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土木研究所資料

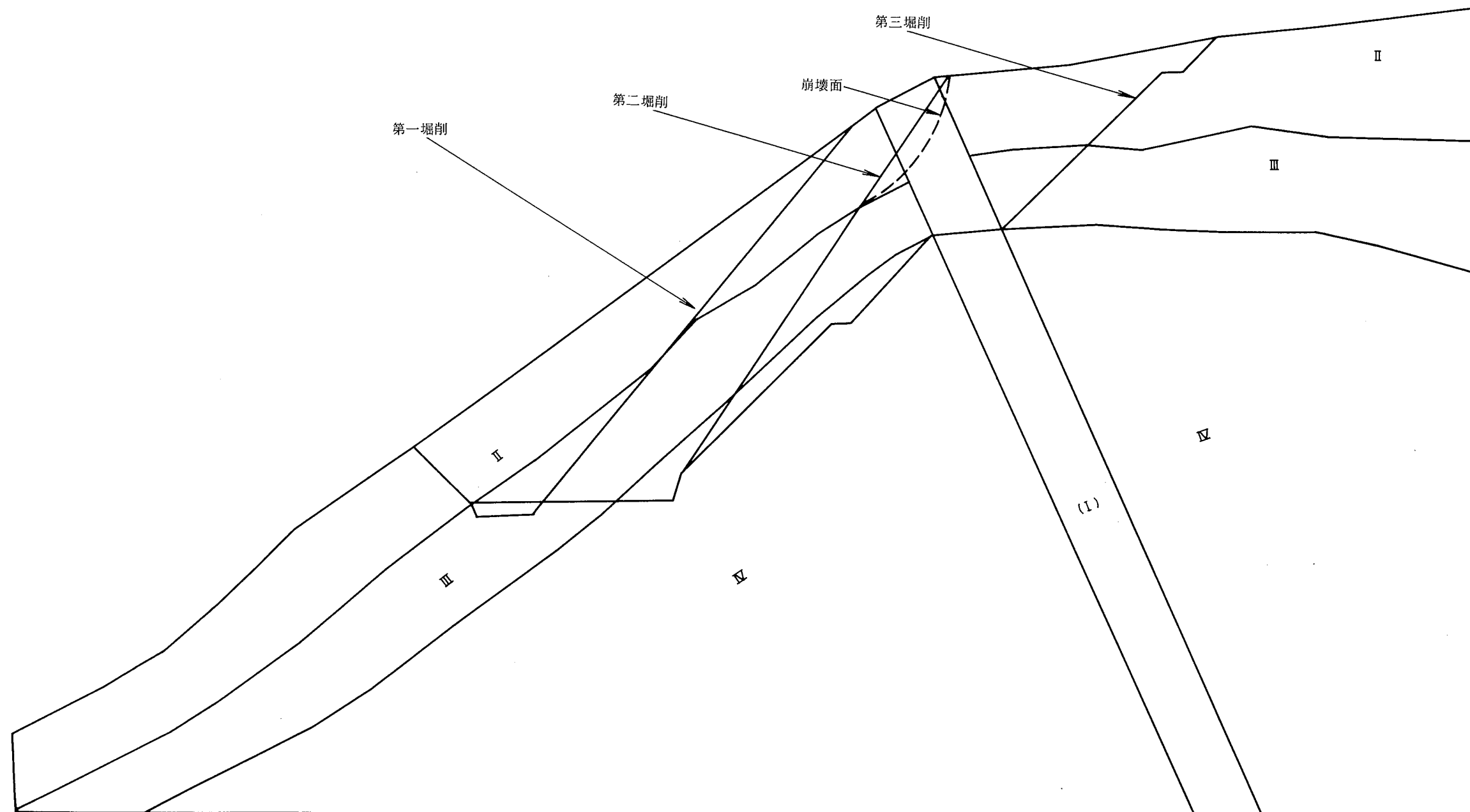
岩盤斜面・のり面の計算資料集

昭和58年3月

建設省土木研究所砂防部急傾斜地崩壊研究室

地区名：国道184号線畑地区(建設省中国地建福山工事事務所管内)

