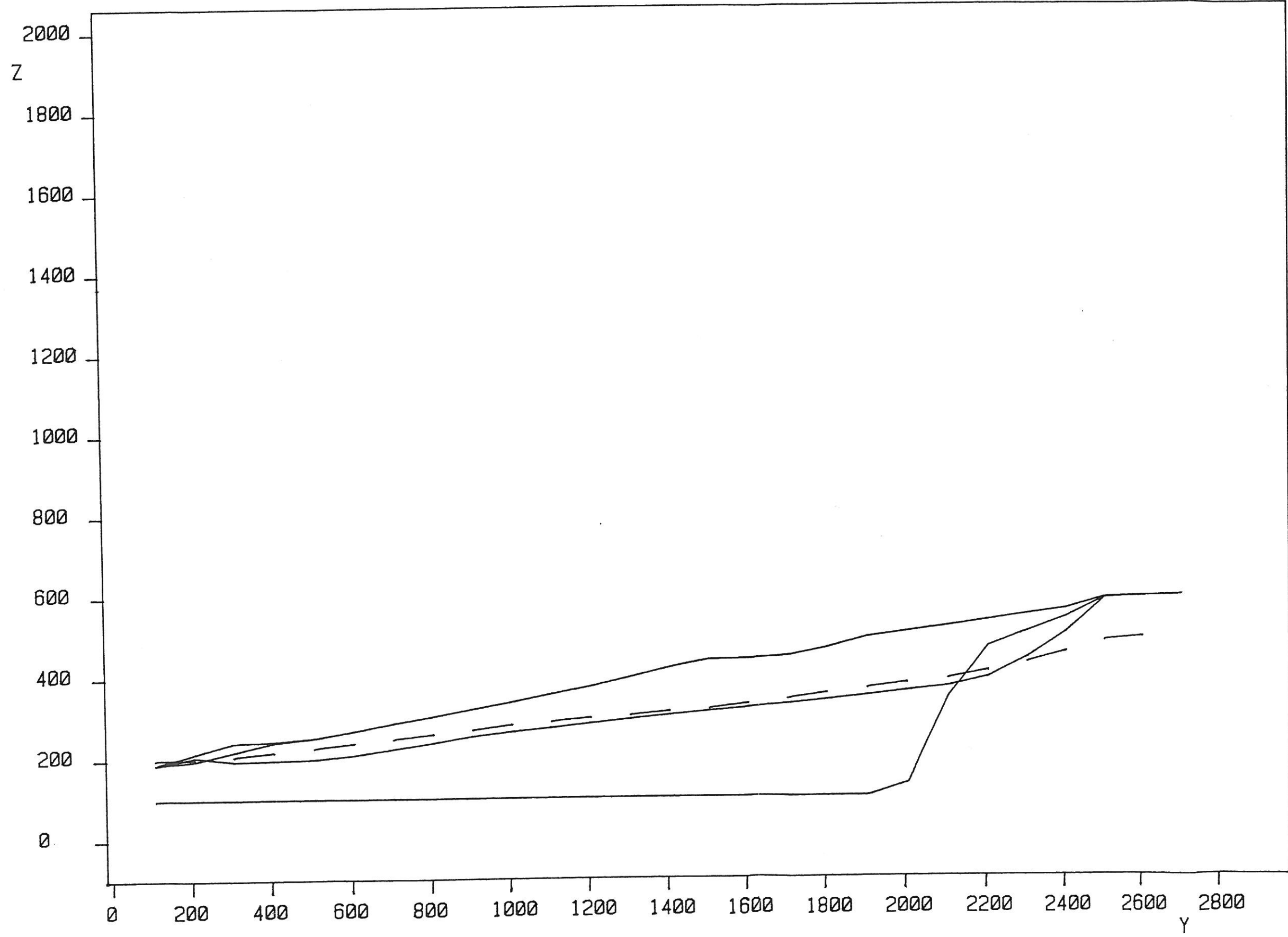


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 1200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-32

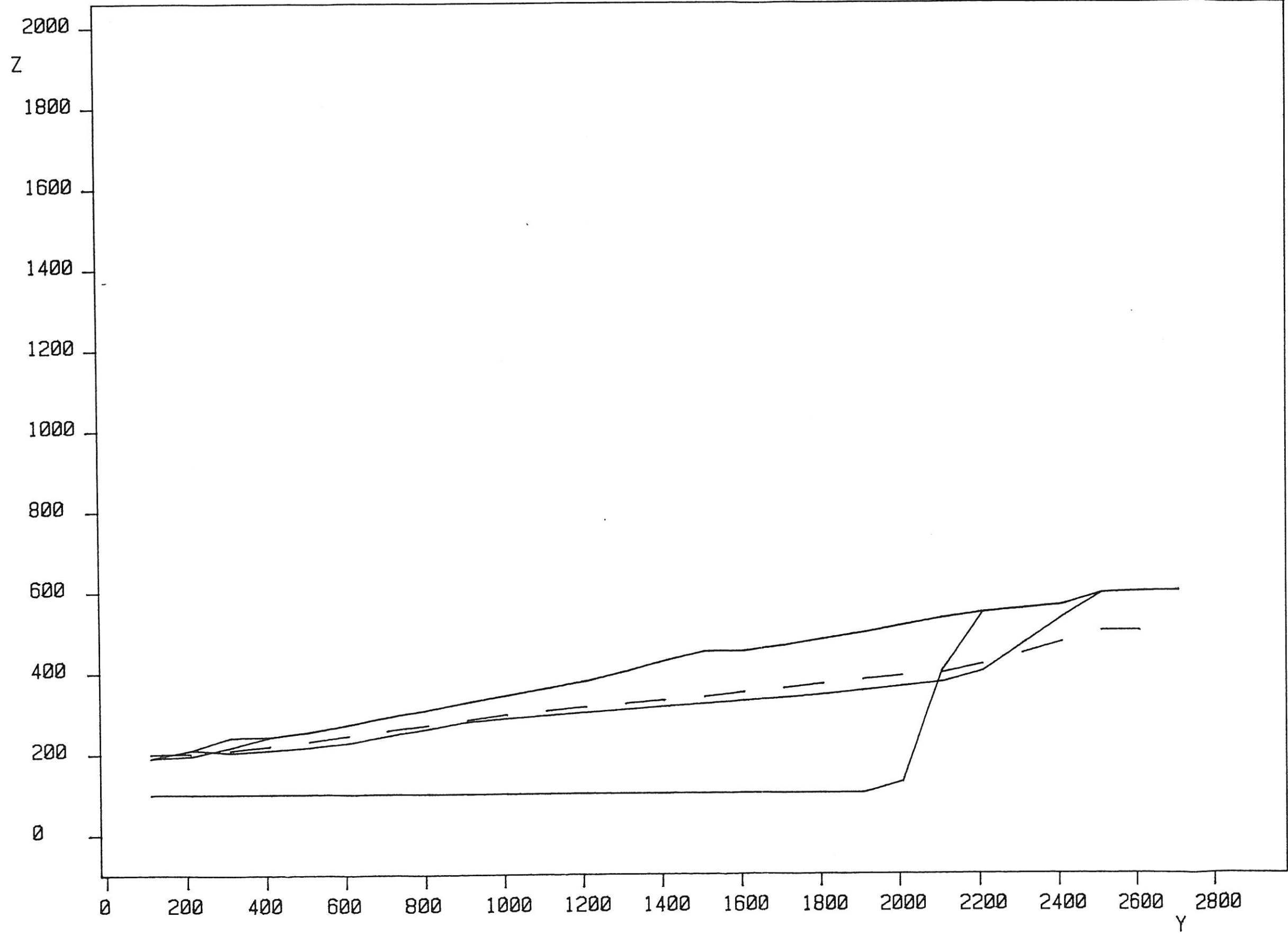


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 1200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 5-32

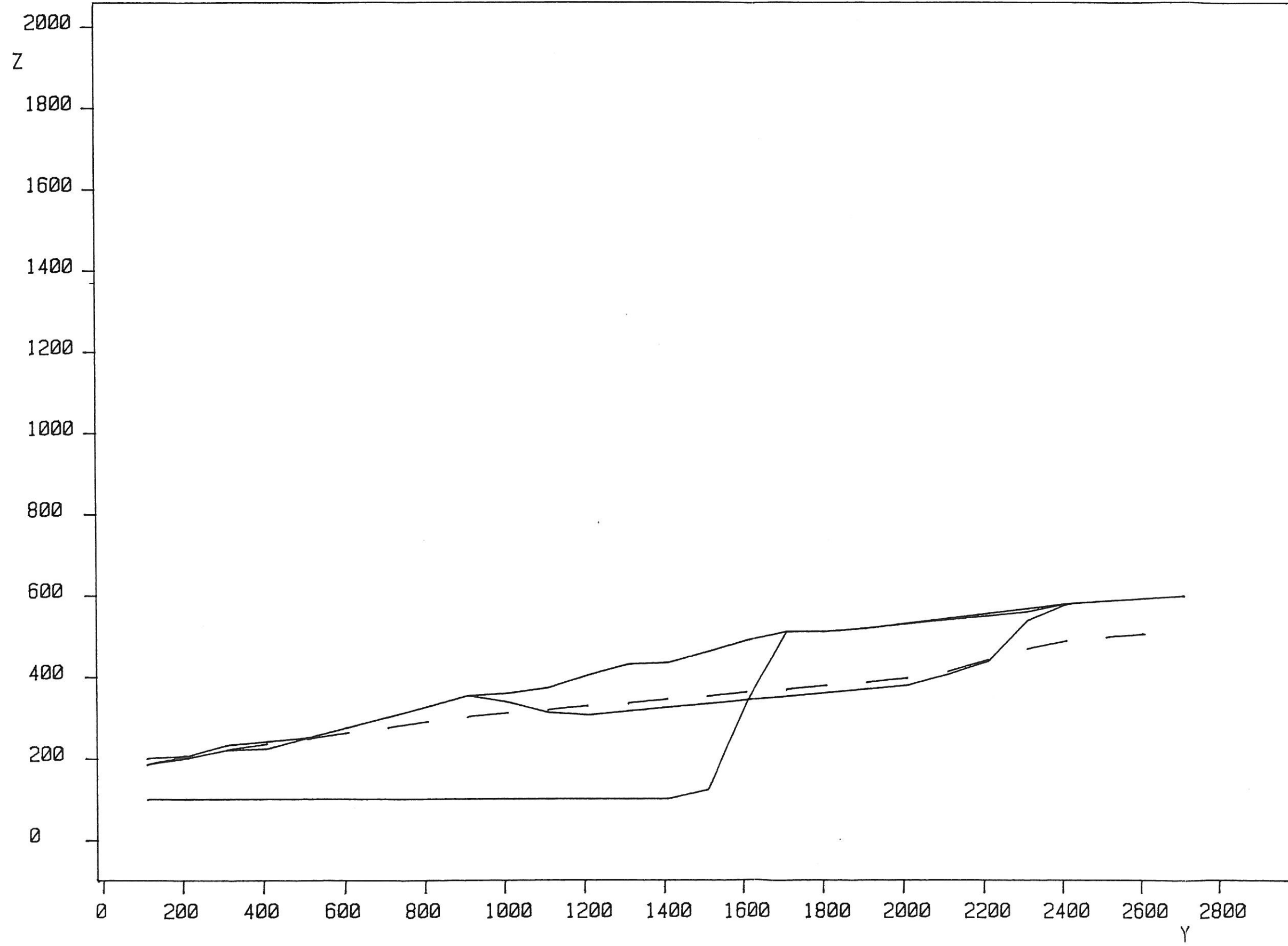


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
X = 1300

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: 5-33 PLATE: 5-33



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-5
 $X = 1400$

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92

SCALE:

PLATE: 5-34

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE

Data File: 82025-4r.CLA Analysis by: SDR Date: 01-22-92

Data Set: X=400 Compare to TSLOPE

RUN IDENTIFICATION LABEL: X=400 Compare to TSLOPE

Number of Active Columns	31	Axis of Rotation Y-coordinate	533.69
Max. No. Columns in Y-dir.	31	Axis of Rotation Z-coordinate	5928.59
Slide Volume	1.89E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.46E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	1.63E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ...	1.119
Janbu	1.107 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	TENSION CRAC	130.00	0.0	0.0	0.0	0.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-4r.CLA
 DATA SET - X=400 Compare to TSLOPE
 ANALYSIS BY SDR
 DATE: 01-22-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 1950
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 3
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS. RATIO* B-BAR	
			HOR.	VERT.	HOR.	VERT.		

A/ MATERIALS:								
1	TENSION CRAC	130.00	0.0	0.0	0.0	0.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1550.00	100.00
1765.00	260.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
260.00	185.00
300.00	200.00
450.00	270.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical Engineering
 Engineering Consulting

500.00	272.00
600.00	262.00
650.00	286.00
750.00	300.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
108.00	185.00
230.00	230.00
390.00	280.00
650.00	286.00
750.00	300.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
820.00	200.00
1070.00	260.00
1760.00	280.00
2000.00	300.00
2800.00	400.00

```

025-F X=400 TN14C to compare to CLARA 2d
1 19 0 0 0 1.5 13 0 0
1 0 0 0 0 62.4 62.4 0
120 100 100 400 100 450 120 750 150 950 155 1000 170 1100 215
    1350 230 1500 228 1600 250 2000 260 2050 300 2150 314 2400
    314 2570 370 2640 400 2700 415 2800 415

```

```

0 200 800 300 1020 322 1730 340 2000 400 2800 400
0 0 0
001 215 0 0 0 0
1050 265 130 0 7 0
100 320 130 0 7 0
150 340 130 0 7 0
1200 340 130 0 7 0
1350 350 130 0 7 0
140 352 130 0 7 0
1500 355 130 0 7 0
1600 360 130 0 7 0
1700 362 130 0 7 0
1800 370 130 0 7 0
1900 390 130 0 7 0
2000 420 130 0 7 0
2050 440 130 0 7 0
2100 450 130 0 7 0
2150 460 130 0 7 0
2200 470 130 0 7 0
2250 480 130 0 7 0
2300 480 130 0 7 0
2350 465 130 0 7 0
2400 440 130 0 7 0
2450 420 130 0 7 0
2500 400 130 0 7 0
2570 370 135 400 30 0
10
STOP

```

```

*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

```

*****
82025-F X=400 Trial 14C to match Trial 5c 82025-4.in/out
*****

```

```

*****
INPUT DATA
*****

```

CONTROL DATA,

```

NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  19
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

```