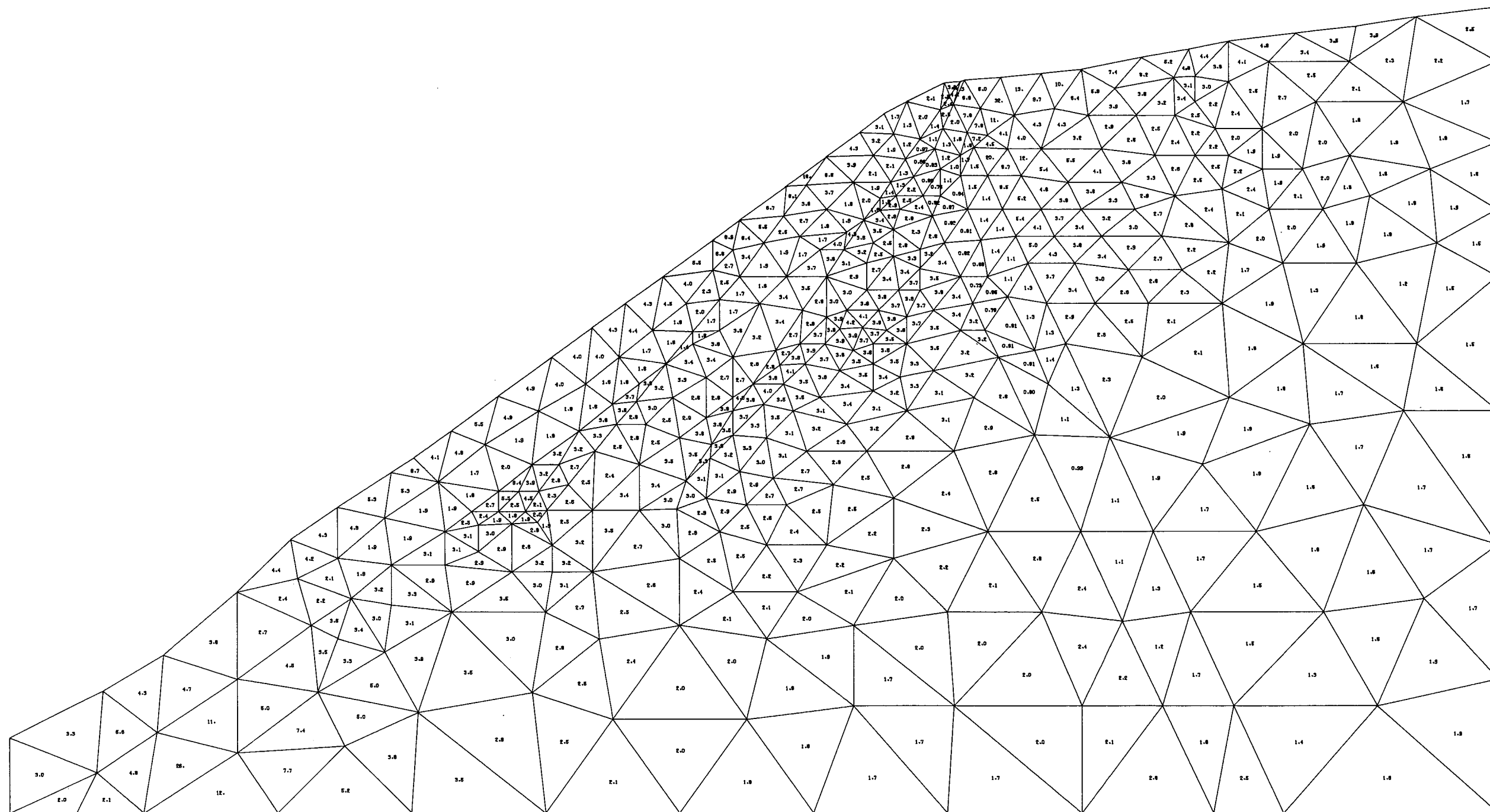
地質断面図



地盤定数

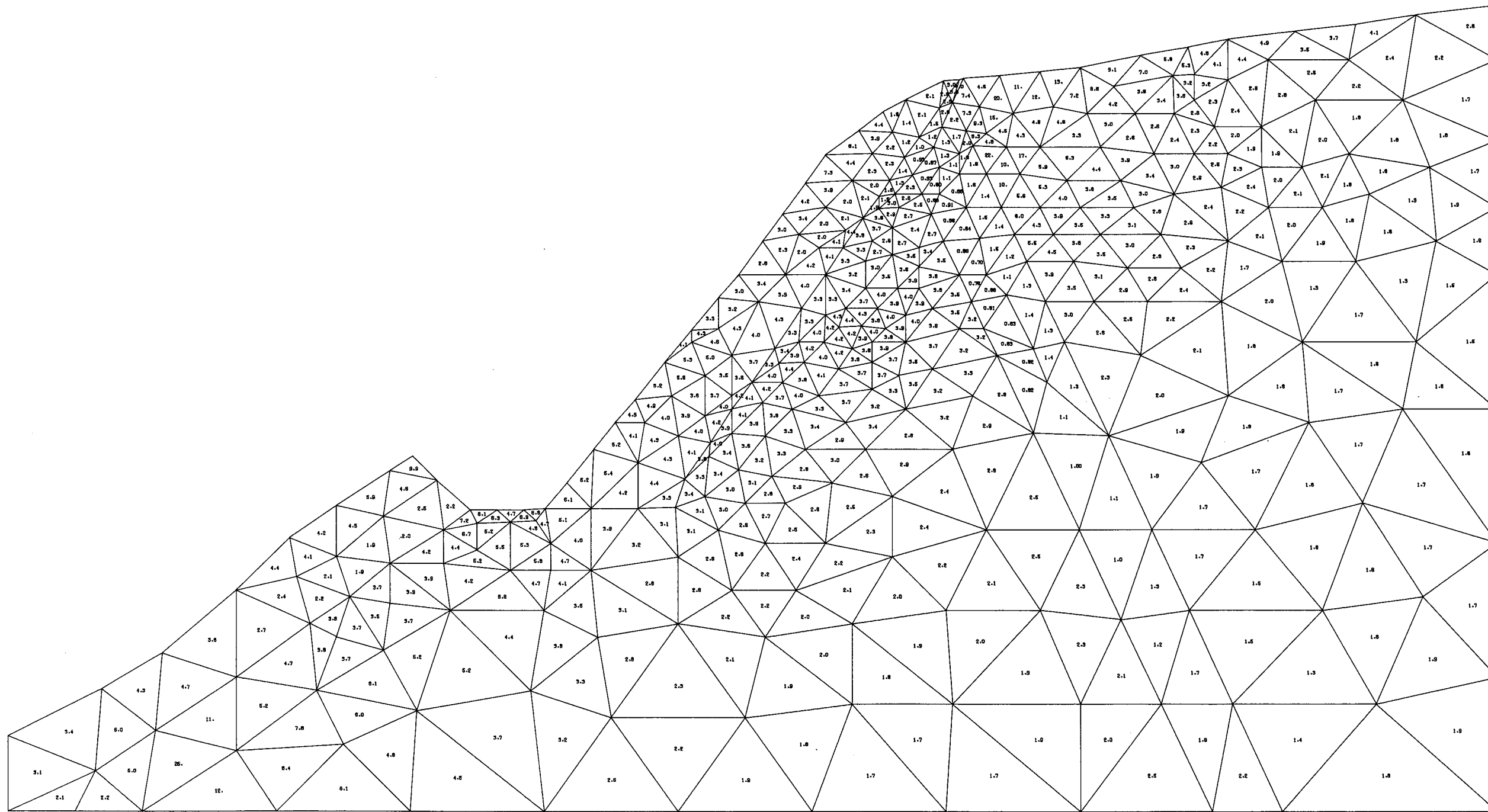
分類	変形係数 $E \text{ (t/m}^2\text{)}$	ポアソン比 ν	$\gamma t \text{ (t/m}^2\text{)}$	$C \text{ (t/m}^2\text{)}$	$\phi \text{ (度)}$
軟岩 I	6,000	0.3	2.2	5	25
軟岩 II	10,000	0.3	2.2	8	30
軟岩 III	56,000	0.3	2.2	30	35
軟岩 IV	176,000	0.3	2.2	60	40