```

INITIAL ESTIMATE OF F              =      1.500
INITIAL ESTIMATE OF THETA           =     13.000
ALLOWABLE FORCE IMBALANCE            =     10.000
ALLOWABLE MOMENT IMBALANCE          =    100.000
SEISMIC COEFFICIENT                 =       .000
ATMOSPHERIC PRESSURE                =       .000
UNIT WEIGHT OF WATER                =     62.400

```

SLOPE POINTS COORDINATES

X	Y
.00	120.00
100.00	100.00
400.00	100.00
450.00	120.00
750.00	150.00
950.00	155.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1000.00	170.00
1100.00	215.00
1350.00	230.00
1500.00	228.00
1600.00	250.00
2000.00	260.00
2050.00	300.00
2150.00	314.00
2400.00	314.00
2570.00	370.00
2640.00	400.00
2700.00	415.00
2800.00	415.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
800.00	300.00
1020.00	322.00
1730.00	340.00
2000.00	400.00
2800.00	400.00

NUMBER OF SLICES = 23

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
1001.00	215.00	130.00	.00	.00	7.00	.00
1050.00	265.00	130.00	.00	.00	7.00	.00
1100.00	320.00	130.00	347.46	.00	7.00	.00
1150.00	340.00	130.00	877.59	.00	7.00	.00
1200.00	340.00	130.00	1031.41	.00	7.00	.00
1350.00	350.00	130.00	1215.54	.00	7.00	.00
1440.00	352.00	130.00	1253.14	.00	7.00	.00
1500.00	355.00	130.00	1374.03	.00	7.00	.00
1600.00	360.00	130.00	1436.05	.00	7.00	.00
1700.00	362.00	130.00	1278.32	.00	7.00	.00
1800.00	370.00	130.00	791.29	.00	7.00	.00
1900.00	390.00	130.00	965.27	.00	7.00	.00
2000.00	420.00	130.00	1858.13	.00	7.00	.00
2050.00	440.00	130.00	2809.10	.00	7.00	.00
2100.00	450.00	130.00	3433.08	.00	7.00	.00
2150.00	460.00					

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Engineering	Geology

		130.00	4059.44	.00	7.00	.00
2200.00	470.00					
		130.00	4683.23	.00	7.00	.00
2250.00	480.00					
		130.00	4992.00	.00	7.00	.00
2300.00	480.00					
		130.00	4531.38	.00	7.00	.00
2350.00	465.00					
		130.00	3299.46	.00	7.00	.00
2400.00	440.00					
		130.00	1907.20	.00	7.00	.00
2450.00	420.00					
		130.00	677.20	.00	7.00	.00
2500.00	400.00					
		135.00	.00	400.00	30.00	.00
2570.00	370.00					

THE SPECIFIED Y-COORD OF FLUID IN THE TENSION CRACK IS BELOW THE BOTTO
IT HAS BEEN SET EQUAL TO THE Y-COORD OF THE BOTTOM OF THE TENSION CRAC

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	90291.6	220587000.0
2	1.349	4.6	-2904.5	-15517230.0
3	1.360	5.2	.1	4922.0
4	1.360	5.2	-.1	-10.7

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	1001.00	.0	0.0	.00	.0	.
1	1050.00	295906.7	5.2	.29	6465.7	583.
2	1100.00	786952.3	5.2	.40	9686.2	874.
3	1150.00	1004266.0	5.2	.38	13525.5	1220.
4	1200.00	936702.5	5.2	.38	14909.8	1345.
5	1350.00	895745.8	5.2	.36	14441.4	1303.
6	1440.00	808104.4	5.2	.34	14651.3	1322.
7	1500.00	775519.0	5.2	.32	14991.4	1353.
8	1600.00	725772.9	5.2	.36	14012.8	1264.
9	1700.00	637735.8	5.2	.34	12887.9	1163.
10	1800.00	634386.6	5.2	.32	13221.8	1193.
11	1900.00	814084.8	5.2	.29	14865.1	1341.
12	2000.00	1205953.0	5.2	.27	17225.8	1554.
13	2050.00	1500062.0	5.2	.35	16512.8	1490.
14	2100.00	1611528.0	5.2	.35	15111.2	1363.
15	2150.00	1727945.0	5.2	.36	14872.5	1342.
16	2200.00	1851762.0	5.2	.35	15074.1	1360.
17	2250.00	1985407.0	5.2	.34	15720.9	1418.
18	2300.00	1909616.0	5.2	.32	16725.3	1509.
19	2350.00	1502819.0	5.2	.30	17278.5	1559.

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Geotechnical	Engineering
Engineering	Geology

TSLOPE TRIAL 14C

20	2400.00	931475.5	5.2	.28	16484.6	1487.
21	2450.00	567282.4	5.2	.29	13240.1	1195.
22	2500.00	323000.0	5.2	.23	9372.0	845.
23	2570.00	.0	5.2	.00	5042.7	2434.

COMPUTED FACTOR OF SAFETY = 1.360

6-8

Execution complete, time = 7.47 seconds

TSLOPE TRIAL 14C

R. T. FRANKIAN & ASSOCIATES

<i>Geotechnical</i>	<i>Engineering</i>
<i>Engineering</i>	<i>Geotech</i>

PROFILE

X=400 PCSTABL5 SEARCH FOR CRITICAL PLANE AT TOE W/ TOEBERM

12

185. 108. 185. 3
 108. 185. 230. 230. 3
 230. 230. 390. 285. 2
 10. 285. 650. 286. 2
 10. 286. 750. 300. 1
 750. 300. 800. 342. 1
 10. 342. 1200. 350. 1
 100. 350. 1300. 372. 1
 1300. 372. 1700. 382. 1
 1700. 382. 1800. 430. 1
 1800. 430. 1850. 453. 1
 1850. 453. 2050. 452. 1
 108. 185. 260. 185. 3
 150. 185. 300. 200. 3
 100. 200. 410. 230. 1
 410. 230. 450. 270. 1
 150. 270. 600. 262. 1
 100. 262. 650. 286. 1
 300. 200. 500. 110. 3
 500. 110. 1400. 110. 3
 500. 100. 1800. 430. 4

SOIL

4
 130. 143. 0. 7. 0. 0. 1
 130. 143. 400. 30. 0. 0. 1
 130. 143. 600. 37. 0. 0. 1
 130. 143. 100. 20. 0. 0. 1

WATER

1 62.4

4
 200. 800. 200. 1070. 260. 2050. 300.

CLOCK

200 6 20.
 150. 80. 600. 130. 4.
 100. 180. 800. 180. 0.5
 1040. 240. 1040. 240. 0.5
 1550. 260. 1650. 260. 0.5
 1700. 280. 1700. 280. 0.5
 1800. 425. 1800. 425. 0.5

** PCSTABL5 **

by
Purdue University

6-10

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer's Method of Slices

Run Date: 03-05-92
Time of Run: 07:30
Run By: SDR
Input Data Filename: A:820.IN
Output Filename: A:8201.OUT

PROBLEM DESCRIPTION X=400 PCSTABL5 SEARCH FOR CRITICAL PLANE
AT TOE W/ TOEBERM

PCSTABL5 TRIAL 17A

BOUNDARY COORDINATES

12 Top Boundaries
21 Total Boundaries

Boundary No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Soil Type Below Bnd
1	.00	185.00	108.00	185.00	3
2	108.00	185.00	230.00	230.00	3
3	230.00	230.00	390.00	285.00	2
4	390.00	285.00	650.00	286.00	2
5	650.00	286.00	750.00	300.00	1
6	750.00	300.00	800.00	342.00	1
7	800.00	342.00	1200.00	350.00	1
8	1200.00	350.00	1300.00	372.00	1
9	1300.00	372.00	1700.00	382.00	1
10	1700.00	382.00	1800.00	430.00	1
11	1800.00	430.00	1850.00	453.00	1
12	1850.00	453.00	2050.00	452.00	1
13	108.00	185.00	260.00	185.00	3
14	260.00	185.00	300.00	200.00	3
15	300.00	200.00	410.00	230.00	1
16	410.00	230.00	450.00	270.00	1
17	450.00	270.00	600.00	262.00	1
18	600.00	262.00	650.00	286.00	1
19	300.00	200.00	500.00	110.00	3
20	500.00	110.00	1400.00	110.00	3
21	1500.00	100.00	1800.00	430.00	4

ISOTROPIC SOIL PARAMETERS

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4 Type(s) of Soil

Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1	130.0	143.0	.0	7.0	.00	.0	1
2	130.0	143.0	400.0	30.0	.00	.0	1
3	130.0	143.0	600.0	37.0	.00	.0	1
4	130.0	143.0	100.0	20.0	.00	.0	1

1 PIEZOMETRIC SURFACE(S) HAVE BEEN SPECIFIED

Unit Weight of Water = 62.40

Piezometric Surface No. 1 Specified by 4 Coordinate Points

Point No.	X-Water (ft)	Y-Water (ft)
1	.00	200.00
2	800.00	200.00
3	1070.00	260.00
4	2050.00	300.00

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Sliding Block Surfaces, Has Been Specified.

200 Trial Surfaces Have Been Generated.

6 Boxes Specified For Generation Of Central Block Base

Length Of Line Segments For Active And Passive Portions Of Sliding Block Is 20.0

Box No.	X-Left (ft)	Y-Left (ft)	X-Right (ft)	Y-Right (ft)	Height (ft)
1	350.00	80.00	600.00	130.00	4.00
2	800.00	180.00	800.00	180.00	.50
3	1040.00	240.00	1040.00	240.00	.50
4	1650.00	260.00	1650.00	260.00	.50
5	1700.00	280.00	1700.00	280.00	.50
6	1800.00	425.00	1800.00	425.00	.50

425 TOP FRANKIAN & ASSOCIATES

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

6-12

* * Safety Factors Are Calculated By The Modified Janbu Method * *

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	249.64	236.75
2	261.52	225.27
3	281.51	224.43
4	296.15	210.81
5	315.07	204.32
6	334.92	201.87
7	352.51	192.35
8	367.55	179.17
9	385.69	170.74
10	399.97	156.74
11	419.49	152.42
12	439.32	149.79
13	458.59	144.44
14	478.58	143.67
15	498.53	142.22
16	513.83	129.35
17	529.92	117.46
18	800.00	179.80
19	1040.00	240.03
20	1650.00	260.11
21	1700.00	249.64
22	1800.00	261.52
23	1804.64	280.98
24	1816.51	297.07
25	1824.34	315.48
26	1834.76	332.55
27	1843.54	350.52
28	1851.23	368.98
29	1861.88	385.91
30	1865.60	405.56
31	1867.27	425.49
32	1873.54	444.48
33	1881.25	452.84

*** 1.356 ***

Failure Surface Specified By 33 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
--------------	----------------	----------------

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Engineering

PCSTABLE TRIAL 17A

1	249.64	236.75
2	261.52	225.27
3	281.51	224.43
4	296.15	210.81
5	315.07	204.32
6	334.92	201.87
7	352.51	192.35
8	367.55	179.17
9	385.69	170.74
10	399.97	156.74
11	419.49	152.42
12	439.32	149.79
13	458.59	144.44
14	478.58	143.67
15	498.53	142.22
16	513.83	129.35
17	529.92	117.46
18	800.00	179.80
19	1040.00	240.03
20	1650.00	260.11
21	1700.00	249.64
22	1800.00	261.52
23	1804.64	280.98
24	1816.51	297.07
25	1824.34	315.48
26	1834.76	332.55
27	1843.54	350.52
28	1851.23	368.98
29	1861.88	385.91
30	1865.60	405.56
31	1867.27	425.49
32	1873.54	444.48
33	1881.25	452.84

*** 1.356 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	292.95	251.64
2	293.01	251.62
3	308.79	239.34
4	325.97	229.10
5	345.65	225.52
6	363.80	217.13
7	379.87	205.22
8	394.01	191.08
9	411.49	181.35
10	426.47	168.11
11	444.37	159.18
12	463.87	154.73
13	481.46	145.21

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Geotechnical | Engineering
Firm Name | City, State

31 1909.49 452.70

*** 1.372 ***

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	269.48	243.57
2	270.15	243.05
3	289.99	240.57
4	306.89	229.87
5	322.04	216.81
6	338.59	205.60
7	356.94	197.63
8	376.21	192.27
9	394.87	185.08
10	413.80	178.62
11	433.18	173.67
12	448.86	161.26
13	463.21	147.33
14	479.45	135.66
15	496.69	125.53
16	513.38	114.49
17	800.00	180.13
18	1040.00	240.19
19	1650.00	260.20
20	1700.00	279.84
21	1800.00	269.48
22	1809.33	287.17
23	1822.45	302.27
24	1835.86	317.10
25	1849.47	331.76
26	1861.59	347.67
27	1865.53	367.28
28	1877.30	383.45
29	1884.86	401.97
30	1896.65	418.12
31	1897.37	438.11
32	1910.58	452.70

*** 1.373 ***

Failure Surface Specified By 32 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	292.36	251.44
2	300.00	243.89

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3	319.98	242.85
4	337.39	233.01
5	355.38	224.28
6	372.30	213.62
7	388.59	202.01
8	404.87	190.39
9	419.03	176.27
10	436.98	167.45
11	456.27	162.16
12	470.59	148.21
13	490.45	145.79
14	508.72	137.66
15	523.67	124.38
16	543.16	119.90
17	800.00	180.23
18	1040.00	240.01
19	1650.00	259.81
20	1700.00	279.80
21	1800.00	292.36
22	1811.18	308.95
23	1824.54	323.83
24	1838.60	338.05
25	1852.69	352.25
26	1865.63	367.49
27	1879.16	382.23
28	1889.45	399.37
29	1903.04	414.05
30	1906.46	433.75
31	1919.88	448.58
32	1923.80	452.63

*** 1.373 ***

Failure Surface Specified By 30 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	312.78	258.45
2	318.50	253.47
3	334.83	241.93
4	350.84	229.94
5	368.05	219.75
6	386.40	211.79
7	401.09	198.22
8	415.41	184.25
9	432.91	174.58
10	449.62	163.59
11	467.08	153.83
12	482.68	141.32
13	502.29	137.37
14	522.29	137.33
15	541.63	132.23
16	557.57	120.15
17	800.00	180.04

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Geotechnical | Engineering
Engineering | Engineering

18	1040.00	240.18
19	1650.00	259.80
20	1700.00	279.83
21	1800.00	312.78
22	1810.88	329.56
23	1825.01	343.71
24	1839.11	357.90
25	1853.19	372.10
26	1866.86	386.70
27	1875.32	404.82
28	1881.48	423.85
29	1887.74	442.84
30	1895.68	452.77

*** 1.403 ***

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.55	255.62
2	314.66	245.55
3	333.13	237.90
4	350.26	227.57
5	365.54	214.66
6	382.57	204.18
7	397.25	190.60
8	412.33	177.46
9	431.57	171.98
10	451.03	167.37
11	465.72	153.80
12	485.68	152.47
13	501.41	140.13
14	515.91	126.35
15	535.87	125.11
16	555.00	119.29
17	800.00	179.90
18	1040.00	240.07
19	1650.00	260.20
20	1700.00	280.09
21	1800.00	304.55
22	1807.63	323.03
23	1818.88	339.57
24	1830.88	355.57
25	1844.92	369.81
26	1852.72	388.23
27	1857.22	407.72
28	1871.18	422.04
29	1882.97	438.19
30	1897.08	452.36
31	1897.40	452.76

*** 1.415 ***

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geotechnical</u>

Failure Surface Specified By 31 Coordinate Points

Point No.	X-Surf (ft)	Y-Surf (ft)
1	304.55	255.62
2	314.66	245.55
3	333.13	237.90
4	350.26	227.57
5	365.54	214.66
6	382.57	204.18
7	397.25	190.60
8	412.33	177.46
9	431.57	171.98
10	451.03	167.37
11	465.72	153.80
12	485.68	152.47
13	501.41	140.13
14	515.91	126.35
15	535.87	125.11
16	555.00	119.29
17	800.00	179.90
18	1040.00	240.07
19	1650.00	260.20
20	1700.00	280.09
21	1800.00	304.55
22	1807.63	323.03
23	1818.88	339.57
24	1830.88	355.57
25	1844.92	369.81
26	1852.72	388.23
27	1857.22	407.72
28	1871.18	422.04
29	1882.97	438.19
30	1897.08	452.36
31	1897.40	452.76

*** 1.415 ***

Failure Surface Specified By 32 Coordinate Points

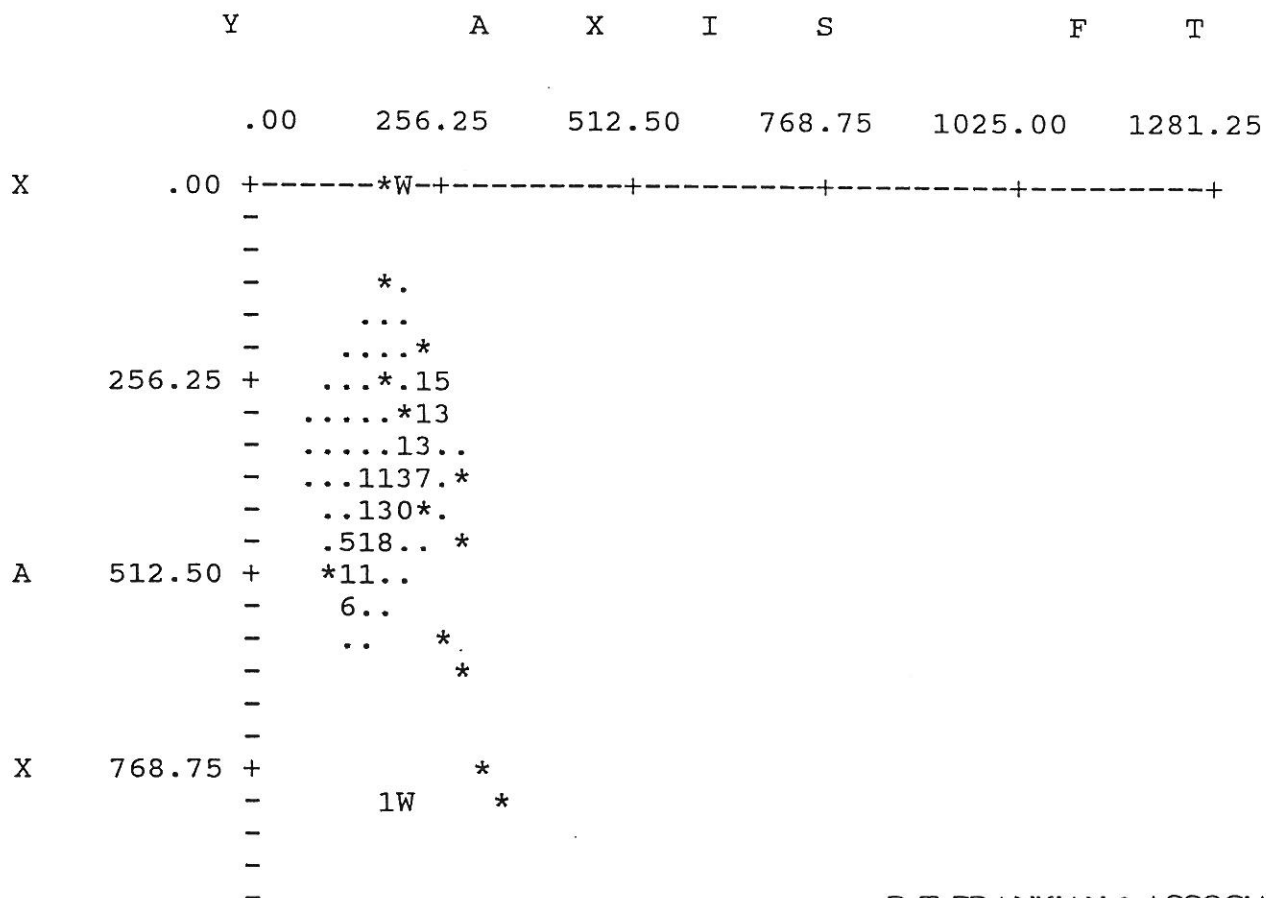
Point No.	X-Surf (ft)	Y-Surf (ft)
1	281.13	247.58
2	290.82	246.42
3	309.72	239.90
4	324.58	226.51
5	338.73	212.37
6	358.67	210.82
7	378.57	208.78
8	393.54	195.52

9	413.33	192.65
10	428.29	179.37
11	442.52	165.32
12	461.11	157.94
13	476.89	145.65
14	491.27	131.75
15	507.73	120.40
16	527.17	115.68
17	800.00	179.77
18	1040.00	240.23
19	1650.00	259.86
20	1700.00	279.93
21	1800.00	281.13
22	1811.17	297.72
23	1823.34	313.59
24	1836.29	328.83
25	1838.13	348.75
26	1852.20	362.96
27	1863.54	379.43
28	1876.10	394.99
29	1882.73	413.86
30	1893.51	430.71
31	1907.06	445.42
32	1910.64	452.70

6-19

PCSTABLE5 TRIAL 17A

*** 1.424 ***



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Geotechnical Engineering

I	1025.00	+	-	1	
			-	W	
			-		
			-		*
S	1281.25	+	-		*
			-		
			-	*	
			-	*	
	1537.50	+	-		
			-		
			-	1	
			-	.13..	*
F	1793.75	+	-	1137..	*
			-	11178.*	
			-	31111	
			-	...633	
			-	...	
T	2050.00	+	-	W	*

```

2025-F X=400 TN14D 14D to check CLARA TN5C Output Geometry
1 19 0 0 0 1.5 13 0 0
1 0 0 0 0 62.4 62.4 0
120 100 100 400 100 450 120 750 150 950 155 1000 170 1100 215
1350 230 1500 228 1600 250 2000 260 2050 300 2150 314 2400
314 2600 385 2640 400 2700 415 2800 415

```

```

0 200 800 300 1020 322 1730 340 2000 400 2800 400
3 0 0
001 215 0 0 0 0
1050 265 130 0 7 0
100 320 130 0 7 0
150 340 130 0 7 0
1200 340 130 0 7 0
1350 350 130 0 7 0
1440 352 130 0 7 0
1500 355 130 0 7 0
1600 360 130 0 7 0
1700 362 130 0 7 0
1800 370 130 0 7 0
1900 390 130 0 7 0
2000 420 130 0 7 0
2050 440 130 0 7 0
2100 450 130 0 7 0
2150 460 130 0 7 0
2200 470 130 0 7 0
2250 480 130 0 7 0
2300 480 130 0 7 0
2350 465 130 0 7 0
2400 440 130 0 7 0
2450 420 130 0 7 0
2500 400 130 0 7 0
2500 385 135 400 30 0
310
STOP

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6-21

TSLOPE TRIAL 28

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* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
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* * * * *
* ***** *
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*****
82025-F X=400 Trial 14D on CLARA PLOT geometry 82025-5.in
*****

```