F E M
地 山



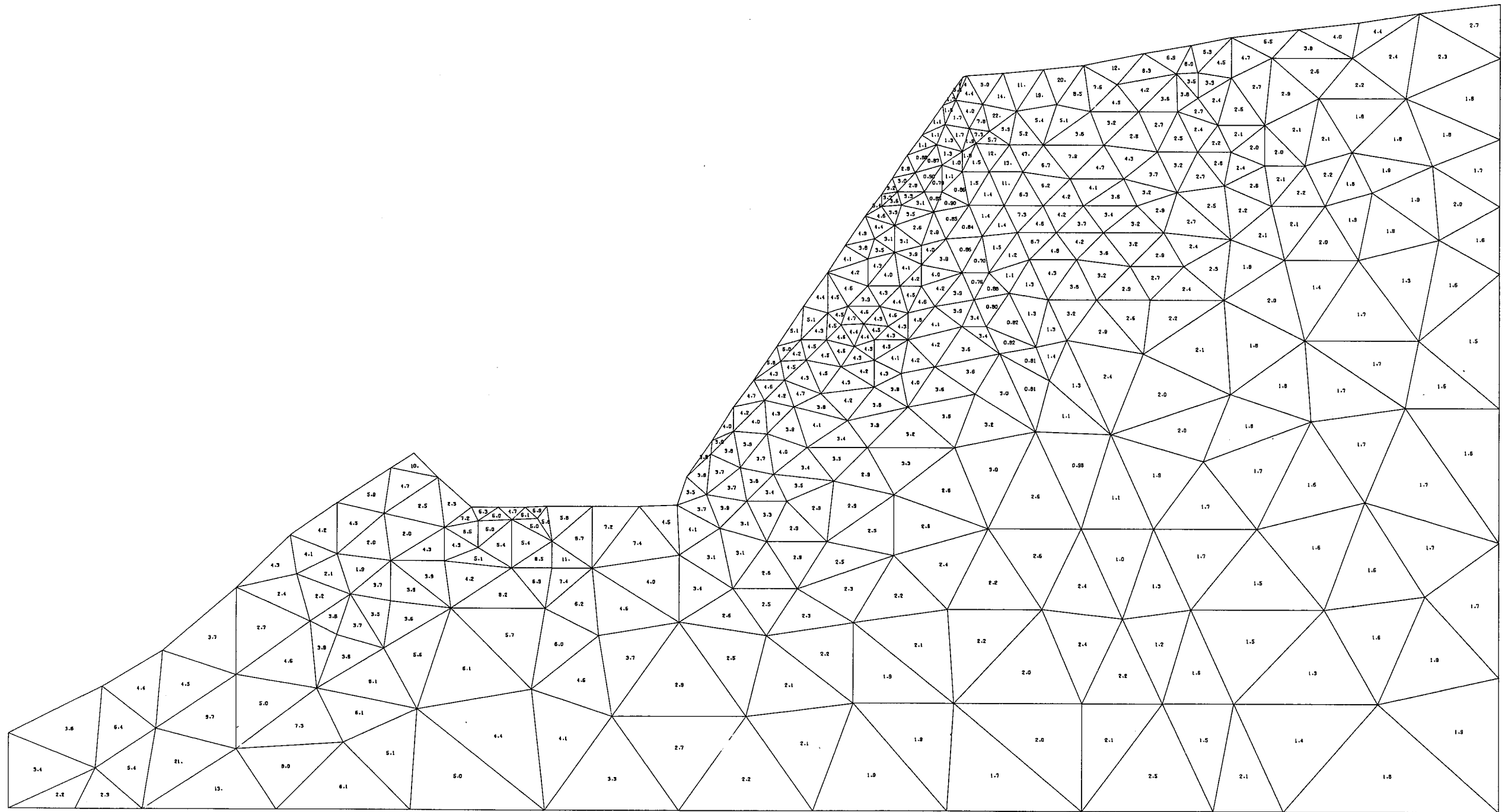
点 安 全 率 图

F E M
第一掘削



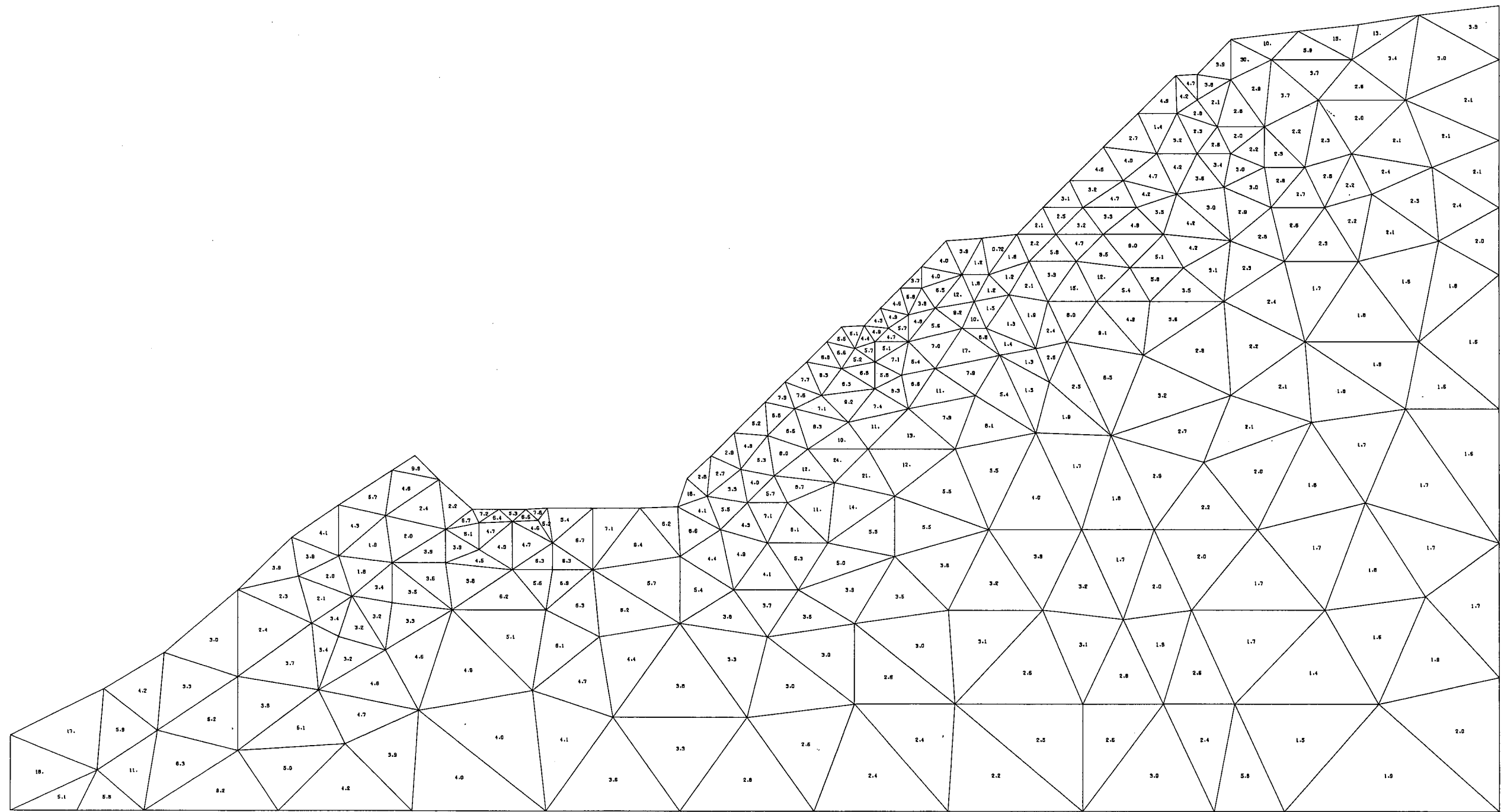
点 安 全 率 图

F E M
第二掘削



点 安 全 率 図

F E M
第三掘削

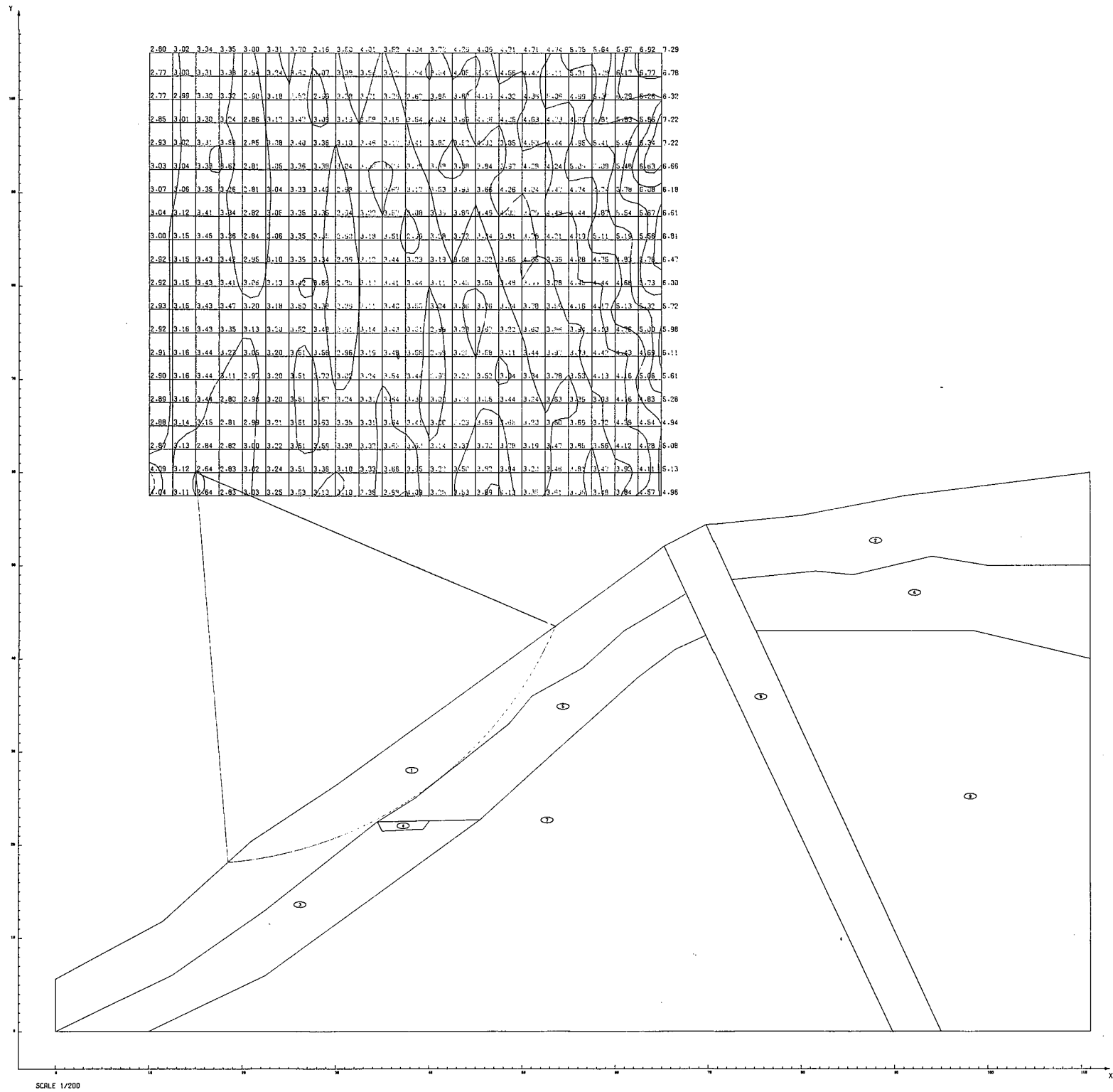


点 安 全 率 図

円弧すべり

地 山

GANBANSHAMEN NO ENKOSUBERI KEISAN CASE-1



MIN. SAFETY FACTOR = 2.640

FAILURE CIRCLE X = 15.00

Y = 60.00

R = 42.00

RESISTING MOMENT = 23021.35

SLIDING MOMENT = 8719.56

	H1	H2	K	Y0	C	PHI
1	2.20	2.20	0.000	0.0	8.00	30.00