```

*****
INPUT DATA
*****

```

CONTROL DATA,

NUMBER OF TRIAL SLIP SURFACES	1
NUMBER OF SPECIFIED SLOPE POINTS	19
NUMBER OF POINT LOADS	0
NUMBER OF PRESSURE LOADS	0
INITIAL ESTIMATE OF F	= 1.500
INITIAL ESTIMATE OF THETA	= 13.000
ALLOWABLE FORCE IMBALANCE	= 10.000
ALLOWABLE MOMENT IMBALANCE	= 100.000
SEISMIC COEFFICIENT	= .000
ATMOSPHERIC PRESSURE	= .000
UNIT WEIGHT OF WATER	= 62.400

SLOPE POINTS COORDINATES

X	Y
.00	120.00
100.00	100.00
400.00	100.00
450.00	120.00
750.00	150.00
950.00	155.00
1000.00	170.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1100.00	215.00
1350.00	230.00
1500.00	228.00
1600.00	250.00
2000.00	260.00
2050.00	300.00
2150.00	314.00
2400.00	314.00
2600.00	385.00
2640.00	400.00
2700.00	415.00
2800.00	415.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
800.00	300.00
1020.00	322.00
1730.00	340.00
2000.00	400.00
2800.00	400.00

NUMBER OF SLICES = 23

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
1001.00	215.00					
		130.00	.00	.00	7.00	.00
1050.00	265.00					
		130.00	.00	.00	7.00	.00
1100.00	320.00					
		130.00	347.46	.00	7.00	.00
1150.00	340.00					
		130.00	877.59	.00	7.00	.00
1200.00	340.00					
		130.00	1031.41	.00	7.00	.00
1350.00	350.00					
		130.00	1215.54	.00	7.00	.00
1440.00	352.00					
		130.00	1253.14	.00	7.00	.00
1500.00	355.00					
		130.00	1374.03	.00	7.00	.00
1600.00	360.00					
		130.00	1436.05	.00	7.00	.00
1700.00	362.00					
		130.00	1278.32	.00	7.00	.00
1800.00	370.00					
		130.00	791.29	.00	7.00	.00
1900.00	390.00					
		130.00	965.27	.00	7.00	.00
2000.00	420.00					
		130.00	1858.13	.00	7.00	.00
2050.00	440.00					
		130.00	2809.10	.00	7.00	.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2100.00	450.00	130.00	3433.08	.00	7.00	.00
2150.00	460.00	130.00	4059.44	.00	7.00	.00
2200.00	470.00	130.00	4683.23	.00	7.00	.00
2250.00	480.00	130.00	4992.00	.00	7.00	.00
2300.00	480.00	130.00	4531.38	.00	7.00	.00
2350.00	465.00	130.00	3299.46	.00	7.00	.00
2400.00	440.00	130.00	1908.65	.00	7.00	.00
2450.00	420.00	130.00	680.59	.00	7.00	.00
2500.00	400.00	135.00	.00	400.00	30.00	.00
2600.00	385.00					

6-24

THE SPECIFIED Y-COORD OF FLUID IN THE TENSION CRACK IS BELOW THE BOTTO
IT HAS BEEN SET EQUAL TO THE Y-COORD OF THE BOTTOM OF THE TENSION CRAC

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-12334.0	200479500.0
2	1.310	4.8	1166.2	-14954850.0
3	1.322	5.4	-.4	4441.9
4	1.322	5.4	.1	-128.9
5	1.322	5.4	.2	108.3
6	1.322	5.4	-.1	-160.2
7	1.322	5.4	-.3	48.4

TSLOPE TRIAL 28

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	1001.00	.0	0.0	.00	.0	.
1	1050.00	293695.8	5.4	.29	6433.6	597.
2	1100.00	781006.6	5.4	.40	9634.5	895.
3	1150.00	996205.2	5.4	.38	13500.3	1254.
4	1200.00	926593.1	5.4	.38	14918.6	1386.
5	1350.00	879848.1	5.4	.36	14443.5	1341.
6	1440.00	788626.0	5.4	.33	14657.7	1361.
7	1500.00	753625.5	5.4	.31	14995.2	1393.
8	1600.00	700117.4	5.4	.35	14016.3	1302.

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

9	1700.00	608577.4	5.4	.33	12893.7	1197.
10	1800.00	601706.8	5.4	.30	13222.4	1228.
11	1900.00	777396.5	5.4	.27	14854.6	1380.
12	2000.00	1164341.0	5.4	.26	17203.1	1598.
13	2050.00	1455846.0	5.4	.33	16480.1	1531.
14	2100.00	1565274.0	5.4	.34	15099.1	1402.
15	2150.00	1679685.0	5.4	.35	14860.2	1380.
16	2200.00	1801468.0	5.4	.33	15061.2	1399.
17	2250.00	1932991.0	5.4	.32	15707.1	1459.
18	2300.00	1854903.0	5.4	.31	16735.2	1554.
19	2350.00	1444657.0	5.4	.29	17329.8	1610.
20	2400.00	868672.0	5.4	.26	16560.3	1538.
21	2450.00	503657.7	5.4	.26	13195.9	1226.
22	2500.00	263989.8	5.4	.16	9129.1	848.
23	2600.00	.2	5.4	.00	3962.6	2033.

COMPUTED FACTOR OF SAFETY = 1.322

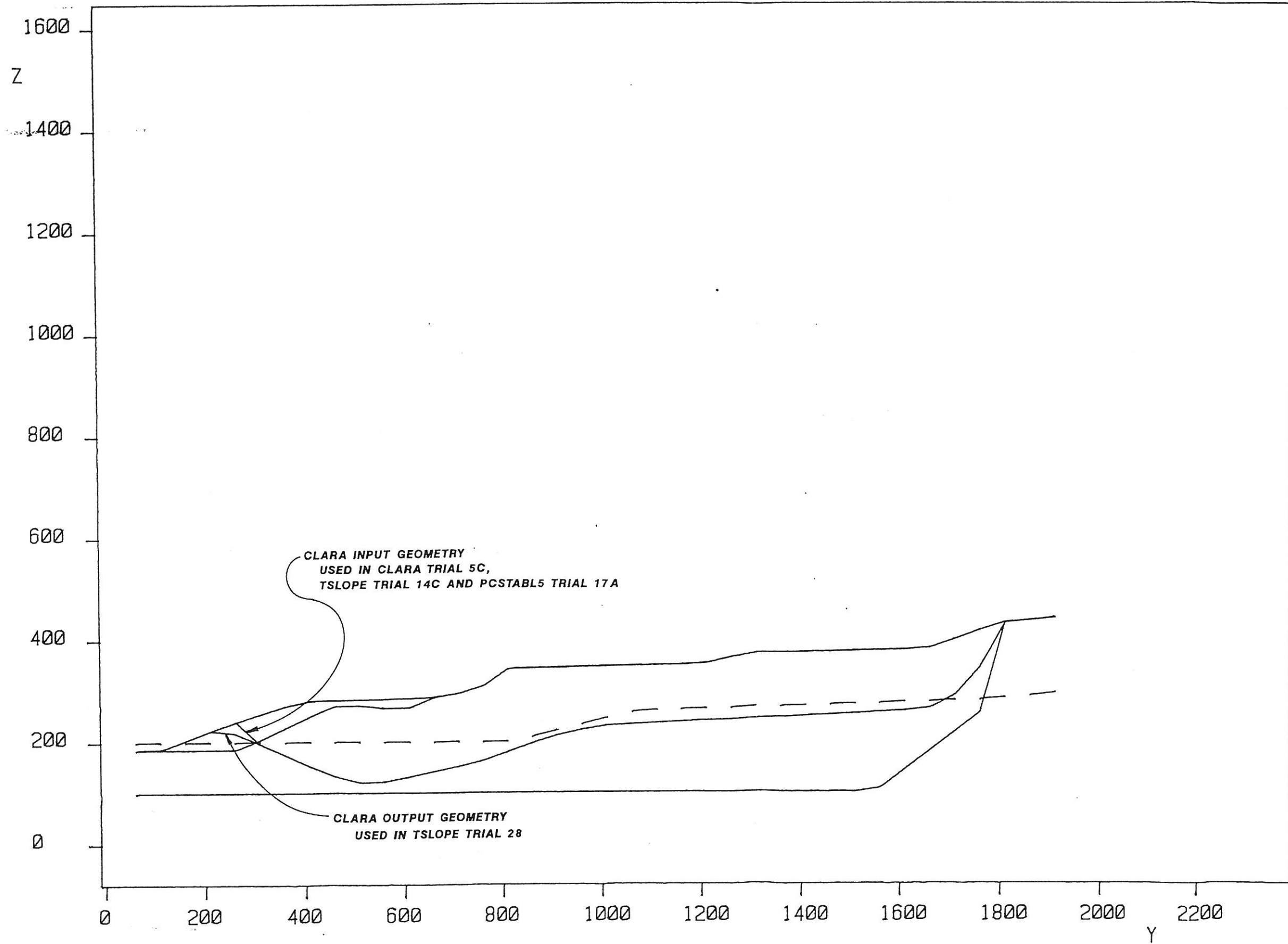
6-25

TSLOPE TRIAL 28

 Execution complete, time = 9.06 seconds

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-6
X = 400

R.T. FRANKIAN & ASSOCIATES

DATE: 03-06-92 SCALE: PLATE: 6-26

T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-2f.CLA
 DATA SET - X=400 NO BERM & WATER 20' ABOVE SLIDE
 ANALYSIS BY SDR
 DATE: 01-12-92

6-27

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 2750
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 2
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

CLARA TRIAL 9

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR

A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1500.00	100.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
260.00	185.00
300.00	200.00
450.00	270.00
500.00	272.00
600.00	262.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical Engineering
 Engineering Geology

650.00	286.00
800.00	342.00
1200.00	350.00
1300.00	372.00
1650.00	378.00
1800.00	430.00
2050.00	452.00
2350.00	480.00
2400.00	500.00
2700.00	500.00
2800.00	480.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
820.00	200.00
1070.00	260.00
1760.00	280.00
2000.00	300.00
2800.00	400.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE
Data File: 82025-2f.CLA Analysis by: SDR Date: 01-12-92
Data Set: X=400 NO BERM & WATER 20' ABOVE SLIDE

RUN IDENTIFICATION LABEL: X=400 NO BERM WATER 20' ABOVE

Number of Active Columns	30	Axis of Rotation Y-coordinate	406.68
Max. No. Columns in Y-dir.	30	Axis of Rotation Z-coordinate	5478.49
Slide Volume	1.79E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.33E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	1.59E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.028
Janbu 1.022 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

82025-F X=400 2D ANALYSIS NO TOEBERM 82025-2L

18 0 0 0 1.5 13 0 0

1 0 0 0 0 62.4 0 0

120 100 400 950 155 1000 170 1100 215 1350 230 1500 228 1600

250 2000 260 2050 300 2150 314 2200 340 2300 328 2350 330

2400 370 2500 400 2540 415 2800 415

0 200 800 300 1730 340 2000 400 2800 400

19 0 0

000 170 0 0 0 0

050 260 130 100 20 0

1100 320 130 100 20 0

150 340 130 100 20 0

200 340 130 0 7 0

1350 350 130 0 7 0

500 355 130 0 7 0

500 360 130 0 7 0

1700 362 130 0 7 0

1800 370 130 0 7 0

900 390 130 0 7 0

000 420 130 0 7 0

2050 440 130 0 7 0

150 460 130 0 7 0

200 470 130 30 9 0

2250 480 130 21 8 0

300 480 130 34 9 0

350 465 130 24 7 0

2400 440 130 160 18 0

2500 400 130 240 10 0

70

TOP

6-30

TSLOPE TRIAL 15

R. T. FRANKIAN & ASSOCIATES

Geotechnical | Engineering
Engineering | Geology

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*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

6-31

TSLOPE TRIAL 15

```

*****
82025-F X=400 2D ANALYSIS NO TOEBERM 82025-2L
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  18
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F              =      1.500
INITIAL ESTIMATE OF THETA          =      13.000
ALLOWABLE FORCE IMBALANCE           =      10.000
ALLOWABLE MOMENT IMBALANCE         =     100.000
SEISMIC COEFFICIENT                =           .000
ATMOSPHERIC PRESSURE               =           .000
UNIT WEIGHT OF WATER              =      62.400

```

```

SLOPE POINTS COORDINATES
      X      Y
      .00    120.00
    100.00    400.00
    950.00    155.00
   1000.00    170.00
   1100.00    215.00
   1350.00    230.00
   1500.00    228.00

```

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

1600.00	250.00
2000.00	260.00
2050.00	300.00
2150.00	314.00
2200.00	340.00
2300.00	328.00
2350.00	330.00
2400.00	370.00
2500.00	400.00
2540.00	415.00
2800.00	415.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
800.00	300.00
1730.00	340.00
2000.00	400.00
2800.00	400.00

NUMBER OF SLICES = 19

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
1000.00	170.00					
		130.00	.00	100.00	20.00	.00
1050.00	260.00					
		130.00	.00	100.00	20.00	.00
1100.00	320.00					
		130.00	1011.77	100.00	20.00	.00
1150.00	340.00					
		130.00	1487.08	.00	7.00	.00
1200.00	340.00					
		130.00	1530.49	.00	7.00	.00
1350.00	350.00					
		130.00	1595.20	.00	7.00	.00
1500.00	355.00					
		130.00	1571.67	.00	7.00	.00
1600.00	360.00					
		130.00	1522.35	.00	7.00	.00
1700.00	362.00					
		130.00	1278.32	.00	7.00	.00
1800.00	370.00					
		130.00	791.29	.00	7.00	.00
1900.00	390.00					
		130.00	965.27	.00	7.00	.00
2000.00	420.00					
		130.00	1858.13	.00	7.00	.00
2050.00	440.00					
		130.00	3124.36	.00	7.00	.00
2150.00	460.00					
		130.00	4049.97	30.00	9.00	.00
2200.00	470.00					

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2250.00	480.00	130.00	4686.03	21.00	8.00	.00
2300.00	480.00	130.00	4992.00	34.00	9.00	.00
2350.00	465.00	130.00	4533.24	24.00	7.00	.00
2400.00	440.00	130.00	3358.44	160.00	18.00	.00
2500.00	400.00	130.00	1664.00	240.00	10.00	.00

6-33

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-345170.0	83810030.0
2	1.175	3.0	-10759.4	-51407950.0
3	1.218	7.1	183.5	859576.6
4	1.217	7.0	-.2	13.5

TSLOPE TRIAL 15

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	1000.00	0.0	0.0	0.0	.0	.
1	1050.00	182346.3	7.0	.41	2466.2	819.
2	1100.00	521721.3	7.0	.43	7568.2	2344.
3	1150.00	599398.5	7.0	.43	12076.0	3692.
4	1200.00	526440.0	7.0	.44	14356.4	1448.
5	1350.00	469699.5	7.0	.42	13956.9	1408.
6	1500.00	329460.4	7.0	.43	14525.3	1465.
7	1600.00	266429.6	7.0	.54	13840.6	1396.
8	1700.00	164838.3	7.0	.76	12843.5	1295.
9	1800.00	147316.1	7.0	.77	13228.9	1334.
10	1900.00	311048.2	7.0	.36	14797.4	1492.
11	2000.00	682816.7	7.0	.21	17075.8	1722.
12	2050.00	965775.4	7.0	.26	16292.4	1643.
13	2150.00	1177605.0	7.0	.25	14905.9	1503.
14	2200.00	1264082.0	7.0	.29	13326.8	1758.
15	2250.00	1364561.0	7.0	.27	12711.2	1484.
16	2300.00	1267341.0	7.0	.23	14615.8	1930.
17	2350.00	884097.4	7.0	.18	15535.1	1587.
18	2400.00	279636.9	7.0	.25	13283.6	3681.
19	2500.00	.2	7.0	.00	3510.2	706.

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

COMPUTED FACTOR OF SAFETY = 1.217

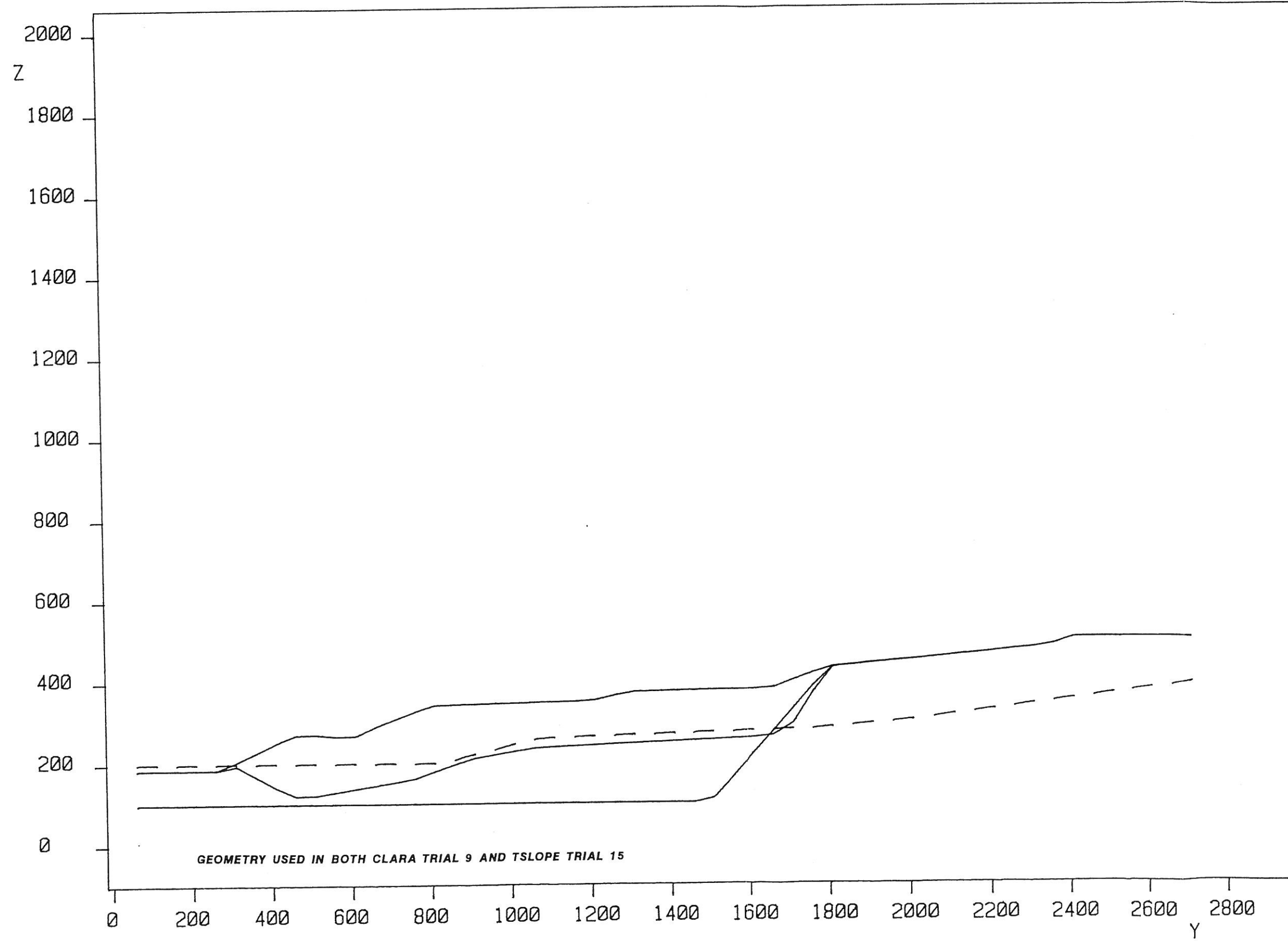
6-34

Execution complete, time = 8.62 seconds

TSLOPE TRIAL 15

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-6

X = 400

R.T. FRANKIAN & ASSOCIATES

DATE: 03-13-92

SCALE:

PLATE: 6-35

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: Abalone Cove
Data File: 82025-4b.CLA Analysis by: SDR Date: 02-08-1992
Data Set: X=200 /W TOEBERM Trial 4 with plane thru Toeberm

RUN IDENTIFICATION LABEL: X=200 TN4A TOEBERM

Number of Active Columns	26	Axis of Rotation Y-coordinate	-2483.46
Max. No. Columns in Y-dir.	26	Axis of Rotation Z-coordinate	34938.20
Slide Volume	9.29E+04	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	1.21E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	1.34E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 4.039
Janbu 4.034 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

7-1

CLARA TRIAL 4A

T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - Abalone Cove
 DATA FILE - 82025-4b.CLA
 DATA SET - X=200 TN4A 60 DEG - BERM
 ANALYSIS BY SDR
 DATE: 01-20-92

7-2

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION)	50
MESH START Y-COORDINATE	10
MESH END Y-COORDINATE	2750
ROW WIDTH	1
TRANSVERSE MESH WIDTH	1
NUMBER OF MATERIALS	3
NUMBER OF DISCONTINUITIES	0
NUMBER OF PIEZOMETRIC SURFACES	1

CLARA TRIAL 4A

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	VERT.	FRICTION HOR.	VERT.	PORE-PRESS. RATIO*	B-BAR

A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
290.00	200.00
390.00	220.00
460.00	270.00
720.00	270.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
140.00	185.00
250.00	230.00
440.00	280.00
750.00	287.00
1100.00	360.00
1560.00	370.00
1650.00	410.00
1700.00	380.00
1950.00	435.00
2020.00	415.00
2360.00	440.00
2500.00	510.00
2800.00	518.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
1000.00	200.00
2000.00	300.00
2800.00	400.00

82025-F X=200 Trial 12 w/ mod strengths TOEBERM 82025-4i.in
 16 0 0 0 3 13 0 0
 3 1 0 0 0 0 62.4 0 0
 82 300 90 440 160 780 185 850 165 1000 205 1100 220 1150 190
 1240 230 1700 240 2050 313 2380 320 2550 375 2620 400 2660
 415 2800 415

2
 200 800 300 1800 400 2620 400 2800 400
 20 0 0
 240 230 0 0 0 0
 330 270 130 100 20 0
 1400 300 130 100 20 0
 150 320 130 100 20 0
 190 320 130 0 7 0
 1560 320 130 0 7 0
 1640 320 130 0 7 0
 700 320 130 0 7 0
 300 320 130 0 7 0
 1880 320 130 0 7 0
 970 345 130 0 7 0
 050 370 130 0 7 0
 2110 390 130 0 7 0
 165 405 130 0 7 0
 220 420 130 0 7 0
 2300 460 130 0 7 0
 2340 450 130 0 7 0
 880 440 130 0 7 0
 450 420 130 0 7 0
 2510 400 130 0 7 0
 620 400 135 400 30 0
 30
 STOP

7-4

TSLOPE TRIAL 12A

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