2	2.20	2.20	0.000	0.0	8.00	30.00
3	2.20	2.20	0.000	0.0	8.00	35.00
4	2.20	2.20	0.000	0.0	5.00	25.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	30.00	35.00
7	2.20	2.20	0.000	0.0	60.00	40.00
8	2.20	2.20	0.000	0.0	5.00	25.00
9	2.20	2.20	0.000	0.0	60.00	40.00

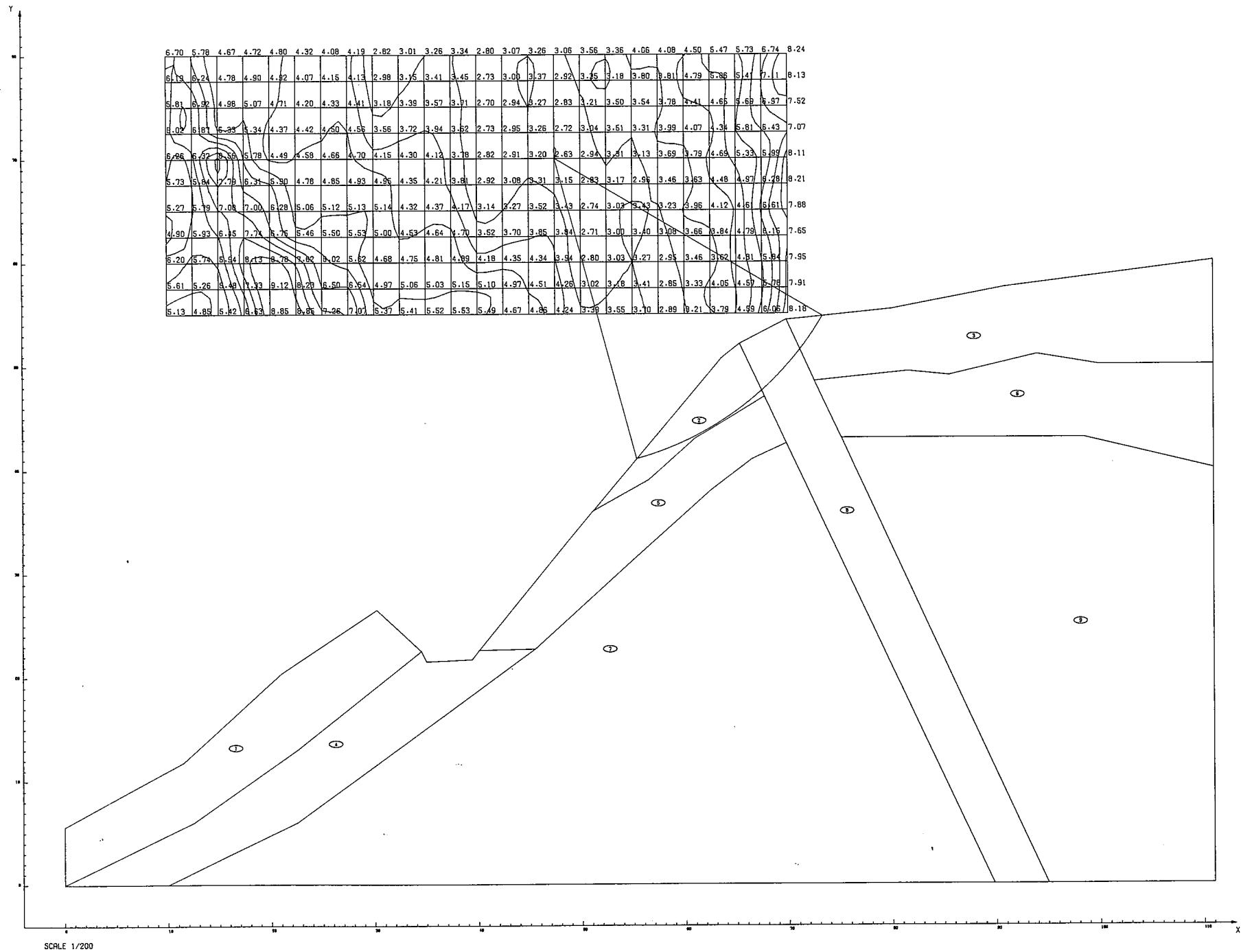
円弧すべり

第一堀削

GANBANSHAMEN NO ENKOSUBERIKEISAN CASE-2

MIN. SAFETY FACTOR	=	2.827
FAILURE CIRCLE	X =	47.50
	Y =	70.00
	R =	30.00
RESISTING MOMENT	=	7136.35
SLIDING MOMENT	=	2716.03