```

*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

7-5

TSLOPE TRIAL 12 A

```

*****
82025-F X=200 Trial 12 w/ mod strengths TOEBERM 82025-4i.in
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  16
NUMBER OF POINT LOADS               0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F                =      3.000
INITIAL ESTIMATE OF THETA            =     13.000
ALLOWABLE FORCE IMBALANCE             =     10.000
ALLOWABLE MOMENT IMBALANCE           =    100.000
SEISMIC COEFFICIENT                  =       .000
ATMOSPHERIC PRESSURE                 =       .000
UNIT WEIGHT OF WATER                 =     62.400

```

```

SLOPE POINTS COORDINATES
      X      Y
      .00    82.00
    300.00   90.00
    440.00  160.00
    780.00  185.00
    850.00  165.00
   1000.00  205.00
   1100.00  220.00

```

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1150.00	190.00
1240.00	230.00
1700.00	240.00
2050.00	313.00
2380.00	320.00
2550.00	375.00
2620.00	400.00
2660.00	415.00
2800.00	415.00

7-6

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
800.00	300.00
1800.00	400.00
2620.00	400.00
2800.00	400.00

NUMBER OF SLICES = 20

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
1240.00	230.00	130.00	.00	100.00	20.00	.00
1330.00	270.00	130.00	.00	100.00	20.00	.00
1400.00	300.00	130.00	.00	100.00	20.00	.00
1450.00	320.00	130.00	.00	.00	7.00	.00
1490.00	320.00	130.00	.00	.00	7.00	.00
1560.00	320.00	130.00	.00	.00	7.00	.00
1640.00	320.00	130.00	.00	.00	7.00	.00
1700.00	320.00	130.00	.00	.00	7.00	.00
1800.00	320.00	130.00	.00	.00	7.00	.00
1880.00	320.00	130.00	.00	.00	7.00	.00
1970.00	345.00	130.00	.00	.00	7.00	.00
2050.00	370.00	130.00	.00	.00	7.00	.00
2110.00	390.00	130.00	.00	.00	7.00	.00
2165.00	405.00	130.00	791.18	.00	7.00	.00
2220.00	420.00	130.00	2561.01	.00	7.00	.00

TSLOPE TRIAL 12A

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2300.00	460.00					
		130.00	3436.14	.00	7.00	.00
2340.00	450.00					
		130.00	2812.50	.00	7.00	.00
2380.00	440.00					
		130.00	1916.95	.00	7.00	.00
2450.00	420.00					
		130.00	695.10	.00	7.00	.00
2510.00	400.00					
		135.00	.00	400.00	30.00	.00
2620.00	400.00					

7-7

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	3.000	13.0	-357380.6	10395550.0
2	2.000	18.1	52973.4	89947500.0
3	1.804	8.1	13855.5	12345880.0
4	1.764	5.3	-24.3	-102559.2
5	1.764	5.4	.4	-33.7

TSLOPE TRIAL 12A

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	1240.00	0.0	0.0	0.0	.0	.
1	1330.00	42271.5	5.4	.28	2201.9	511.
2	1400.00	133761.9	5.4	.27	6110.2	1317.
3	1450.00	218043.2	5.4	.27	8957.9	1905.
4	1490.00	186941.3	5.4	.27	11122.6	774.
5	1560.00	133278.5	5.4	.30	10966.1	763.
6	1640.00	73142.8	5.4	.42	10752.8	748.
7	1700.00	28876.3	5.4	.96	10553.6	734.
8	1800.00	-34765.0	5.4	-1.09	9103.7	633.
9	1880.00	-71940.9	5.4	-.87	6647.4	462.
10	1970.00	35373.0	5.4	1.36	5702.7	397.
11	2050.00	163732.0	5.4	.43	6576.8	457.
12	2110.00	294576.8	5.4	.33	8232.7	573.
13	2165.00	410714.6	5.4	.29	10350.2	720.

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

14	2220.00	549440.7	5.4	.27	11300.9	786.
15	2300.00	1078520.0	5.4	.27	12323.8	857.
16	2340.00	850459.3	5.4	.25	15073.8	1049.
17	2380.00	639462.0	5.4	.23	14232.6	990.
18	2450.00	311716.8	5.4	.24	11578.2	805.
19	2510.00	121377.8	5.4	.09	7263.6	505.
20	2620.00	-.3	5.4	.00	2664.0	1098.

COMPUTED FACTOR OF SAFETY = 1.764

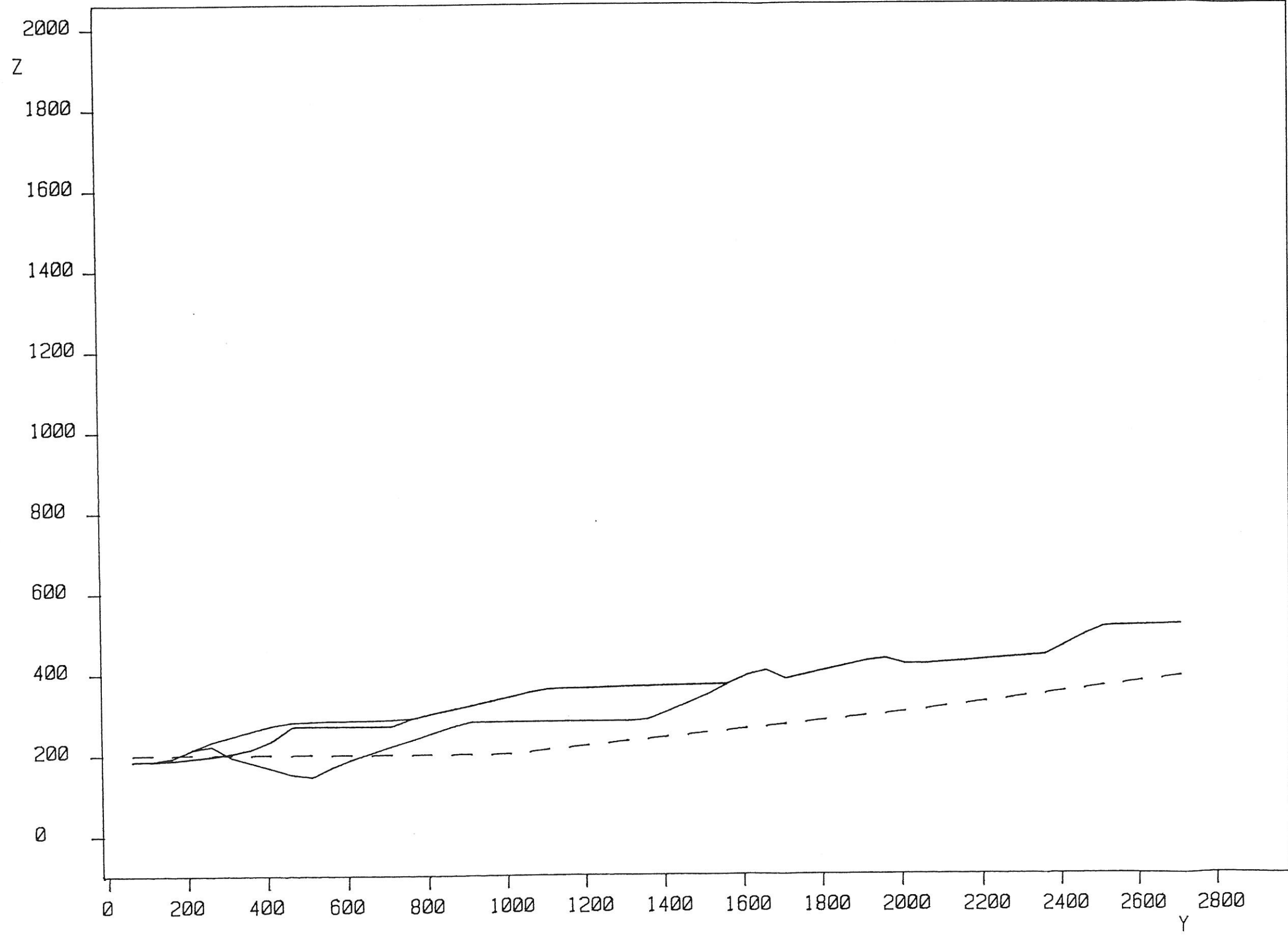
7-8

 Execution complete, time = 8.18 seconds

TSLOPE TRIAL 12A

R. T. FRANKIAN & ASSOCIATES

<i>Geotechnical</i>	<i>Engineering</i>
<i>Engineering</i>	<i>Geology</i>

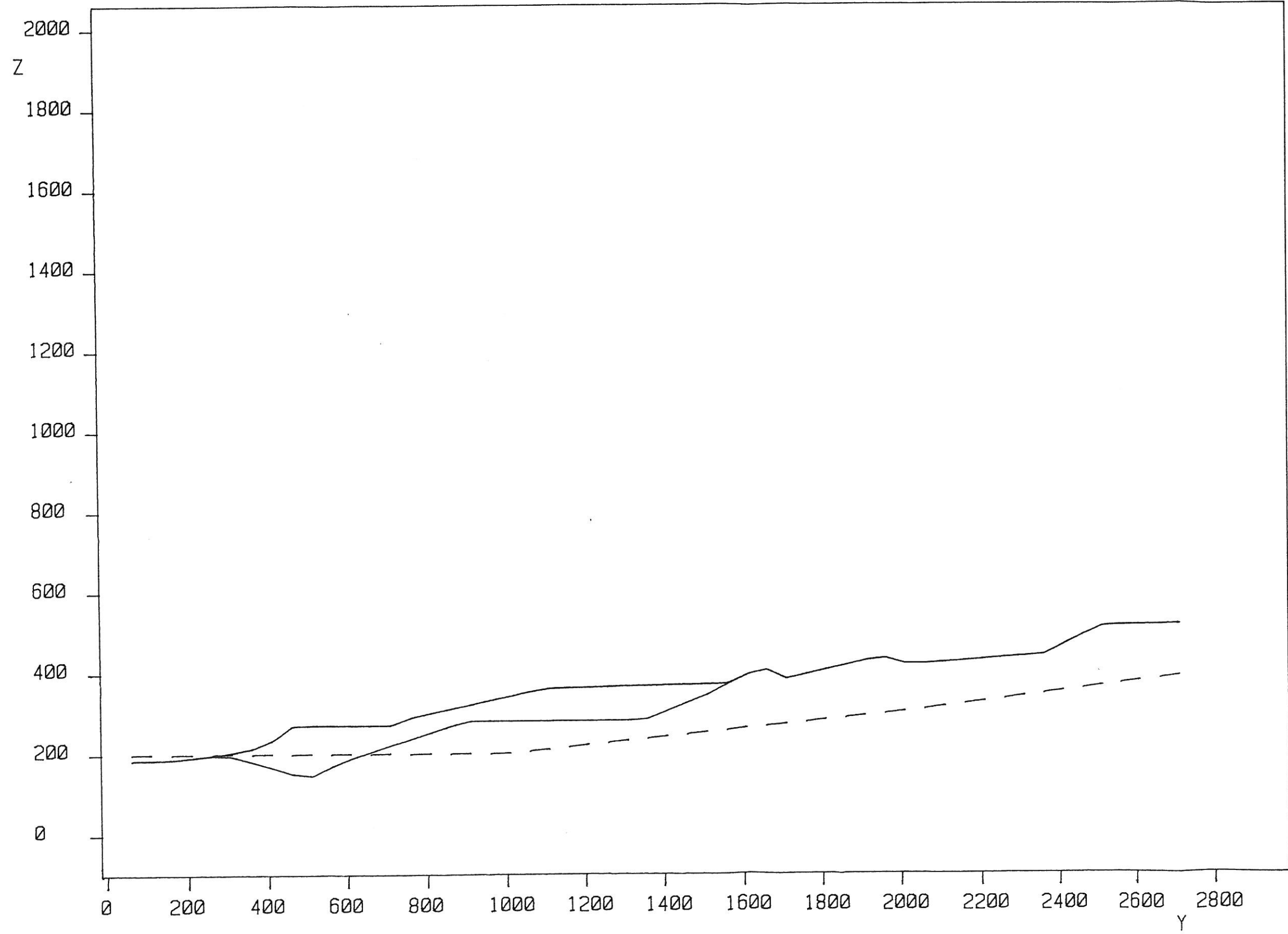


RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-7
X = 200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-07-92 SCALE: PLATE: 7-9



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-7
X = 200

R.T. FRANKIAN & ASSOCIATES

DATE: 03-07-92 SCALE: PLATE: 7-18

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE
Data File: 82025-2G.CLA Analysis by: SDR Date: 01-20-92
Data Set: 2D X=700 FROM 82025(d) WITHOUT TOEBERM

RUN IDENTIFICATION LABEL: X=700 TN10 NO BERM

Number of Active Columns	41	Axis of Rotation Y-coordinate	792.64
Max. No. Columns in Y-dir.	41	Axis of Rotation Z-coordinate	4895.31
Slide Volume	2.98E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.87E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.13E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 0.871
Janbu 0.861 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS. RATIO* B-BAR	
			HOR.	VERT.	HOR.	VERT.		
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-2G.CLA
 DATA SET - 2D X=700 FROM 82025(d) WITHOUT TOEBERM
 ANALYSIS BY SDR
 DATE: 01-20-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION)	50
MESH START Y-COORDINATE	10
MESH END Y-COORDINATE	2750
ROW WIDTH	1
TRANSVERSE MESH WIDTH	1
NUMBER OF MATERIALS	2
NUMBER OF DISCONTINUITIES	0
NUMBER OF PIEZOMETRIC SURFACES	1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	VERT.	FRICTION HOR.	VERT.	PORE-PRESS. RATIO* B-BAR

A/ MATERIALS:							
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00 0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00 0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2100.00	100.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
400.00	220.00
450.00	270.00
650.00	285.00
750.00	265.00
780.00	286.00
1200.00	353.00
1250.00	386.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

8-3

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
954.00	200.00
1698.00	242.00
2200.00	350.00
2250.00	380.00
2800.00	400.00

CLARA TRIAL 10

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

2025-F X=700 NO TOEBERM - 82025-3B.IN

1 17 0 0 0 1.5 13 0 0

3 0 0 0 0 0 62.4 0 0

0 135 430 190 450 192 550 200 750 220 1100 332 1200 320

1550 314 1600 347 2020 415 2040 440 2120 420 2370 430 2410 480

2510 500 2530 515 2800 515

2

5

30 300 550 340 1100 460 1850 500 2800 500

30 0 0

430.00 190.00 0 0 0 0

450.00 220.00 130 100 20 0

500.00 300.00 130 100 20 0

550.00 345.00 130 100 20 0

616.67 366.67 130 0 7 0

683.33 388.33 130 0 7 0

750.00 410.00 130 0 7 0

837.50 427.50 130 0 7 0

925.00 445.00 130 0 7 0

1012.50 462.50 130 0 7 0

1100.00 480.00 130 0 7 0

1200.00 485.00 130 0 7 0

1287.50 486.25 130 0 7 0

1375.00 487.50 130 0 7 0

1462.50 488.75 130 0 7 0

1550.00 490.00 130 0 7 0

1600.00 510.00 130 0 7 0

1725.00 515.00 130 0 7 0

1850.00 520.00 130 0 7 0

1935.00 535.00 130 0 7 0

2020.00 550.00 130 0 7 0

2040 545 130 0 7 0

2120 555 130 0 7 0

2160.00 560.00 130 0 7 0

2255.00 560.00 130 0 7 0

2350.00 560.00 130 0 7 0

2370 555 130 0 7 0

2380.00 550.00 135 0 7 0

2410.00 540.00 130 0 7 0

2485.00 510.00 130 0 7 0

2510 500 130 0 7 0

190

STOP

8-4

TSLOPE TRIAL 19

R. T. FRANKIAN & ASSOCIATES

Geotechnical | Engineering
Engineering | Geology

```

*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

```

*****
82025-F X=700 NO TOEBERM - 82025-3B.IN
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  17
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F               =      1.500
INITIAL ESTIMATE OF THETA           =     13.000
ALLOWABLE FORCE IMBALANCE            =     10.000
ALLOWABLE MOMENT IMBALANCE          =    100.000
SEISMIC COEFFICIENT                 =       .000
ATMOSPHERIC PRESSURE                 =       .000
UNIT WEIGHT OF WATER                =     62.400

```

```

SLOPE POINTS COORDINATES
      X      Y
      .00    135.00
    430.00   190.00
    450.00   192.00
    550.00   200.00
    750.00   220.00
   1100.00   332.00
   1200.00   320.00

```

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1550.00	314.00
1600.00	347.00
2020.00	415.00
2040.00	440.00
2120.00	420.00
2370.00	430.00
2410.00	480.00
2510.00	500.00
2530.00	515.00
2800.00	515.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	300.00
550.00	340.00
1100.00	460.00
1850.00	500.00
2800.00	500.00

NUMBER OF SLICES = 30

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
430.00	190.00					
		130.00	.00	100.00	20.00	.00
450.00	220.00					
		130.00	.00	100.00	20.00	.00
500.00	300.00					
		130.00	.00	100.00	20.00	.00
550.00	345.00					
		130.00	513.47	.00	7.00	.00
616.67	366.67					
		130.00	937.24	.00	7.00	.00
683.33	388.33					
		130.00	1361.08	.00	7.00	.00
750.00	410.00					
		130.00	1523.41	.00	7.00	.00
837.50	427.50					
		130.00	1428.67	.00	7.00	.00
925.00	445.00					
		130.00	1333.94	.00	7.00	.00
1012.50	462.50					
		130.00	1239.21	.00	7.00	.00
1100.00	480.00					
		130.00	1233.90	.00	7.00	.00
1200.00	485.00					
		130.00	1117.13	.00	7.00	.00
1287.50	486.25					
		130.00	904.54	.00	7.00	.00
1375.00	487.50					
		130.00	691.95	.00	7.00	.00
1462.50	488.75					
		130.00	479.36	.00	7.00	.00
1550.00	490.00					

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1600.00	510.00	130.00	905.71	.00	7.00	.00
1725.00	515.00	130.00	1400.87	.00	7.00	.00
1850.00	520.00	130.00	1297.25	.00	7.00	.00
1935.00	535.00	130.00	1716.72	.00	7.00	.00
2020.00	550.00	130.00	2652.72	.00	7.00	.00
2040.00	545.00	130.00	2970.50	.00	7.00	.00
2120.00	555.00	130.00	3133.00	.00	7.00	.00
2160.00	560.00	130.00	3588.65	.00	7.00	.00
2255.00	560.00	130.00	3744.00	.00	7.00	.00
2350.00	560.00	130.00	3744.00	.00	7.00	.00
2370.00	555.00	130.00	3589.18	.00	7.00	.00
2380.00	550.00	135.00	3279.92	.00	7.00	.00
2410.00	540.00	130.00	2837.49	.00	7.00	.00
2485.00	510.00	130.00	1747.20	.00	7.00	.00
2510.00	500.00	130.00	416.00	.00	7.00	.00

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-1746942.0	519032600.0
2	1.611	23.0	-1708603.0	517730900.0

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

8-8

TSLOPE TRIAL 19

```
*****
PLOT OF SLOPE GEOMETRY
*****
```

Geotechnical	Engineering
Engineering	Geology

0000-XXX-XX0XX0XX0XX0XX0XX0XX0XX0X0000000000000000
0000000-XX-XX-XXX-XX-XX0XX0XX0X0XX0XX0XX0XX0 000000
000000000000000XX-XX-XX-X-XXX-XXXX-XX0XX00XX00XX
0000000000000000000000000000-XX--XX--XX
000000000000

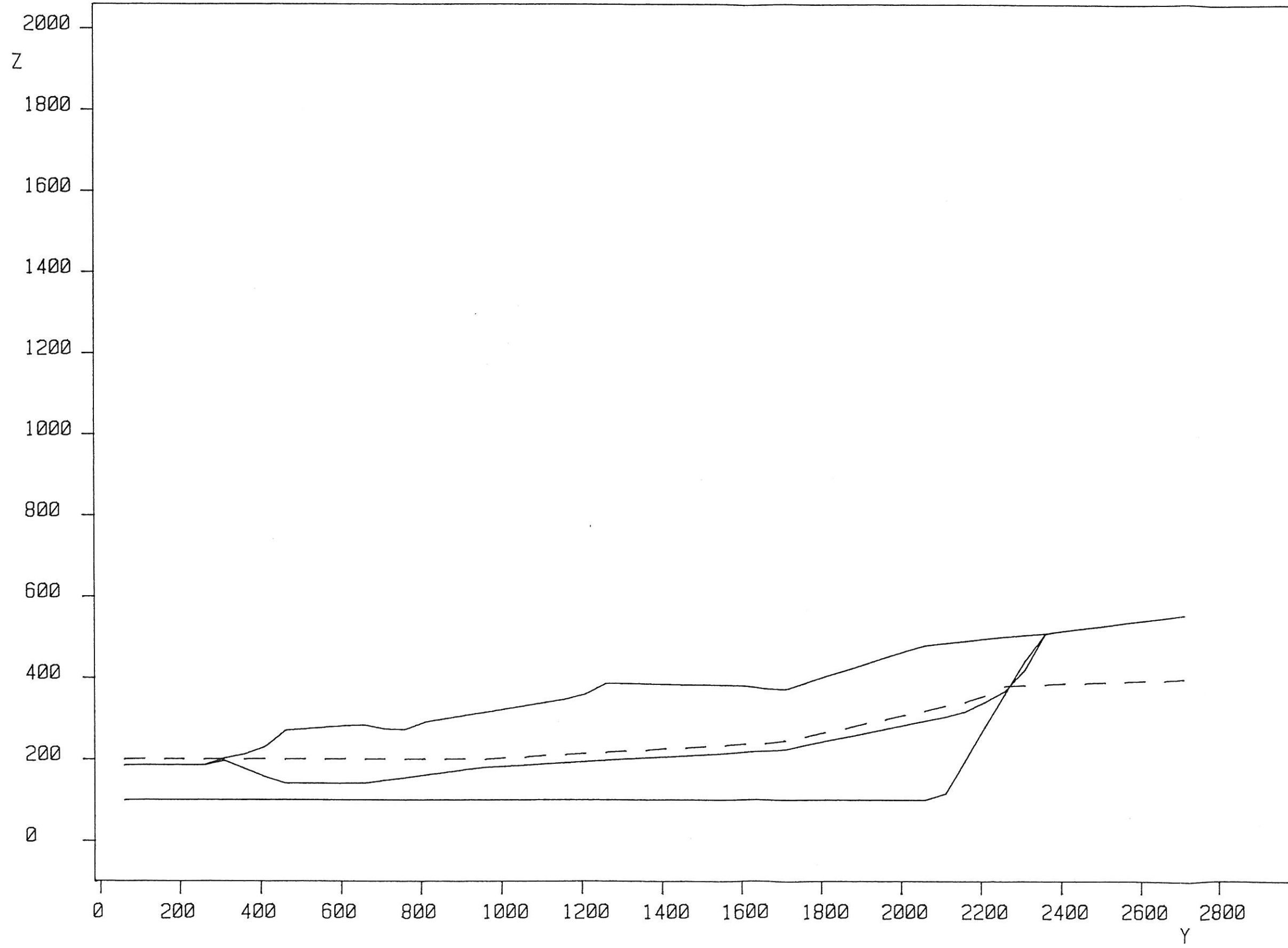
Execution complete, time = 15.00 seconds

8-9

TSLOPE TRIAL 19

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-8
 $X = 700$

R.T. FRANKIAN & ASSOCIATES

DATE: 03-09-92 SCALE:

PLATE: 8-10

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE

Data File: 82025-4C.CLA Analysis by: SDR Date: 01-20-92

Data Set: X=700 W/ TOEBERM - Trial 6 w/ break thru toeberm

RUN IDENTIFICATION LABEL: X=700 TN6A 60 DEG - TOEBERM

Number of Active Columns	42	Axis of Rotation Y-coordinate	795.91
Max. No. Columns in Y-dir.	42	Axis of Rotation Z-coordinate	4880.59
Slide Volume	3.09E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	4.03E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.18E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ...	1.018
Janbu	1.002 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-4C.CLA
 DATA SET - X=700 W/ TOEBERM - Trial 6 w/ break thru toeberm
 ANALYSIS BY SDR
 DATE: 01-20-92

8-12

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 2750
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 3
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR. VERT.	FRICTION HOR. VERT.	PORE-PRESS. RATIO* B-BAR

A/ MATERIALS:					
1	SIDES	130.00	100.0 100.0	20.0 20.0	-1.00 0.00
2	BOTTOM	130.00	0.0 0.0	7.0 7.0	-1.00 0.00
3	TOEBERM	135.00	400.0 400.0	30.0 30.0	-1.00 0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2100.00	100.00
2350.00	508.00
2800.00	565.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
275.00	185.00
300.00	200.00
400.00	220.00
450.00	270.00
650.00	285.00
750.00	265.00
780.00	286.00
1200.00	353.00

CLARA TRIAL 6A

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1250.00	386.00
1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

8-13

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
135.00	185.00
240.00	225.00
385.00	280.00
780.00	286.00
1200.00	353.00
1250.00	386.00
1600.00	380.00
1700.00	368.00
2050.00	478.00
2250.00	500.00
2350.00	508.00
2800.00	565.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
954.00	200.00
1698.00	242.00
2200.00	350.00
2250.00	380.00
2800.00	400.00

CLARA TRIAL 6A

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

82025-F X=700 W/TOEBERM - Break at toe through Toeberm 82025-3a.IN

1 14 0 0 0 1.5 13 0 0
3 0 0 0 0 0 62.4 0 0
0 135 430 190 450 192 550 200 750 220 1100 332 1200
320 1550 314 1600 347 2020 415 2410 420 2560 480 2660 515
2800 515

2
5
0 300 550 340 1100 460 1850 500 2800 500
28 0 0

430.00 190.00 0 0 0 0
450.00 220.00 130 100 20 0
500.00 300.00 130 100 20 0
550.00 345.00 130 100 20 0
616.67 366.67 130 0 7 0
683.33 388.33 130 0 7 0
750.00 410.00 130 0 7 0
837.50 427.50 130 0 7 0
925.00 445.00 130 0 7 0
1012.50 462.50 130 0 7 0
1100.00 480.00 130 0 7 0
1200.00 485.00 130 0 7 0
1287.50 486.25 130 0 7 0
1375.00 487.50 130 0 7 0
1462.50 488.75 130 0 7 0
1550.00 490.00 130 0 7 0
1600.00 510.00 130 0 7 0
1725.00 515.00 130 0 7 0
1850.00 520.00 130 0 7 0
1935.00 535.00 130 0 7 0
2020.00 550.00 130 0 7 0
2090.00 555.00 130 0 7 0
2160.00 560.00 130 0 7 0
2255.00 560.00 130 0 7 0
2350.00 560.00 130 0 7 0
2380.00 550.00 135 0 7 0
2410.00 540.00 135 0 7 0
2485.00 510.00 135 400 30 0
2560.00 480.00 135 400 30 0

190
STOP

8-14

TSLOPE TRIAL 20

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology


```

*****
* ***** *
* *
* * ----- *
* * TSLOPE - slope stability analysis *
* * Revision 2.50 - 05/30/85 *
* * ----- *
* *
* * TAGA Engineering Software Services *
* * Berkeley, California USA *
* *
* * IBM PC & 8086/8088 MS-DOS Version by *
* *
* * Design Professionals Management Systems *
* * Kirkland, Washington USA *
* *
* * copyright (c) 1983,84,85 TAGA *
* * copyright (c) 1983,84,85 DPMS *
* *
* ***** *
*****

```

```

*****
82025-F X=700 W/TOEBERM - Break at toe through Toeberm 82025-3a.IN
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  14
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F              =      1.500
INITIAL ESTIMATE OF THETA          =     13.000
ALLOWABLE FORCE IMBALANCE           =     10.000
ALLOWABLE MOMENT IMBALANCE         =    100.000
SEISMIC COEFFICIENT                =         .000
ATMOSPHERIC PRESSURE               =         .000
UNIT WEIGHT OF WATER               =     62.400

```

```

SLOPE POINTS COORDINATES
      X      Y
      .00    135.00
    430.00   190.00
    450.00   192.00
    550.00   200.00
    750.00   220.00
   1100.00   332.00
   1200.00   320.00

```

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1550.00	314.00
1600.00	347.00
2020.00	415.00
2410.00	420.00
2560.00	480.00
2660.00	515.00
2800.00	515.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	300.00
550.00	340.00
1100.00	460.00
1850.00	500.00
2800.00	500.00

NUMBER OF SLICES = 28

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
430.00	190.00					
		130.00	.00	100.00	20.00	.00
450.00	220.00					
		130.00	.00	100.00	20.00	.00
500.00	300.00					
		130.00	.00	100.00	20.00	.00
550.00	345.00					
		130.00	513.47	.00	7.00	.00
616.67	366.67					
		130.00	937.24	.00	7.00	.00
683.33	388.33					
		130.00	1361.08	.00	7.00	.00
750.00	410.00					
		130.00	1523.41	.00	7.00	.00
837.50	427.50					
		130.00	1428.67	.00	7.00	.00
925.00	445.00					
		130.00	1333.94	.00	7.00	.00
1012.50	462.50					
		130.00	1239.21	.00	7.00	.00
1100.00	480.00					
		130.00	1233.90	.00	7.00	.00
1200.00	485.00					
		130.00	1117.13	.00	7.00	.00
1287.50	486.25					
		130.00	904.54	.00	7.00	.00
1375.00	487.50					
		130.00	691.95	.00	7.00	.00
1462.50	488.75					
		130.00	479.36	.00	7.00	.00
1550.00	490.00					
		130.00	905.71	.00	7.00	.00
1600.00	510.00					
		130.00	1400.87	.00	7.00	.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1725.00	515.00	130.00	1297.25	.00	7.00	.00
1850.00	520.00	130.00	1716.72	.00	7.00	.00
1935.00	535.00	130.00	2652.72	.00	7.00	.00
2020.00	550.00	130.00	3276.78	.00	7.00	.00
2090.00	555.00	130.00	3588.75	.00	7.00	.00
2160.00	560.00	130.00	3744.00	.00	7.00	.00
2255.00	560.00	130.00	3744.00	.00	7.00	.00
2350.00	560.00	135.00	3435.98	.00	7.00	.00
2380.00	550.00	135.00	2812.32	.00	7.00	.00
2410.00	540.00	135.00	1664.00	400.00	30.00	.00
2485.00	510.00	135.00	.00	400.00	30.00	.00
2560.00	480.00					

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-409396.9	582774900.0
2	1.257	5.1	14773.1	-32713190.0
3	1.266	5.5	.5	3074.4
4	1.266	5.5	-.1	-85.0

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	430.00	0.0	0.0	0.0	.0	.

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1	450.00	25308.5	5.5	.33	1103.9	396.
2	500.00	372937.7	5.5	.33	5332.6	1611.
3	550.00	745382.5	5.5	.32	12233.0	3595.
4	616.67	1036335.0	5.5	.29	18314.9	1776.
5	683.33	1358264.0	5.5	.28	19751.1	1915.
6	750.00	1711537.0	5.5	.28	21186.5	2054.
7	837.50	1935984.0	5.5	.31	21824.2	2116.
8	925.00	2147605.0	5.5	.34	20591.9	1996.
9	1012.50	2346399.0	5.5	.39	19359.7	1877.
10	1100.00	2532367.0	5.5	.45	18127.4	1757.
11	1200.00	2448439.0	5.5	.39	19099.2	1852.
12	1287.50	2299773.0	5.5	.36	20646.4	2002.
13	1375.00	2146666.0	5.5	.33	21220.5	2057.
14	1462.50	1989119.0	5.5	.31	21794.7	2113.
15	1550.00	1827131.0	5.5	.29	22368.9	2169.
16	1600.00	2145967.0	5.5	.35	19750.1	1915.
17	1725.00	2018330.0	5.5	.37	18823.8	1825.
18	1850.00	1903624.0	5.5	.38	16943.8	1643.
19	1935.00	2032593.0	5.5	.40	15186.1	1472.
20	2020.00	2170427.0	5.5	.42	14414.2	1397.
21	2090.00	2160927.0	5.5	.40	14452.8	1401.
22	2160.00	2152601.0	5.5	.37	14671.1	1422.
23	2255.00	2014392.0	5.5	.34	14933.4	1448.
24	2350.00	1877663.0	5.5	.30	14773.5	1432.
25	2380.00	1633400.0	5.5	.26	16172.5	1568.
26	2410.00	1406582.0	5.5	.22	15310.4	1484.
27	2485.00	392989.1	5.5	.21	14568.9	6958.
28	2560.00	.1	5.5	.00	5724.1	2925.

COMPUTED FACTOR OF SAFETY = 1.266

8-18

TSLOPE TRIAL 20

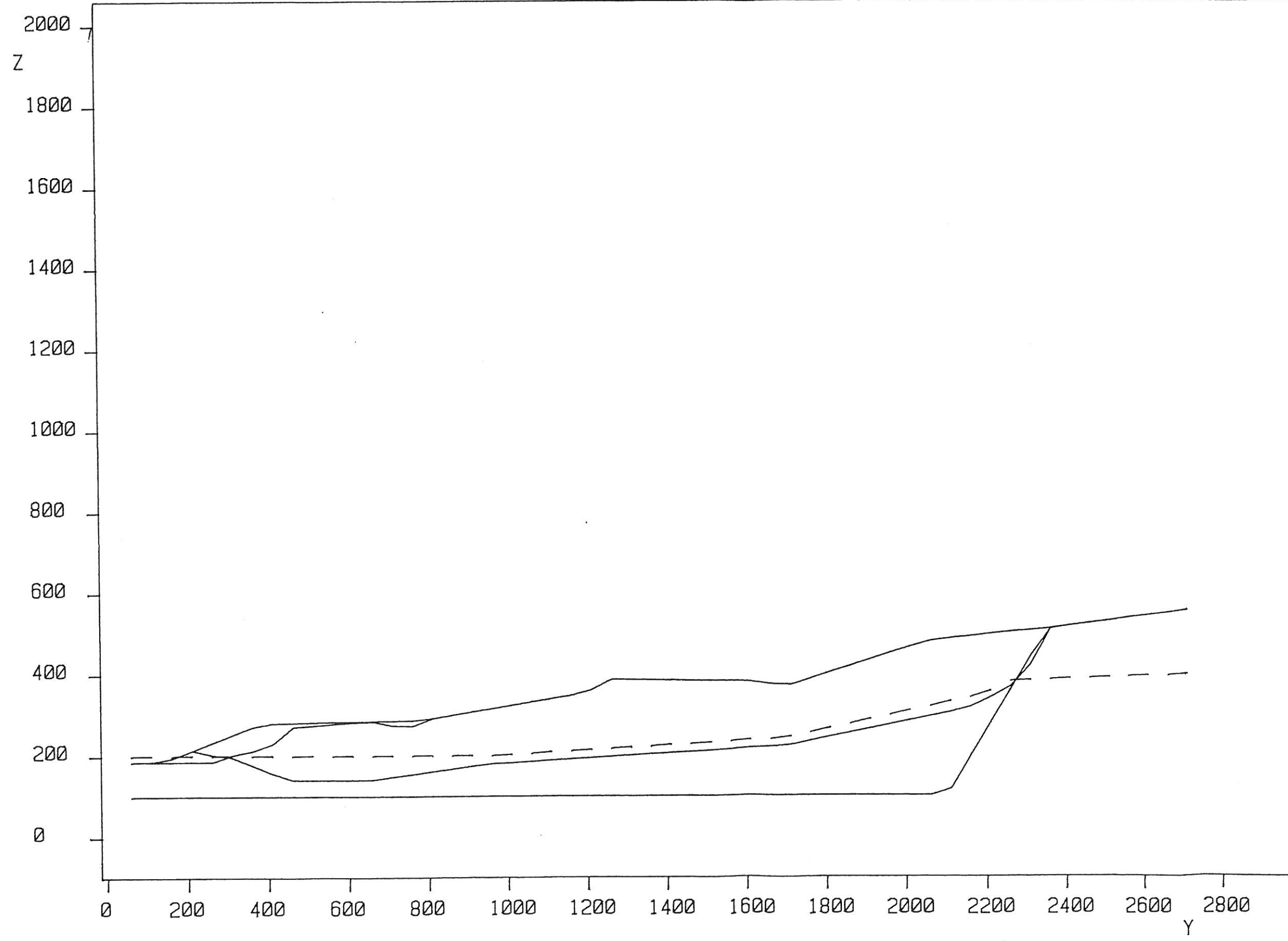
PLOT OF SLOPE GEOMETRY