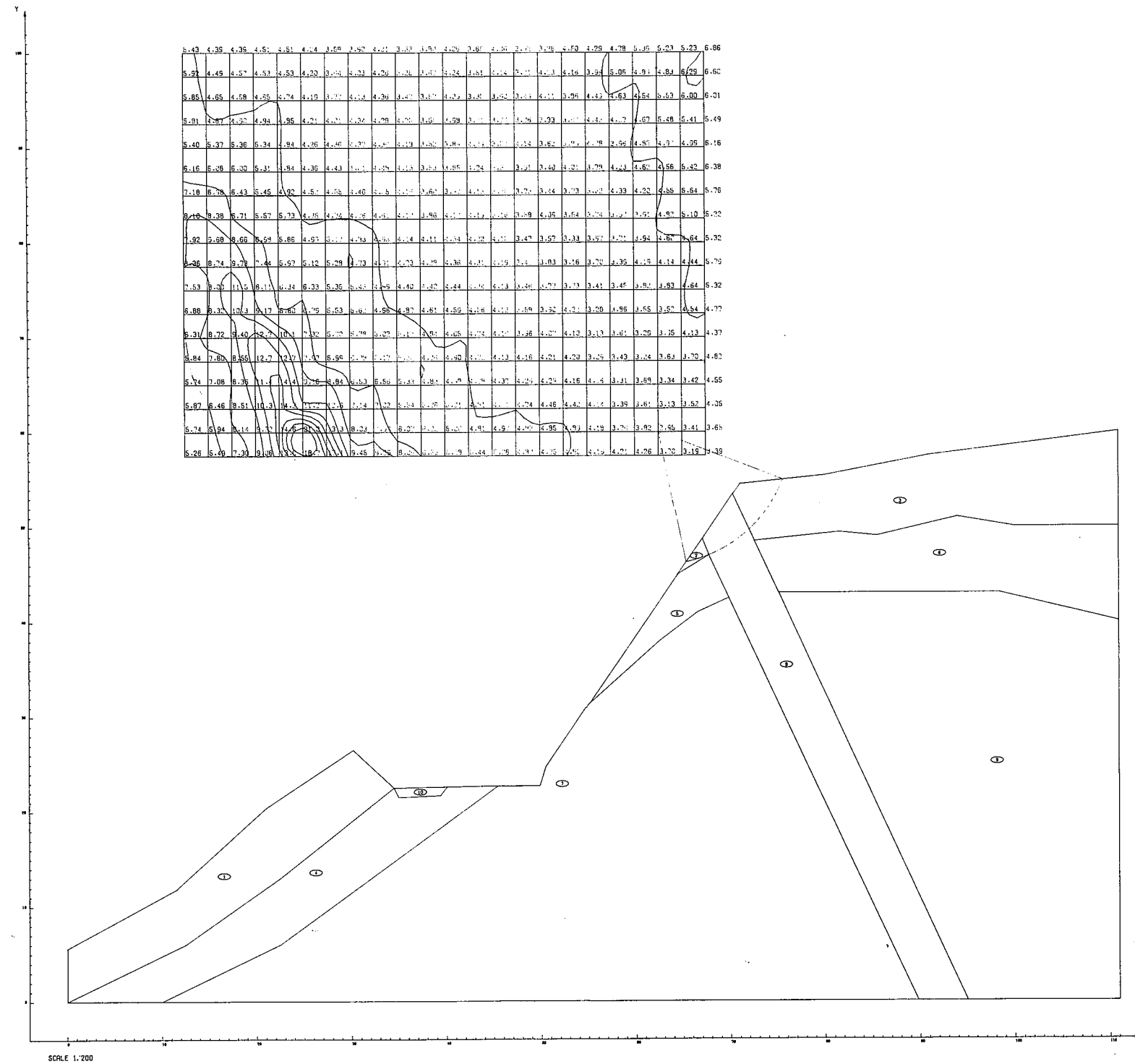
	W1	W2	K	Y0	C	PHI
1	2.20	2.20	0.000	0.0	8.00	30.00
2	2.20	2.20	0.000	0.0	8.00	30.00
3	2.20	2.20	0.000	0.0	8.00	30.00
4	2.20	2.20	0.000	0.0	30.00	35.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	30.00	35.00
7	2.20	2.20	0.000	0.0	60.00	40.00
8	2.20	2.20	0.000	0.0	5.00	25.00
9	2.20	2.20	0.000	0.0	60.00	40.00



円弧すべり
第二堀削

円弧すべり
第二堀削

GANBANSHAMEN NO ENKOSUBERIKEISAN CASE-3



SCALE 1:200

MIN. SAFETY FACTOR =	2.948
FAILURE CIRCLE ϕ =	62.50
Y =	60.00
R =	14.00
RESISTING MOMENT =	1762.39
SLIDING MOMENT =	597.91

	H1	H2	K	YO	C	PHI
1	2.20	2.20	0.000	0.0	8.00	30.00
2	2.20	2.20	0.000	0.0	8.00	30.00
3	2.20	2.20	0.000	0.0	8.00	30.00
4	2.20	2.20	0.000	0.0	8.00	35.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	30.00	35.00
7	2.20	2.20	0.000	0.0	60.00	40.00
8	2.20	2.20	0.000	0.0	5.00	25.00
9	2.20	2.20	0.000	0.0	60.00	40.00
10	2.20	2.20	0.000	0.0	5.00	25.00