```

0000000000000000
-000000000000
-XOXOXOXOX000000
O-X-XOXOXOXOX000000
  0000-X-XXOXOXOXOXOX000000000000000000000000
    00000-XX-XX-XXOXOXOXOXOXOXOXOXOXOX0000000000000000
      0000000XX-XX-XXX-XX-XX-XX-XXOXOXOXOXOXOXOX0000000000
        0000000000000000XXOXOXOX-X-XXXX-XXX-XX-XXOXOXOXOX
          000000000000000000000000000000XX-XX-X-XX
            000000000000

```

Execution complete, time = 10.82 seconds



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-8
X = 700

R.T. FRANKIAN & ASSOCIATES

DATE: 03-09-92 SCALE: PLATE: 8-19

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

9-1

Project: ABALONE COVE
Data File: 82025-2H.CLA Analysis by: SDR Date: 01-20-92
Data Set: 2D X=1000 FROM 82025(d) WITHOUT TOEBERM

RUN IDENTIFICATION LABEL: X=1000 TN11 NO BERM

Number of Active Columns	46	Axis of Rotation Y-coordinate	79.99
Max. No. Columns in Y-dir.	46	Axis of Rotation Z-coordinate	9526.92
Slide Volume	2.44E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.18E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.37E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 0.880
Janbu 0.879 (uncorrected)

CLARA TRIAL 11

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	sides	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-2H.CIA
 DATA SET - 2D X=1000 FROM 82025(d) WITHOUT TOEBERM
 ANALYSIS BY SDR
 DATE: 01-20-92

9-2

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 2750
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 2
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	VERT.	FRICTION HOR.	VERT.	PORE-PRESS. RATIO* B-BAR
A/ MATERIALS:							
1	sides	130.00	100.0	100.0	20.0	20.0	-1.00 0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00 0.00

CLARA TRIAL 11

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1965.00	100.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
185.00	185.00
200.00	200.00
250.00	202.00
350.00	236.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical Engineering
 Engineering Geology

1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
750.00	210.00
1400.00	298.00
1650.00	320.00
2200.00	388.00
2300.00	400.00
2800.00	400.00

9-3

CLARA TRIAL 11

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

82025-F X=1000 NO TOEBERM - 82025-3d.IN

14 0 0 0 1.5 13 0 0
3 0 0 0 0 0 62.4 0 0
0 115 250 130 650 205 900 215 1050 290 1250 275 1400
295 1650 360 1800 375 2300 460 2560 460 2635 495 2680
515 2800 515

2
300 500 300 1900 400 2800 400
28 0 0

250.00 130.00 0 0 0 0
350.00 230.00 130 100 20 0
500.00 320.00 130 100 20 0
575.00 325.00 130 0 7 0
650.00 330.00 130 0 7 0
725.00 335.00 130 0 7 0
800.00 340.00 130 0 7 0
900.00 360.00 130 0 7 0
975.00 370.00 130 0 7 0
1050.00 380.00 130 0 7 0
1150.00 400.00 130 0 7 0
1250.00 410.00 130 0 7 0
1325.00 417.50 130 0 7 0
1400.00 425.00 130 0 7 0
1483.33 436.67 130 0 7 0
1566.67 448.33 130 0 7 0
1650.00 460.00 130 0 7 0
1725.00 472.50 130 0 7 0
1800.00 485.00 130 0 7 0
1900.00 495.00 130 0 7 0
2000.00 502.50 130 0 7 0
2100.00 510.00 130 0 7 0
2200.00 513.00 130 0 7 0
2300.00 516.00 130 0 7 0
2375.00 514.50 130 0 7 0
2450.00 513.00 130 0 7 0
2500.00 510.00 130 0 7 0
2560 505 130 0 7 0
2600 500 130 0 7 0
130

STOP

9-4

TSLOPE TRIAL 21

```

*****
* ***** *
* * * * *
* * ----- *
* * TSLOPE - slope stability analysis *
* * Revision 2.50 - 05/30/85 *
* * ----- *
* * * * *
* * TAGA Engineering Software Services *
* * Berkeley, California USA *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by *
* * * * *
* * Design Professionals Management Systems *
* * Kirkland, Washington USA *
* * * * *
* * copyright (c) 1983,84,85 TAGA *
* * copyright (c) 1983,84,85 DPMS *
* * * * *
* ***** *
*****

```

9-5

TSLOPE TRIAL 21

```

*****
82025-F X=1000 NO TOEBERM - BREAK THROUGH TOEBERM 82025-3D.IN
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  14
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F               =      1.500
INITIAL ESTIMATE OF THETA           =      13.000
ALLOWABLE FORCE IMBALANCE            =      10.000
ALLOWABLE MOMENT IMBALANCE          =     100.000
SEISMIC COEFFICIENT                 =          .000
ATMOSPHERIC PRESSURE                 =          .000
UNIT WEIGHT OF WATER                =      62.400

```

```

SLOPE POINTS COORDINATES
      X      Y
      .00    115.00
    250.00   130.00
    650.00   205.00
    900.00   215.00
   1050.00   290.00
   1250.00   275.00
   1400.00   295.00

```

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1650.00	360.00
1800.00	375.00
2300.00	460.00
2560.00	460.00
2635.00	495.00
2680.00	515.00
2800.00	515.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	300.00
500.00	300.00
1900.00	400.00
2800.00	400.00

NUMBER OF SLICES = 28

AT THE TOE THE SLIP SURFACE AND THE GROUND SURFACE DO NOT MEET.
THE Y-COORD OF THE SLIP SURFACE WAS SET EQUAL TO THE Y-COORD
OF THE GROUND SURFACE.

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
250.00	130.00					
		130.00	.00	100.00	20.00	.00
350.00	230.00					
		130.00	.00	100.00	20.00	.00
500.00	320.00					
		130.00	1230.70	.00	7.00	.00
575.00	325.00					
		130.00	1208.54	.00	7.00	.00
650.00	330.00					
		130.00	1186.21	.00	7.00	.00
725.00	335.00					
		130.00	1164.03	.00	7.00	.00
800.00	340.00					
		130.00	1559.85	.00	7.00	.00
900.00	360.00					
		130.00	2090.28	.00	7.00	.00
975.00	370.00					
		130.00	2377.19	.00	7.00	.00
1050.00	380.00					
		130.00	2944.41	.00	7.00	.00
1150.00	400.00					
		130.00	3416.63	.00	7.00	.00
1250.00	410.00					
		130.00	3569.58	.00	7.00	.00
1325.00	417.50					
		130.00	3702.61	.00	7.00	.00
1400.00	425.00					
		130.00	3944.47	.00	7.00	.00
1483.33	436.67					

TSLOPE TRIAL 21

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

1566.67	448.33	130.00	4298.91	.00	7.00	.00
1650.00	460.00	130.00	4653.32	.00	7.00	.00
1725.00	472.50	130.00	5057.15	.00	7.00	.00
1800.00	485.00	130.00	5500.52	.00	7.00	.00
1900.00	495.00	130.00	5808.25	.00	7.00	.00
2000.00	502.50	130.00	6158.23	.00	7.00	.00
2100.00	510.00	130.00	6625.83	.00	7.00	.00
2200.00	513.00	130.00	6954.76	.00	7.00	.00
2300.00	516.00	130.00	7141.33	.00	7.00	.00
2375.00	514.50	130.00	7191.81	.00	7.00	.00
2450.00	513.00	130.00	7098.22	.00	7.00	.00
2500.00	510.00	130.00	6958.51	.00	7.00	.00
2560.00	505.00	130.00	6710.74	.00	7.00	.00
2600.00	478.67	130.00	6004.27	.00	7.00	.00

9-7

TSLOPE TRIAL 21

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-2100841.0	296518000.0
2	.500	13.1	2001531.0	-270359100.0
3	.657	3.1	521215.4	-181716200.0
4	.713	13.1	193700.7	-22198610.0

5	.745	11.3	-446.6	-268453.3
6	.745	11.4	.2	-31.9

9-8

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	250.00	0.0	0.0	0.0	.0	.
1	350.00	155952.1	11.4	.33	3250.5	1723.
2	500.00	323977.4	11.4	.39	11045.1	5530.
3	575.00	203244.9	11.4	.56	16919.4	2787.
4	650.00	91151.9	11.4	1.22	15753.5	2595.
5	725.00	-17749.6	11.4	-5.98	15313.1	2522.
6	800.00	-128903.5	11.4	-.86	15598.1	2569.
7	900.00	-41145.2	11.4	-2.39	15563.5	2564.
8	975.00	-55152.0	11.4	-2.24	14686.5	2419.
9	1050.00	-57065.5	11.4	-2.88	10876.4	1792.
10	1150.00	39030.8	11.4	3.22	10022.5	1651.
11	1250.00	-11248.9	11.4	-9.64	12883.2	2122.
12	1325.00	-51833.6	11.4	-2.17	13699.4	2257.
13	1400.00	-89124.6	11.4	-1.33	13240.2	2181.
14	1483.33	-67342.8	11.4	-1.96	11977.6	1973.
15	1566.67	-38072.3	11.4	-3.84	10343.1	1704.
16	1650.00	-975.8	11.4	*****	8707.3	1434.
17	1725.00	64656.6	11.4	2.37	7878.2	1298.
18	1800.00	135970.1	11.4	1.06	8064.7	1329.
19	1900.00	143069.0	11.4	.98	7892.6	1300.
20	2000.00	130117.3	11.4	1.04	6558.9	1080.
21	2100.00	136493.3	11.4	.96	4839.2	797.
22	2200.00	115405.5	11.4	1.09	3081.8	507.
23	2300.00	123123.6	11.4	.98	1028.3	169.
24	2375.00	111826.8	11.4	.79	20.6	3.
25	2450.00	102173.3	11.4	.56	-85.5	-14.
26	2500.00	83050.3	11.4	.44	-189.6	-31.
27	2560.00	55676.9	11.4	.25	-451.6	-74.
28	2600.00	-.2	11.4	.00	-3144.7	-518.

COMPUTED FACTOR OF SAFETY = .745

PLOT OF SLOPE GEOMETRY

```

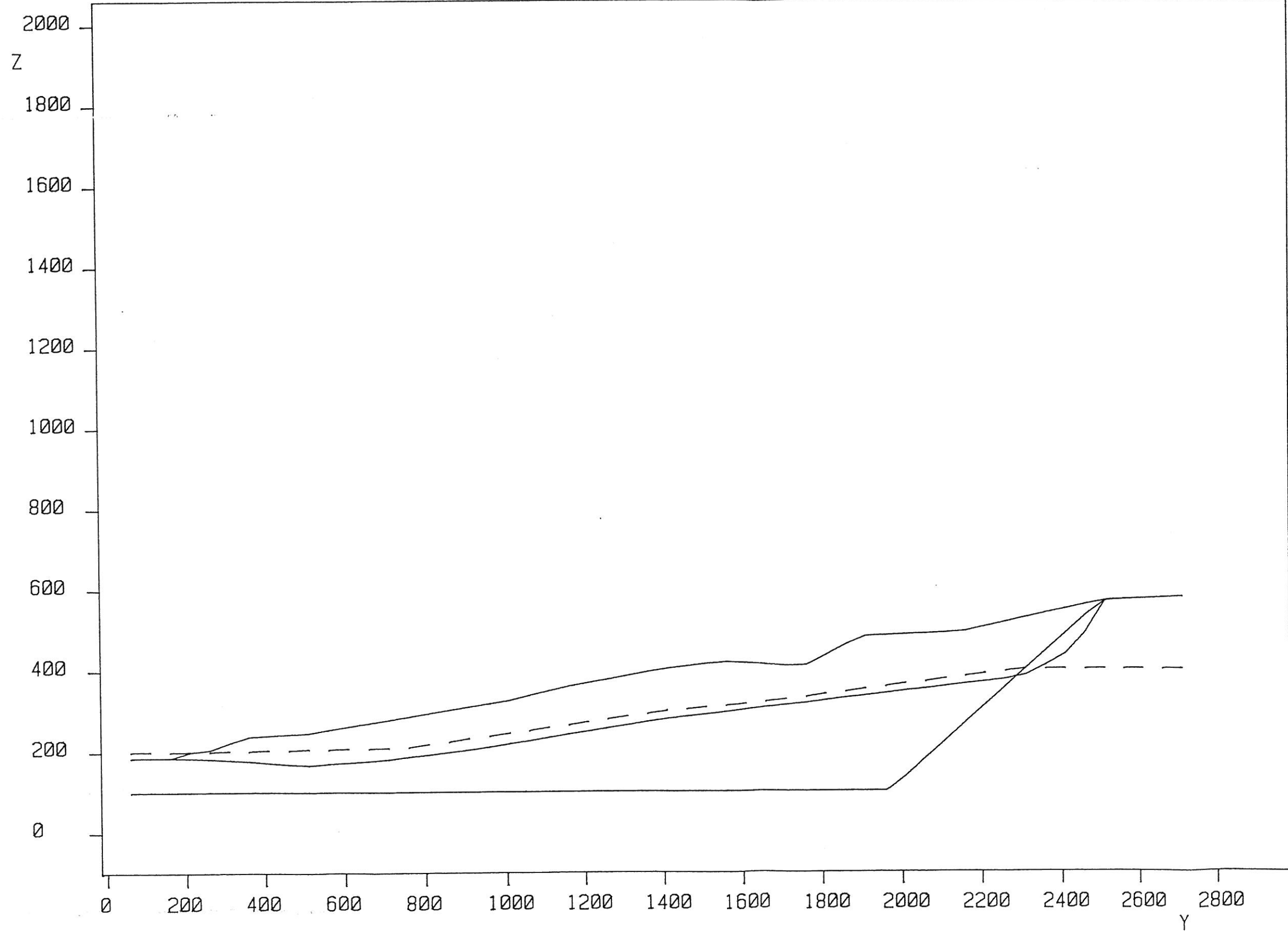
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              000000000000000000X0XX0XX0XX0XXX-XXX-
                00000000000000000000
  
```

TSLOPE TRIAL 21

R. T. FRANKIAN & ASSOCIATES

Geotechnical Engineering

Execution complete, time = 11.52 seconds



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-9
X = 1000

R.T. FRANKIAN & ASSOCIATES

DATE: 03-13-92 SCALE: PLATE: 9-10

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

9-11

Project: ABALONE COVE
Data File: 82025-4D.CLA Analysis by: SDR Date: 01-20-92
Data Set: X=1000 W/ TOEBERM - break through toeberm

RUN IDENTIFICATION LABEL: X=1000 TN7A BERM

Number of Active Columns	46	Axis of Rotation Y-coordinate	252.17
Max. No. Columns in Y-dir.	46	Axis of Rotation Z-coordinate	8654.19
Slide Volume	2.48E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	3.23E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.37E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

CLARA TRIAL 7A

FACTOR OF SAFETY: Bishop's ... 0.922
Janbu 0.920 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	sides	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-4D.CLA
 DATA SET - X=1000 W/ TOEBERM - break through toeberm
 ANALYSIS BY SDR
 DATE: 01-20-92

9-12

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 2750
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 3
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR. VERT.	FRICTION HOR. VERT.	PORE-PRESS. RATIO* B-BAR

A/ MATERIALS:					
1	sides	130.00	100.0 100.0	20.0 20.0	-1.00 0.00
2	BOTTOM	130.00	0.0 0.0	7.0 7.0	-1.00 0.00
3	TOEBERM	135.00	400.0 400.0	30.0 30.0	-1.00 0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
1965.00	100.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
185.00	185.00
200.00	200.00
250.00	202.00
350.00	236.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00

CLARA TRIAL 7A

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1550.00	420.00
1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
120.00	185.00
170.00	210.00
240.00	240.00
510.00	246.00
1000.00	324.00
1150.00	358.00
1400.00	402.00
1550.00	420.00
1750.00	406.00
1900.00	482.00
2150.00	492.00
2500.00	568.00
2800.00	582.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
750.00	210.00
1400.00	298.00
1650.00	320.00
2200.00	388.00
2300.00	400.00
2800.00	400.00

9-13

CLARA TRIAL 7A

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
<u>Engineering</u>	<u>Geology</u>

2025-F X=1000 WITH TOEBERM - BREAK THROUGH TOEBERM 82025-3C.IN

1 14 0 0 0 1.5 13 0 0

3 0 0 0 0 0 62.4 0 0

0 115 250 130 650 205 900 215 1050 290 1250 275 1400

295 1650 360 1800 375 2300 460 2560 460 2635 495 2680 515

2800 515

2
4
0 300 500 300 1900 400 2800 400

28 0 0

250.00 130.00 0 0 0 0

350.00 230.00 130 100 20 0

500.00 320.00 130 100 20 0

575.00 325.00 130 0 7 0

650.00 330.00 130 0 7 0

725.00 335.00 130 0 7 0

800.00 340.00 130 0 7 0

900.00 360.00 130 0 7 0

975.00 370.00 130 0 7 0

1050.00 380.00 130 0 7 0

1150.00 400.00 130 0 7 0

1250.00 410.00 130 0 7 0

1325.00 417.50 130 0 7 0

1400.00 425.00 130 0 7 0

1483.33 436.67 130 0 7 0

1566.67 448.33 130 0 7 0

1650.00 460.00 130 0 7 0

1725.00 472.50 130 0 7 0

1800.00 485.00 130 0 7 0

1900.00 495.00 130 0 7 0

2000.00 502.50 130 0 7 0

2100.00 510.00 130 0 7 0

2200.00 513.00 130 0 7 0

2300.00 516.00 130 0 7 0

2375.00 514.50 130 0 7 0

2450.00 513.00 130 0 7 0

2500.00 510.00 130 0 7 0

2560.00 504.00 130 0 7 0

2635.00 495.00 135 400 30 0

130

TOP

9-14

TSLOPE TRIAL 22

R. T. FRANKIAN & ASSOCIATES

Geotechnical | Engineering
Engineering | Geology