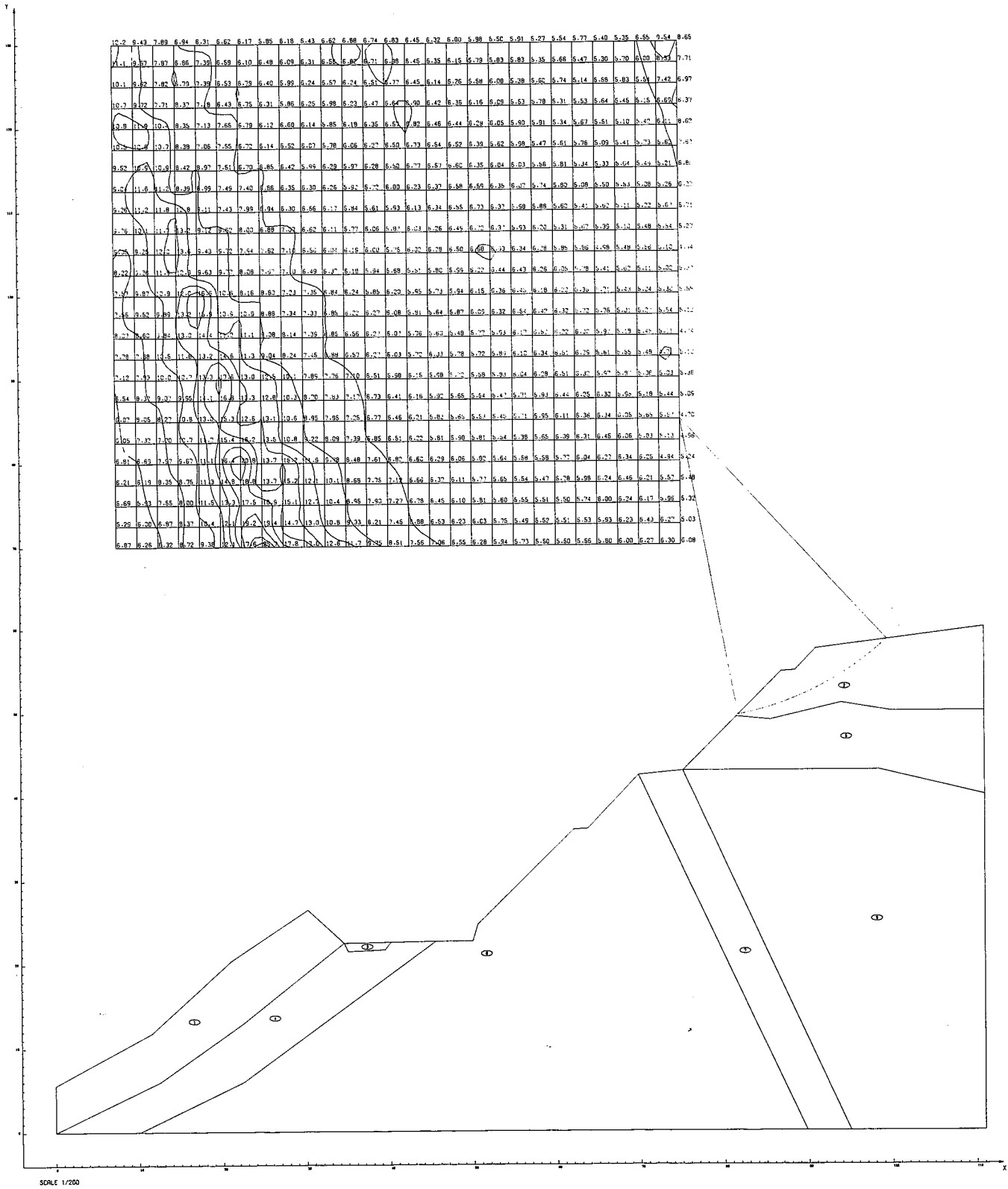
円弧すべり

第三堀削

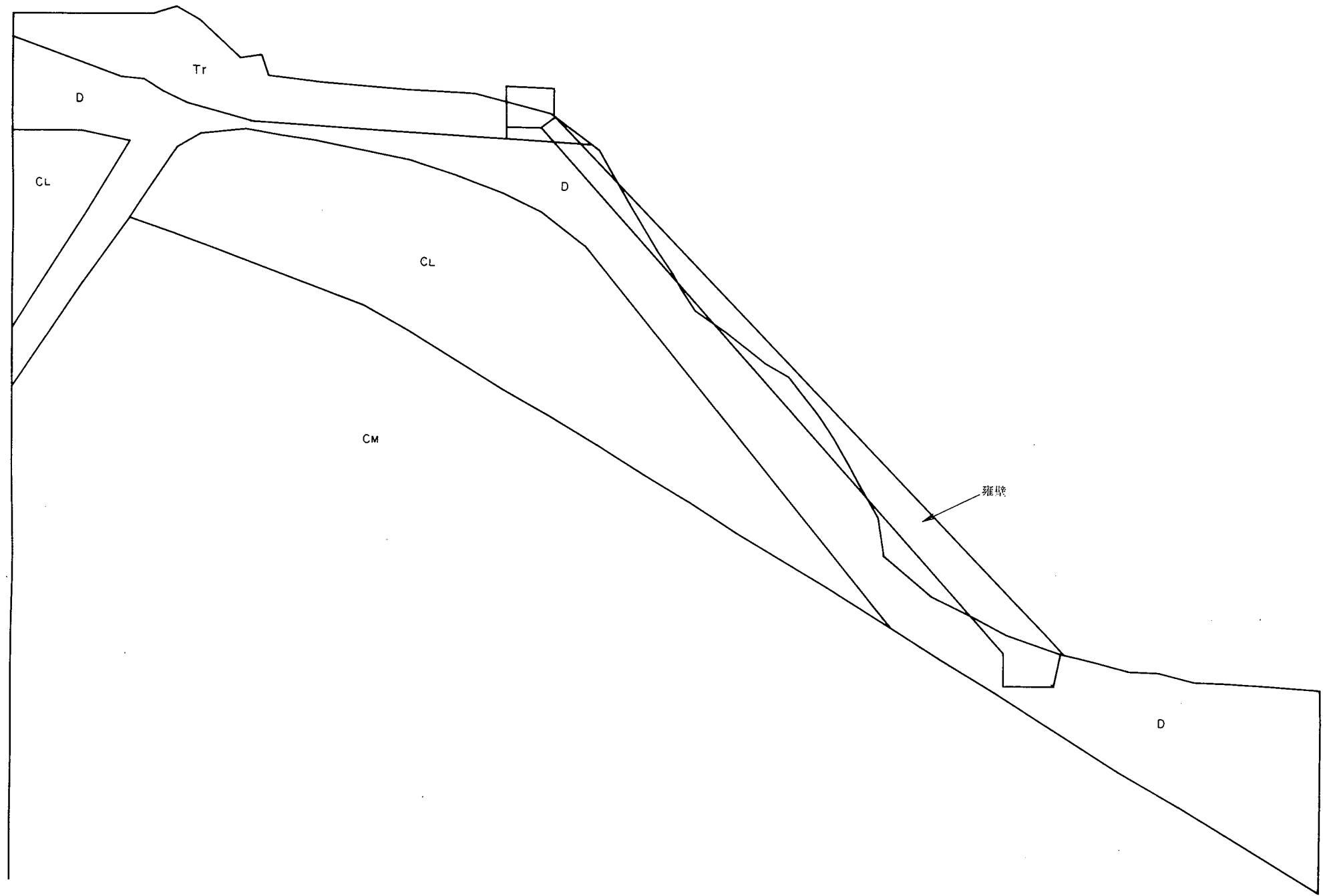
GANBANSHAMEN NO ENKOSUBERIKEISAN CASE-4

MIN. SAFETY FACTOR	=	4.859
FAILURE CIRCLE	X =	75.00
	Y =	85.00
	R =	35.00
RESISTING MOMENT	=	7754.61
SLIDING MOMENT	=	1850.16

	W	H	X	Y	C	PHI
1	2.20	2.20	0.000	0.0	8.80	30.80
2	2.20	2.20	0.000	0.0	8.80	30.80
3	2.20	2.20	0.000	0.0	8.80	35.00
4	2.20	2.20	0.000	0.0	30.00	35.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	60.00	40.80
7	2.20	2.20	0.000	0.0	5.00	25.80
8	2.20	2.20	0.000	0.0	60.00	40.80



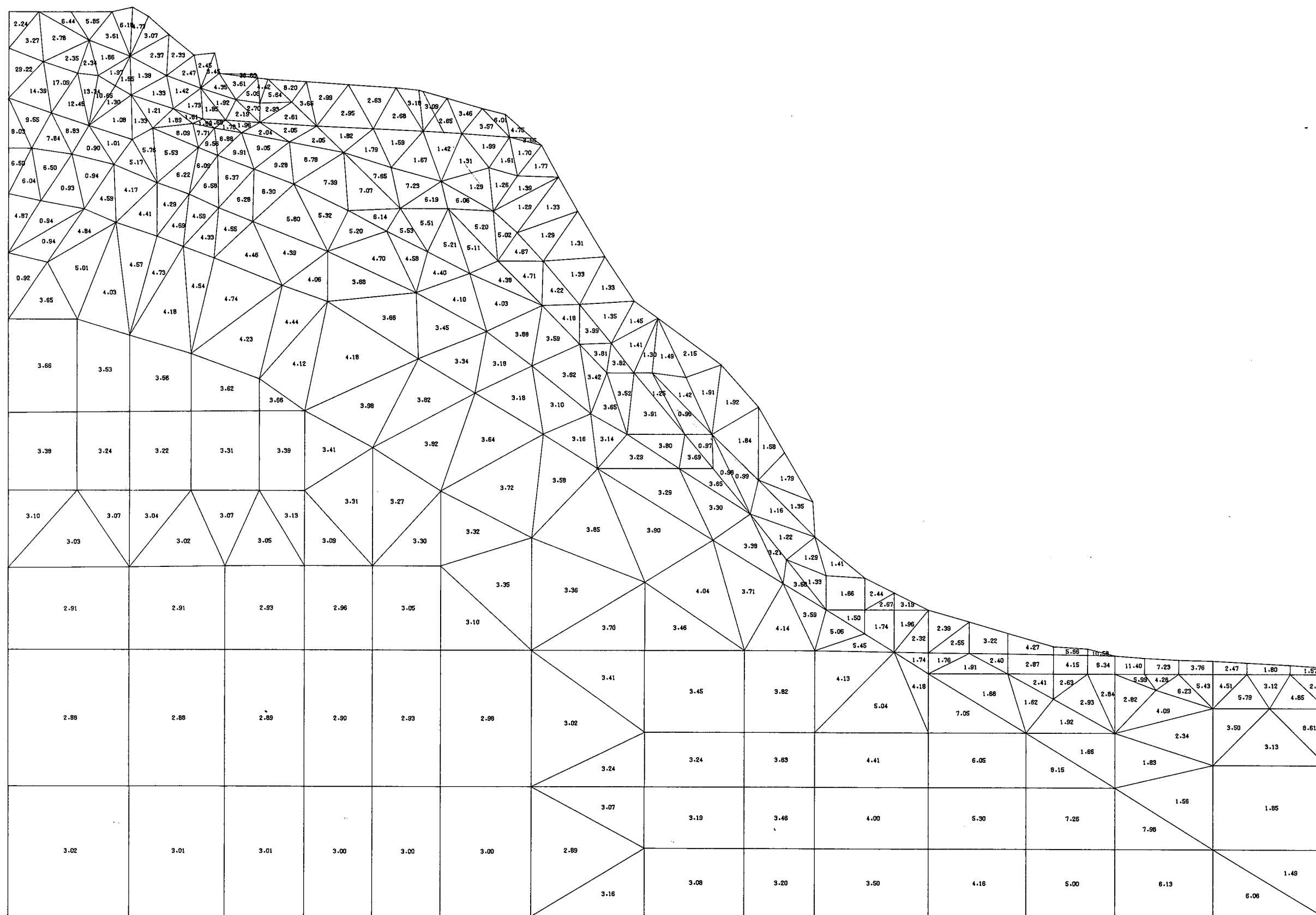
地区名：国道19号線船場地区(建設省関東地建長野国道工事事務所管内)
地質断面図



地盤定数

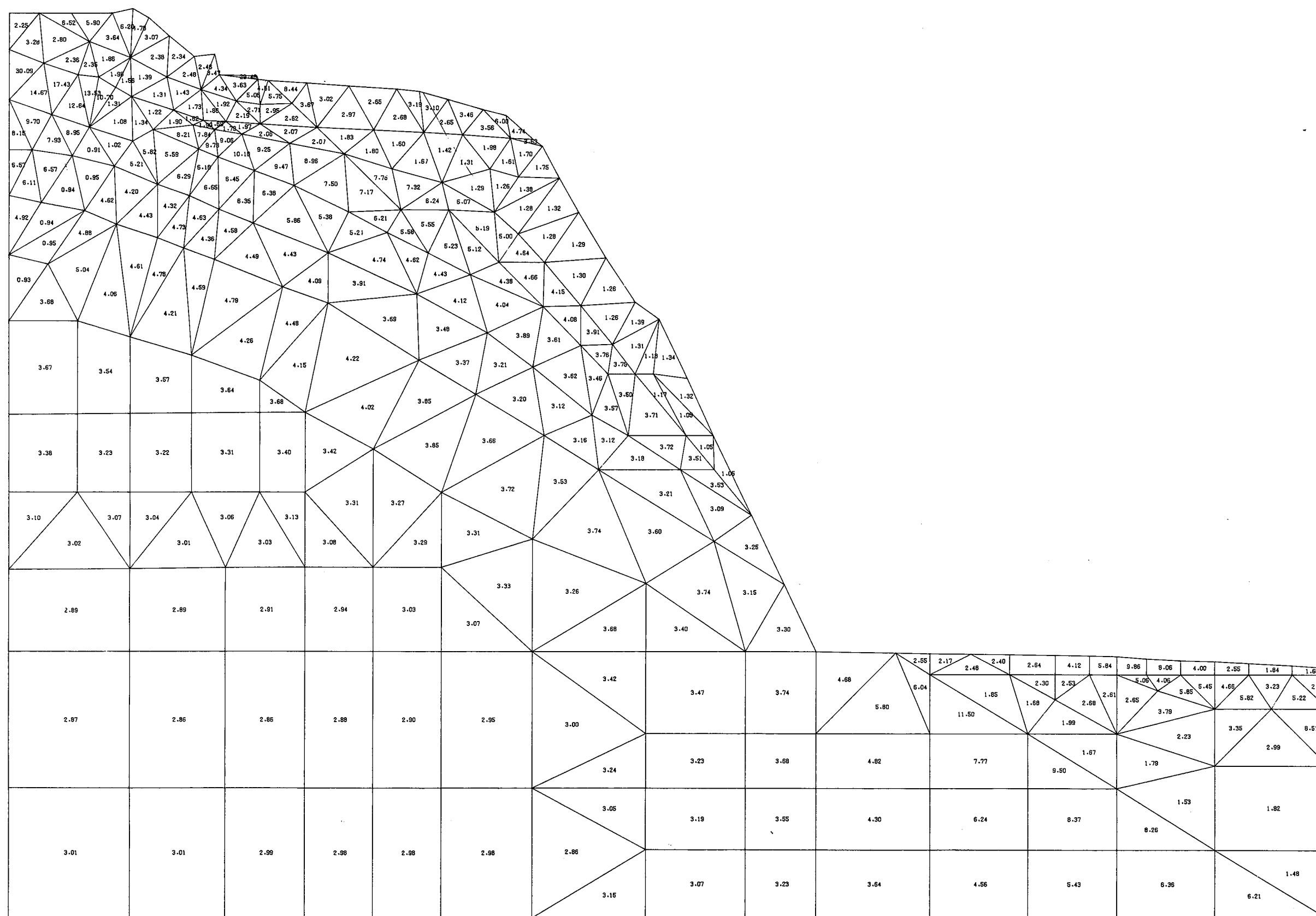
分類	変形係数 E (t/m ²)	ポアソン比 ν	γ t (t/m ³)	C (t/m ³)	φ (度)
表土 (Tr)	4,000	0.3	2.2	5	25
軟岩 (D)	10,000	0.3	2.2	8	30
軟岩 (CL)	56,000	0.3	2.2	30	35
軟岩 (CH)	100,000	0.3	2.2	45	40