```

*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

```

*****
82025-F X=1000 WITH TOEBERM - BREAK THROUGH TOEBERM 82025-3C.IN
*****

```

TSLOPE TRIAL 22

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  14
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F              =      1.500
INITIAL ESTIMATE OF THETA          =      13.000
ALLOWABLE FORCE IMBALANCE           =      10.000
ALLOWABLE MOMENT IMBALANCE         =     100.000
SEISMIC COEFFICIENT                =           .000
ATMOSPHERIC PRESSURE               =           .000
UNIT WEIGHT OF WATER              =      62.400

```

SLOPE POINTS COORDINATES

X	Y
.00	115.00
250.00	130.00
650.00	205.00
900.00	215.00
1050.00	290.00
1250.00	275.00
1400.00	295.00

1650.00	360.00
1800.00	375.00
2300.00	460.00
2560.00	460.00
2635.00	495.00
2680.00	515.00
2800.00	515.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	300.00
500.00	300.00
1900.00	400.00
2800.00	400.00

NUMBER OF SLICES = 28

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
250.00	130.00	130.00	.00	100.00	20.00	.00
350.00	230.00	130.00	.00	100.00	20.00	.00
500.00	320.00	130.00	1230.70	.00	7.00	.00
575.00	325.00	130.00	1208.54	.00	7.00	.00
650.00	330.00	130.00	1186.21	.00	7.00	.00
725.00	335.00	130.00	1164.03	.00	7.00	.00
800.00	340.00	130.00	1559.85	.00	7.00	.00
900.00	360.00	130.00	2090.28	.00	7.00	.00
975.00	370.00	130.00	2377.19	.00	7.00	.00
1050.00	380.00	130.00	2944.41	.00	7.00	.00
1150.00	400.00	130.00	3416.63	.00	7.00	.00
1250.00	410.00	130.00	3569.58	.00	7.00	.00
1325.00	417.50	130.00	3702.61	.00	7.00	.00
1400.00	425.00	130.00	3944.47	.00	7.00	.00
1483.33	436.67	130.00	4298.91	.00	7.00	.00
1566.67	448.33	130.00	4653.32	.00	7.00	.00
1650.00	460.00	130.00	5057.15	.00	7.00	.00
1725.00	472.50					

TSLOPE TRIAL 22

		130.00	5500.52	.00	7.00	.00
1800.00	485.00	130.00	5808.25	.00	7.00	.00
1900.00	495.00	130.00	6158.23	.00	7.00	.00
2000.00	502.50	130.00	6625.83	.00	7.00	.00
2100.00	510.00	130.00	6954.76	.00	7.00	.00
2200.00	513.00	130.00	7141.33	.00	7.00	.00
2300.00	516.00	130.00	7191.81	.00	7.00	.00
2375.00	514.50	130.00	7098.22	.00	7.00	.00
2450.00	513.00	130.00	6958.51	.00	7.00	.00
2500.00	510.00	130.00	6680.78	.00	7.00	.00
2560.00	504.00	135.00	6302.40	400.00	30.00	.00
2635.00	495.00					

9-17

RESULTS

TSLOPE TRIAL 22

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	1.500	13.0	-2232106.0	283687000.0
2	.500	12.3	1611263.0	-324239600.0
3	.684	2.3	130848.5	-48817310.0
4	.706	.0	-88.1	-45623.3
5	.706	.0	-.1	55.3

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	250.00	0.0	0.0	0.0	.0	.

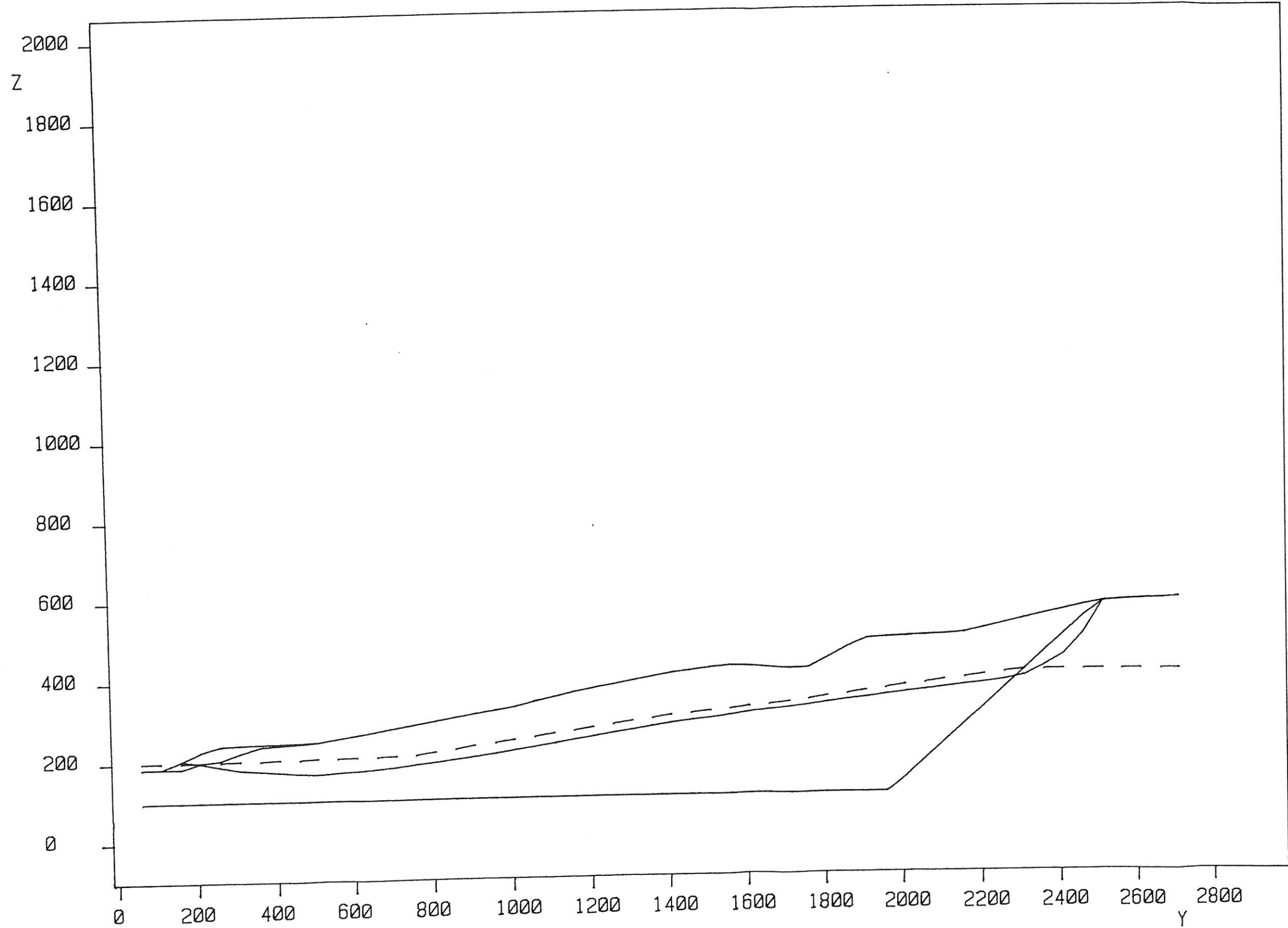
COMPUTED FACTOR OF SAFETY = .706

TSLOPE TRIAL 22

00000000-000000
000XX00000-0
-00XX0XX0X00000000000
00-XX0X0XX0XX0XX0XX000 0000000000
0000X0XX0XX0XX0XX0XX0XX0XX0XX00000000
00000000000000000000XX0XX0XX0XX0XX0XX00000
000000000000000000XX0XX0XX0XX0X0000000000000000
-
-0-000-00-000-000-

TSLOPE T

Geotechnical | Engineering



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-9
X = 1000

R.T. FRANKIAN & ASSOCIATES

DATE: 03-14-92 SCALE: 9-19 PLATE: 9-19

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE
Data File: 82025-7B.CLA Analysis by: SDR Date: 03-04-92
Data Set: X=1300 WATER 20' ABOVE NO TOEBERM

RUN IDENTIFICATION LABEL: X=1300 TN31 NO BERM

Number of Active Columns	45	Axis of Rotation Y-coordinate	-38.10
Max. No. Columns in Y-dir.	45	Axis of Rotation Z-coordinate	8812.61
Slide Volume	1.90E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.48E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.32E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ...	1.040
Janbu	1.037 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS. RATIO* B-BAR	
			HOR.	VERT.	HOR.	VERT.		
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-7B.CLA
 DATA SET - X=1300 WATER 20' ABOVE NO TOEBERM
 ANALYSIS BY SDR
 DATE: 03-04-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION)	50
MESH START Y-COORDINATE	10
MESH END Y-COORDINATE	2790
ROW WIDTH	1
TRANSVERSE MESH WIDTH	1
NUMBER OF MATERIALS	2
NUMBER OF DISCONTINUITIES	0
NUMBER OF PIEZOMETRIC SURFACES	1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION HOR.	VERT.	FRICTION HOR.	VERT.	PORE-PRESS. RATIO* B-BAR
A/ MATERIALS:							
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00 0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00 0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2000.00	100.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
225.00	195.00
230.00	205.00
280.00	210.00
410.00	242.00
490.00	250.00
900.00	324.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

10-3

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
570.00	240.00
920.00	300.00
1220.00	320.00
1780.00	360.00
2180.00	400.00
2800.00	400.00

CLARA TRIAL 31

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

=1300 COMPARE TO TRIAL 30 CLARA FILE 82025-7D.IN/OUT

1 16 0 0 0 2 11 0 0

0 0 0 0 0 62.4 0 0

0 300 7 375 46 640 60 860 100 1180 150 1300 150 1570 220

1900 276 2310 350 2390 358 2460 362 2520 390 2570 395

2600 415 2800 415

0 200 620 200 1020 240 1580 280 1880 300 2230 360 2600 400 2800 400

9 0 0

00 7 0 0 0 0

375 56 130 100 20 0

50 100 130 100 20 0

00 140 130 0 7 0

640 220 130 0 7 0

860 240 130 0 7 0

020 260 130 0 7 0

180 270 130 0 7 0

1300 280 130 0 7 0

570 300 130 0 7 0

880 320 130 0 7 0

1900 324 130 0 7 0

000 340 130 0 7 0

130 360 130 0 7 0

2230 380 130 0 7 0

2310 385 130 0 7 0

390 389 130 0 7 0

460 395 130 0 7 0

2520 400 130 0 7 0

569 396 130 0 7 0

6

STOP

10-4

TSLOPE TRIAL 32

R. T. FRANKIAN & ASSOCIATES

Geotechnical | Engineering
Engineering | Geology

```

*****
* ***** *
* * * * *
* * ----- * *
* * TSLOPE - slope stability analysis * *
* * Revision 2.50 - 05/30/85 * *
* * ----- * *
* * * * *
* * TAGA Engineering Software Services * *
* * Berkeley, California USA * *
* * * * *
* * IBM PC & 8086/8088 MS-DOS Version by * *
* * * * *
* * Design Professionals Management Systems * *
* * Kirkland, Washington USA * *
* * * * *
* * copyright (c) 1983,84,85 TAGA * *
* * copyright (c) 1983,84,85 DPMS * *
* * * * *
* ***** *
*****

```

10-5

```

*****
X=1300 COMPARE TO TRIAL 30 CLARA FILE 82025-7D.IN/OUT
*****

```

TSLOPE TRIAL 32

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  16
NUMBER OF POINT LOADS               0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F                =      2.000
INITIAL ESTIMATE OF THETA            =     11.000
ALLOWABLE FORCE IMBALANCE             =     10.000
ALLOWABLE MOMENT IMBALANCE           =    100.000
SEISMIC COEFFICIENT                 =       .000
ATMOSPHERIC PRESSURE                 =       .000
UNIT WEIGHT OF WATER                 =     62.400

```

SLOPE POINTS COORDINATES

X	Y
.00	.00
300.00	7.00
375.00	46.00
640.00	60.00
860.00	100.00
1180.00	150.00
1300.00	150.00

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

1570.00	220.00
1900.00	276.00
2310.00	350.00
2390.00	358.00
2460.00	362.00
2520.00	390.00
2570.00	395.00
2600.00	415.00
2800.00	415.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
620.00	200.00
1020.00	240.00
1580.00	280.00
1880.00	300.00
2230.00	360.00
2600.00	400.00
2800.00	400.00

NUMBER OF SLICES = 19

AT THE TOE THE SLIP SURFACE AND THE GROUND SURFACE DO NOT MEET.
THE Y-COORD OF THE SLIP SURFACE WAS SET EQUAL TO THE Y-COORD
OF THE GROUND SURFACE.

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
300.00	7.00	130.00	.00	100.00	20.00	.00
375.00	56.00	130.00	.00	100.00	20.00	.00
450.00	100.00	130.00	.00	.00	7.00	.00
500.00	140.00	130.00	.00	.00	7.00	.00
640.00	220.00	130.00	1051.67	.00	7.00	.00
860.00	240.00	130.00	1111.33	.00	7.00	.00
1020.00	260.00	130.00	1198.19	.00	7.00	.00
1180.00	270.00	130.00	1197.91	.00	7.00	.00
1300.00	280.00	130.00	1262.08	.00	7.00	.00
1570.00	300.00	130.00	1264.95	.00	7.00	.00
1880.00	320.00	130.00	1229.73	.00	7.00	.00
1900.00	324.00	130.00	1212.62	.00	7.00	.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

2000.00	340.00	130.00	1109.36	.00	7.00	.00
2130.00	360.00	130.00	1126.42	.00	7.00	.00
2230.00	380.00	130.00	1125.52	.00	7.00	.00
2310.00	385.00	130.00	868.07	.00	7.00	.00
2390.00	389.00	130.00	672.97	.00	7.00	.00
2460.00	395.00	130.00	587.46	.00	7.00	.00
2520.00	400.00	130.00	319.68	.00	7.00	.00
2569.00	394.90					

10-7

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	2.000	11.0	-2152940.0	93984820.0
2	1.000	11.3	-750443.9	48927160.0
3	.774	8.1	41178.7	-12812340.0
4	.784	8.9	-7.1	8983.4
5	.784	8.9	.0	2.2

TSLOPE TRIAL 32

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	300.00	0.0	0.0	0.0	.0	.
1	375.00	-3369.7	8.9	1.24	440.1	331.
2	450.00	14613.3	8.9	.10	2979.1	1510.
3	500.00	251896.8	8.9	.18	7288.1	1141.
4	640.00	1070723.0	8.9	.23	13931.9	2182.
5	860.00	823299.0	8.9	.23	18360.3	2875.
6	1020.00	761256.6	8.9	.22	16500.4	2584.
7	1180.00	537996.6	8.9	.20	15440.8	2418.
8	1300.00	416465.1	8.9	.16	15012.3	2351.
9	1570.00	162484.2	8.9	.20	12389.2	1940.
10	1880.00	-15188.0	8.9	-1.04	7033.0	1101.
11	1900.00	-6039.0	8.9	-2.54	4751.5	744.

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

12	2000.00	15211.4	8.9	1.06	4742.6	742.
13	2130.00	36011.8	8.9	.48	4505.9	705.
14	2230.00	77789.3	8.9	.28	4323.9	677.
15	2310.00	52638.8	8.9	.27	4046.9	633.
16	2390.00	26403.4	8.9	.20	3445.5	539.
17	2460.00	13054.8	8.9	.15	3469.9	543.
18	2520.00	6250.5	8.9	.43	2196.4	344.
19	2569.00	.0	8.9	.00	355.8	55.

COMPUTED FACTOR OF SAFETY = .784

10-8

1*****
PLOT OF SLOPE GEOMETRY

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-00XX000000000000000000000000
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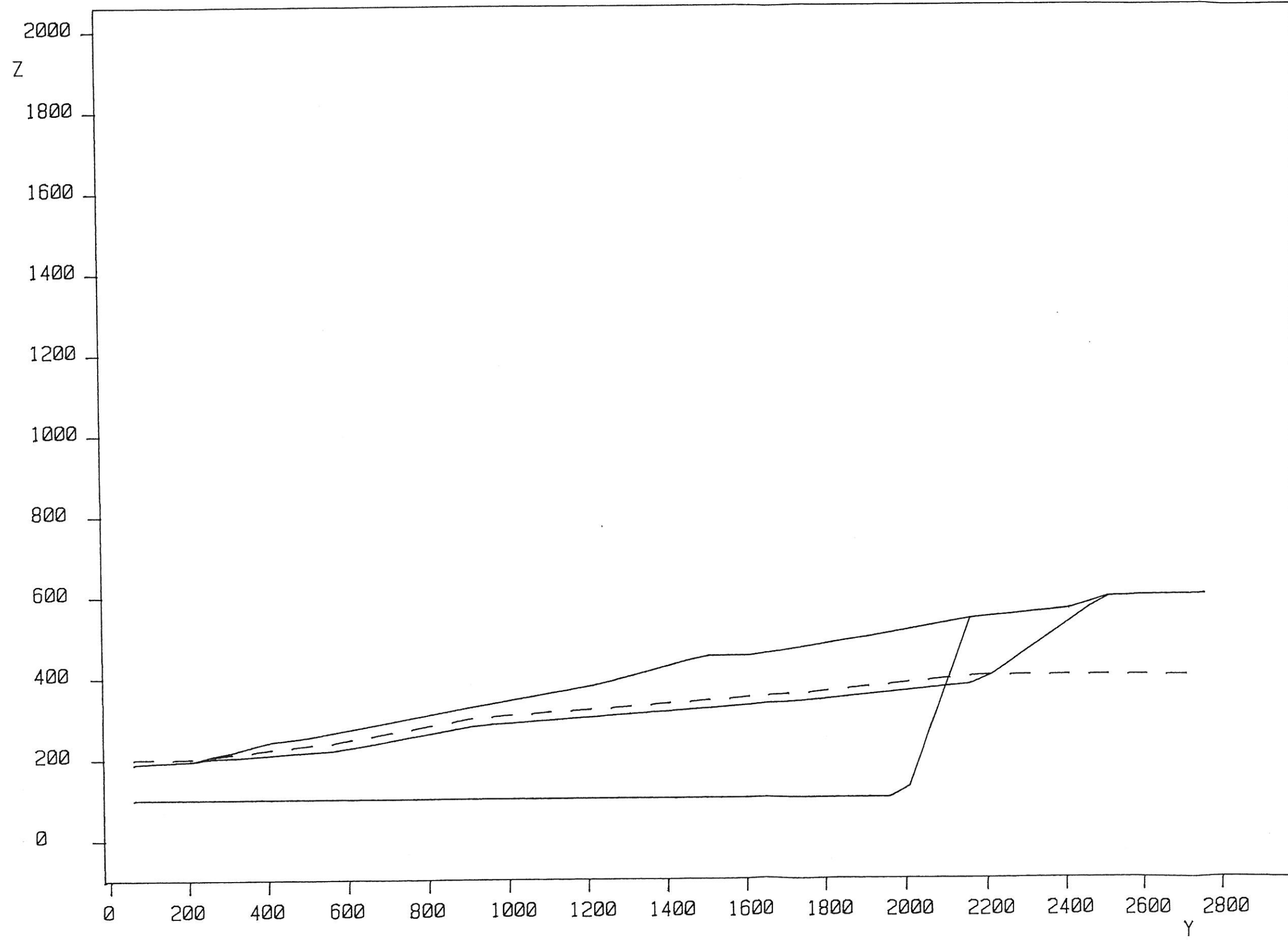
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Execution complete, time = 8.90 seconds

TSLOPE TRIAL 32

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-10
X = 1300

R.T. FRANKIAN & ASSOCIATES

DATE: 03-13-92 SCALE: 10-9 PLATE: 10-9

R. T. Frankian & Associates Inc., Burbank, CA

CLARA - SLOPE STABILITY ANALYSIS, BISHOP'S SIMPLIFIED AND JANBU METHODS

Project: ABALONE COVE
Data File: 82025-7A.CLA Analysis by: SDR Date: 03-02-92
Data Set: X=1300 TOEBERM W/ WATER 20' ABOVE SLIDE

RUN IDENTIFICATION LABEL: X=1300 TN29 BERM

Number of Active Columns	45	Axis of Rotation Y-coordinate	-38.10
Max. No. Columns in Y-dir.	45	Axis of Rotation Z-coordinate	8812.61
Slide Volume	1.94E+05	Total Water Trust Force	0.00E+00
Weight of Slide Mass ...	2.52E+07	Unbalanced Transverse Force .	0.00E+00
Sliding Surface Area ...	2.32E+03	Z-coord. of unbalanced force	0.00
Earthquake Acceleration	0.00	Negative Norm. Forces	0.00 % OF WEIGHT

!! NUMBER OF WARNINGS ISSUED CONCERNING THE PRESENT SOLUTION: ... 0

FACTOR OF SAFETY: Bishop's ... 1.056
Janbu 1.053 (uncorrected)

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR
A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

R. T. FRANKIAN & ASSOCIATES

Geotechnical Engineering
Engineering Geology

10-10

CLARA TRIAL 29

R. T. Frankian & Associates Inc., Burbank, CA
 SLOPE STABILITY ANALYSIS - DATA FILE SUMMARY
 PROJECT - ABALONE COVE
 DATA FILE - 82025-7A.CIA
 DATA SET - X=1300 TOEBERM W/ WATER 20' ABOVE SLIDE
 ANALYSIS BY SDR
 DATE: 03-02-92

UNIT WEIGHT OF WATER = 62.4

CONTROL VARIABLES

COLUMN LENGTH (Y-DIRECTION) 50
 MESH START Y-COORDINATE 10
 MESH END Y-COORDINATE 2790
 ROW WIDTH 1
 TRANSVERSE MESH WIDTH 1
 NUMBER OF MATERIALS 3
 NUMBER OF DISCONTINUITIES 0
 NUMBER OF PIEZOMETRIC SURFACES 1

SUMMARY OF MATERIAL AND DISCONTINUITY PROPERTIES

NO.	LABEL	UNIT WEIGHT	COHESION		FRICTION		PORE-PRESS.	
			HOR.	VERT.	HOR.	VERT.	RATIO*	B-BAR

A/ MATERIALS:								
1	SIDES	130.00	100.0	100.0	20.0	20.0	-1.00	0.00
2	BOTTOM	130.00	0.0	0.0	7.0	7.0	-1.00	0.00
3	TOEBERM	135.00	400.0	400.0	30.0	30.0	-1.00	0.00

NOTES:

Material layers are numbered from bottom up

* Negative integer signifies the applicable piezometric surface number

CROSS-SECTION NUMBER 1 X = 0

MATERIAL NO. 1

Y-COORDINATE	Z-COORDINATE
0.00	100.00
2000.00	100.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 2

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
225.00	195.00
230.00	205.00
280.00	210.00
410.00	242.00
490.00	250.00

900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

MATERIAL NO. 3

Y-COORDINATE	Z-COORDINATE
0.00	185.00
190.00	195.00
210.00	210.00
250.00	240.00
410.00	242.00
490.00	250.00
900.00	324.00
1230.00	380.00
1500.00	450.00
1620.00	450.00
1940.00	500.00
2160.00	540.00
2425.00	564.00
2500.00	593.00
2800.00	600.00

PIEZO SURFACE NO 1

Y-COORDINATE	Z-COORDINATE
0.00	200.00
200.00	200.00
570.00	240.00
920.00	300.00
1220.00	320.00
1780.00	360.00
2180.00	400.00
2800.00	400.00

10-12

CLARA TRIAL 29

R. T. FRANKIAN & ASSOCIATES

<u>Geotechnical</u>	<u>Engineering</u>
Engineering	Geology

=1300 COMPARE TO TRIAL 29 CLARA FILE 82025-7C.IN/OUT

I 15 0 0 0 2 11 0 0

3 0 0 0 0 0 62.4 0 0

0 300 7 375 46 640 60 860 100 1180 150 1300 150 1570 220
1900 276 2310 350 2390 358 2550 360 2590 390 2610 405
2800 415

0 200 620 200 1020 240 1580 280 1880 300 2230 360 2600 400 2800 400

20 0 0

00 7 0 0 0 0

375 56 130 100 20 0

450 100 130 100 20 0

00 140 130 0 7 0

0 220 130 0 7 0

860 240 130 0 7 0

20 260 130 0 7 0

80 270 130 0 7 0

1300 280 130 0 7 0

1570 300 130 0 7 0

80 320 130 0 7 0

00 324 130 0 7 0

2000 340 130 0 7 0

30 360 130 0 7 0

30 380 130 0 7 0

2310 385 130 0 7 0

90 389 130 0 7 0

50 390 130 0 7 0

2550 400 130 0 7 0

2569 396 130 0 7 0

89 392 135 400 30 0

STOP

10-13

TSLOPE TRIAL 30

R. T. FRANKIAN & ASSOCIATES

Geotechnical | Engineering
Engineering | Geology

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*****
* ***** *
* * *
* * ----- *
* * TSLOPE - slope stability analysis *
* * Revision 2.50 - 05/30/85 *
* * ----- *
* * *
* * TAGA Engineering Software Services *
* * Berkeley, California USA *
* * *
* * IBM PC & 8086/8088 MS-DOS Version by *
* * *
* * Design Professionals Management Systems *
* * Kirkland, Washington USA *
* * *
* * copyright (c) 1983,84,85 TAGA *
* * copyright (c) 1983,84,85 DPMS *
* * *
* ***** *
*****

```

```

*****
X=1300 COMPARE TO TRIAL 29 CLARA FILE 82025-7C.IN/OUT
*****

```

```

*****
INPUT DATA
*****

```

```

CONTROL DATA,
NUMBER OF TRIAL SLIP SURFACES      1
NUMBER OF SPECIFIED SLOPE POINTS  15
NUMBER OF POINT LOADS              0
NUMBER OF PRESSURE LOADS           0

INITIAL ESTIMATE OF F               =      2.000
INITIAL ESTIMATE OF THETA           =     11.000
ALLOWABLE FORCE IMBALANCE            =     10.000
ALLOWABLE MOMENT IMBALANCE          =    100.000
SEISMIC COEFFICIENT                 =       .000
ATMOSPHERIC PRESSURE                 =       .000
UNIT WEIGHT OF WATER                =     62.400

```

SLOPE POINTS COORDINATES

X	Y
.00	.00
300.00	7.00
375.00	46.00
640.00	60.00
860.00	100.00
1180.00	150.00
1300.00	150.00

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Geotechnical	Engineering
Engineering	Geology

1570.00	220.00
1900.00	276.00
2310.00	350.00
2390.00	358.00
2550.00	360.00
2590.00	390.00
2610.00	405.00
2800.00	415.00

POINTS DEFINING PHREATIC SURFACE

X	Y
.00	200.00
620.00	200.00
1020.00	240.00
1580.00	280.00
1880.00	300.00
2230.00	360.00
2600.00	400.00
2800.00	400.00

NUMBER OF SLICES = 20

AT THE TOE THE SLIP SURFACE AND THE GROUND SURFACE DO NOT MEET.
THE Y-COORD OF THE SLIP SURFACE WAS SET EQUAL TO THE Y-COORD
OF THE GROUND SURFACE.

SLICE DATA

X	Y	GAMMA	U	CEE	PHI	DPHI
300.00	7.00					
375.00	56.00	130.00	.00	100.00	20.00	.00
450.00	100.00	130.00	.00	100.00	20.00	.00
500.00	140.00	130.00	.00	.00	7.00	.00
640.00	220.00	130.00	.00	.00	7.00	.00
860.00	240.00	130.00	1051.67	.00	7.00	.00
1020.00	260.00	130.00	1111.33	.00	7.00	.00
1180.00	270.00	130.00	1198.19	.00	7.00	.00
1300.00	280.00	130.00	1197.91	.00	7.00	.00
1570.00	300.00	130.00	1262.08	.00	7.00	.00
1880.00	320.00	130.00	1264.95	.00	7.00	.00
1900.00	324.00	130.00	1229.73	.00	7.00	.00
		130.00	1212.62	.00	7.00	.00

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

2000.00	340.00					
2130.00	360.00	130.00	1109.36	.00	7.00	.00
2230.00	380.00	130.00	1126.42	.00	7.00	.00
2310.00	385.00	130.00	1125.52	.00	7.00	.00
2390.00	389.00	130.00	868.07	.00	7.00	.00
2450.00	390.00	130.00	552.39	.00	7.00	.00
2550.00	400.00	130.00	357.38	.00	7.00	.00
2569.00	396.00	130.00	165.09	.00	7.00	.00
2589.00	389.25	135.00	.00	400.00	30.00	.00

10-16

RESULTS

ITERATION	F	THETA DEGREES	EXCESS FORCE	EXCESS MOMENT
1	2.000	11.0	-2101411.0	99064860.0
2	1.000	11.5	-647799.1	60419730.0
3	.910	1.5	-470077.9	1985772.0
4	.865	11.5	-191269.6	53283960.0
5	.810	8.2	782.2	-913860.8
6	.810	8.2	.0	7.8

TSLOPE TRIAL 30

SECTION NUMBER	X COORDINATE	INTERSLICE FORCES			EFFECTIVE STRESSES ON SLI	
		FORCE	THETA	POA	NORMAL	SHEA
0	300.00	0.0	0.0	0.0	.0	.
1	375.00	-2495.2	8.2	1.27	443.8	322.
2	450.00	19346.8	8.2	.17	2997.9	1470.
3	500.00	260160.0	8.2	.19	7351.0	1114.
4	640.00	1092486.0	8.2	.24	14014.1	2125.
5	860.00	866319.1	8.2	.25	18343.0	2780.
6	1020.00	817879.3	8.2	.25	16494.5	2500.
7	1180.00	607910.6	8.2	.26	15419.0	2337.
8	1300.00	495904.1	8.2	.23	14996.5	2273.
9	1570.00	259726.6	8.2	.36	12374.4	1875.
10	1880.00	93724.7	8.2	.74	7023.8	1064.
11	1900.00	103349.8	8.2	.69	4757.6	721.
12	2000.00	126988.4	8.2	.62	4745.2	719.
13	2130.00	150745.3	8.2	.59	4507.8	683.
14	2230.00	194688.8	8.2	.54	4329.5	656.
15	2310.00	171269.2	8.2	.58	4041.7	612.
16	2390.00	146527.3	8.2	.50	3440.2	521.
17	2450.00	118022.5	8.2	.35	3553.0	538.

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology

18	2550.00	99552.5	8.2	.20	4236.1	642.
19	2569.00	69624.9	8.2	.15	4208.9	637.
20	2589.00	.1	8.2	.00	2810.1	2493.

COMPUTED FACTOR OF SAFETY = .810

10-17

PLOT OF SLOPE GEOMETRY

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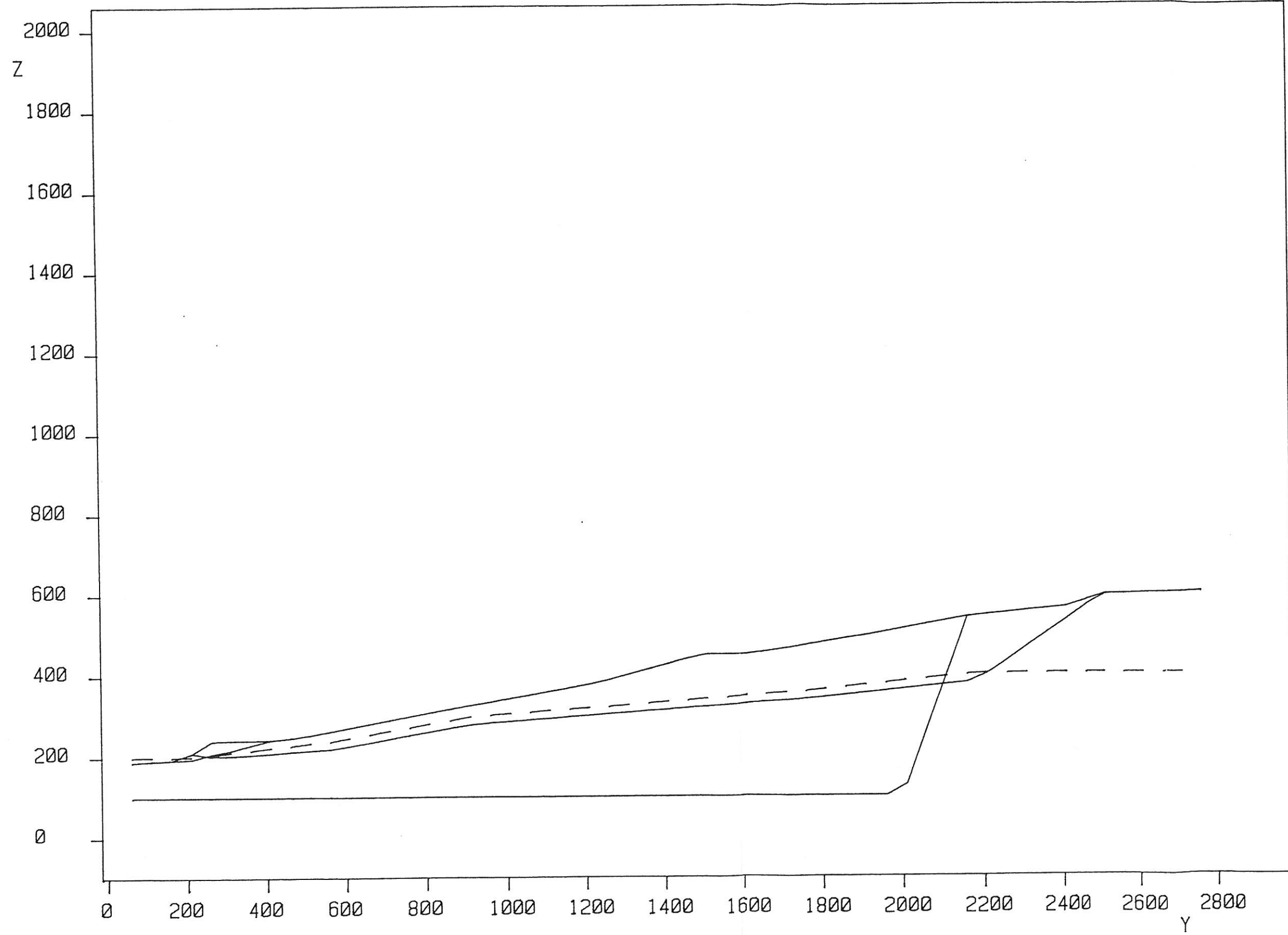
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TSLOPE TRIAL 30

R. T. FRANKIAN & ASSOCIATES

Geotechnical	Engineering
Engineering	Geology



RANCHO PALOS VERDES
ABALONE COVE LANDSLIDE
PRELIMINARY STABILITY ANALYSIS
JOB NO. 82-025-F

Use with TRIAL NO. SN-10
X = 1300

R.T. FRANKIAN & ASSOCIATES

DATE: 03-15-92 SCALE: 10-18