F E M
地 山



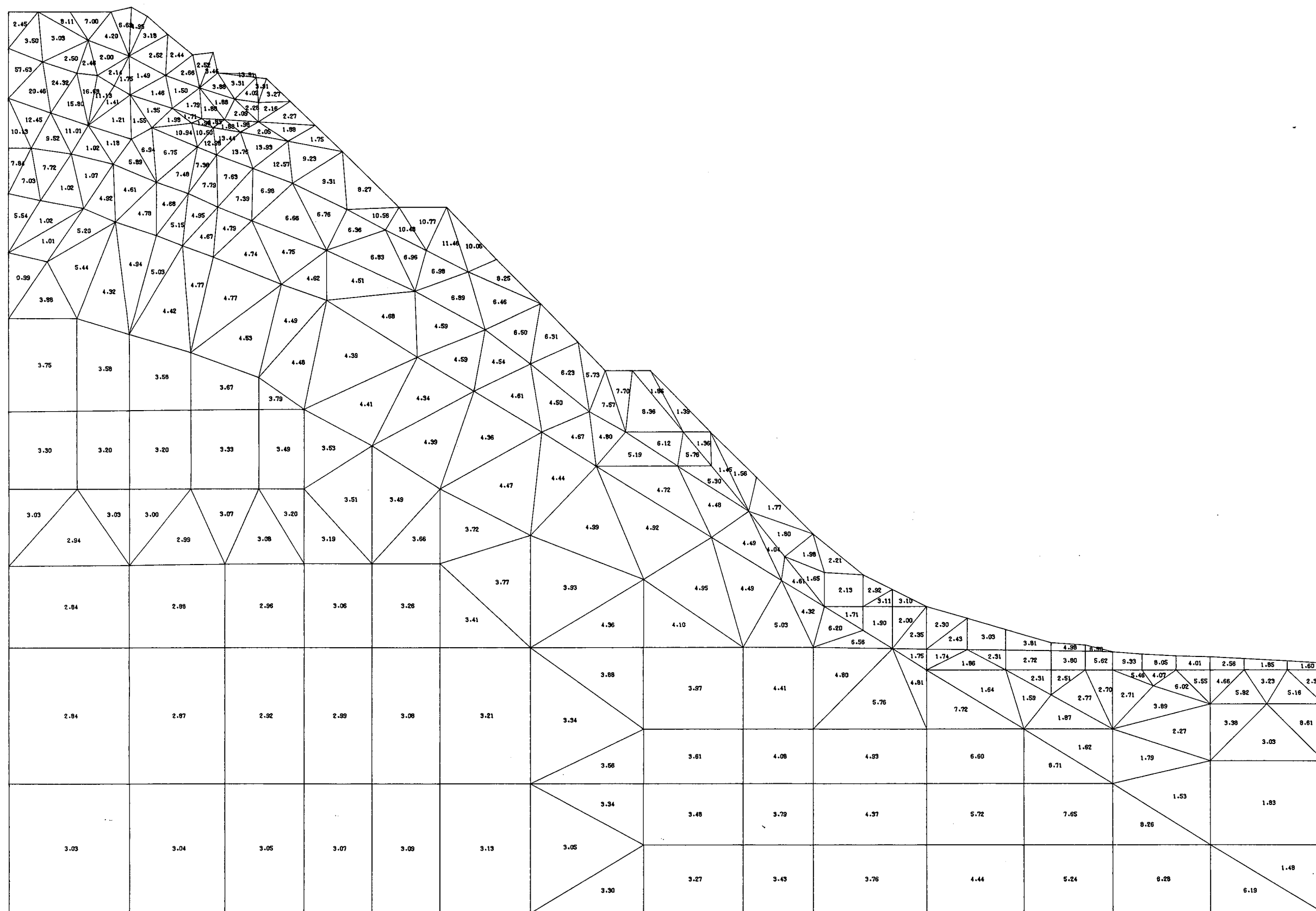
点 安 全 率 图

F E M
第一掘削



点 安 全 率 図

F E M
第二掘削



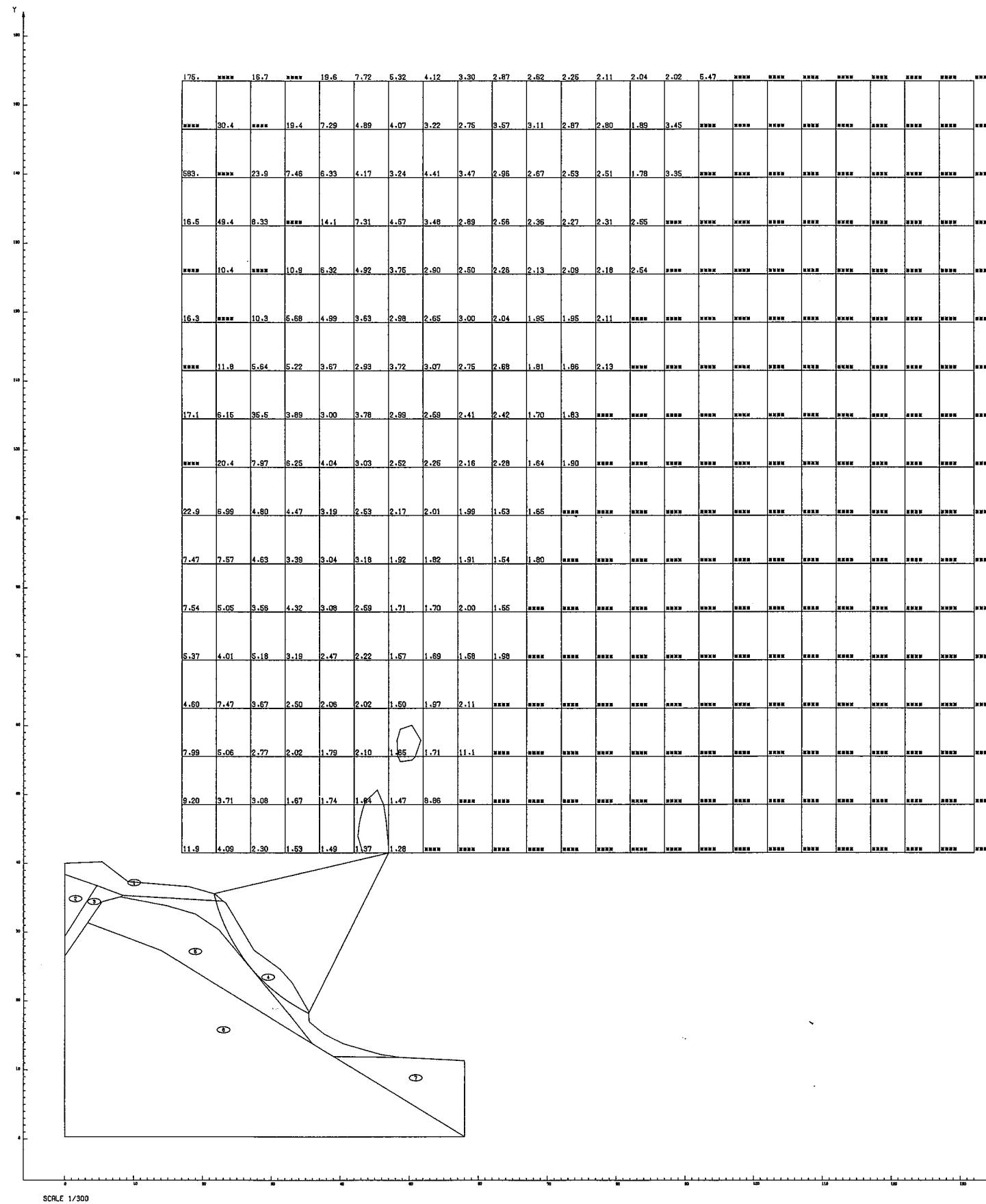
点 安 全 率 図

円弧すべり

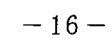
地 山

MIN. SAFETY FACTOR = 1.276
 FAILURE CIRCLE X = 47.00
 Y = 41.60
 R = 26.00
 RESISTING MOMENT = 2221.77
 SLIDING MOMENT = 1741.76

	W1	W2	K	Y0	C	PHI
1	2.20	2.20	0.000	0.0	2.00	25.00
2	2.20	2.20	0.000	0.0	30.00	35.00
3	2.20	2.20	0.000	0.0	2.60	25.00
4	2.20	2.20	0.000	0.0	2.60	25.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	45.00	40.00
7	2.20	2.20	0.000	0.0	2.60	25.00



	W1	W2	K	Y0	C	PH
1	2.20	2.20	0.000	0.0	2.00	26.0
2	2.20	2.20	0.000	0.0	30.00	36.0
3	2.20	2.20	0.000	0.0	2.60	25.0
4	2.20	2.20	0.000	0.0	2.60	25.0
5	2.20	2.20	0.000	0.0	30.00	36.0
6	2.20	2.20	0.000	0.0	46.00	40.0
7	2.20	2.20	0.000	0.0	2.60	25.0

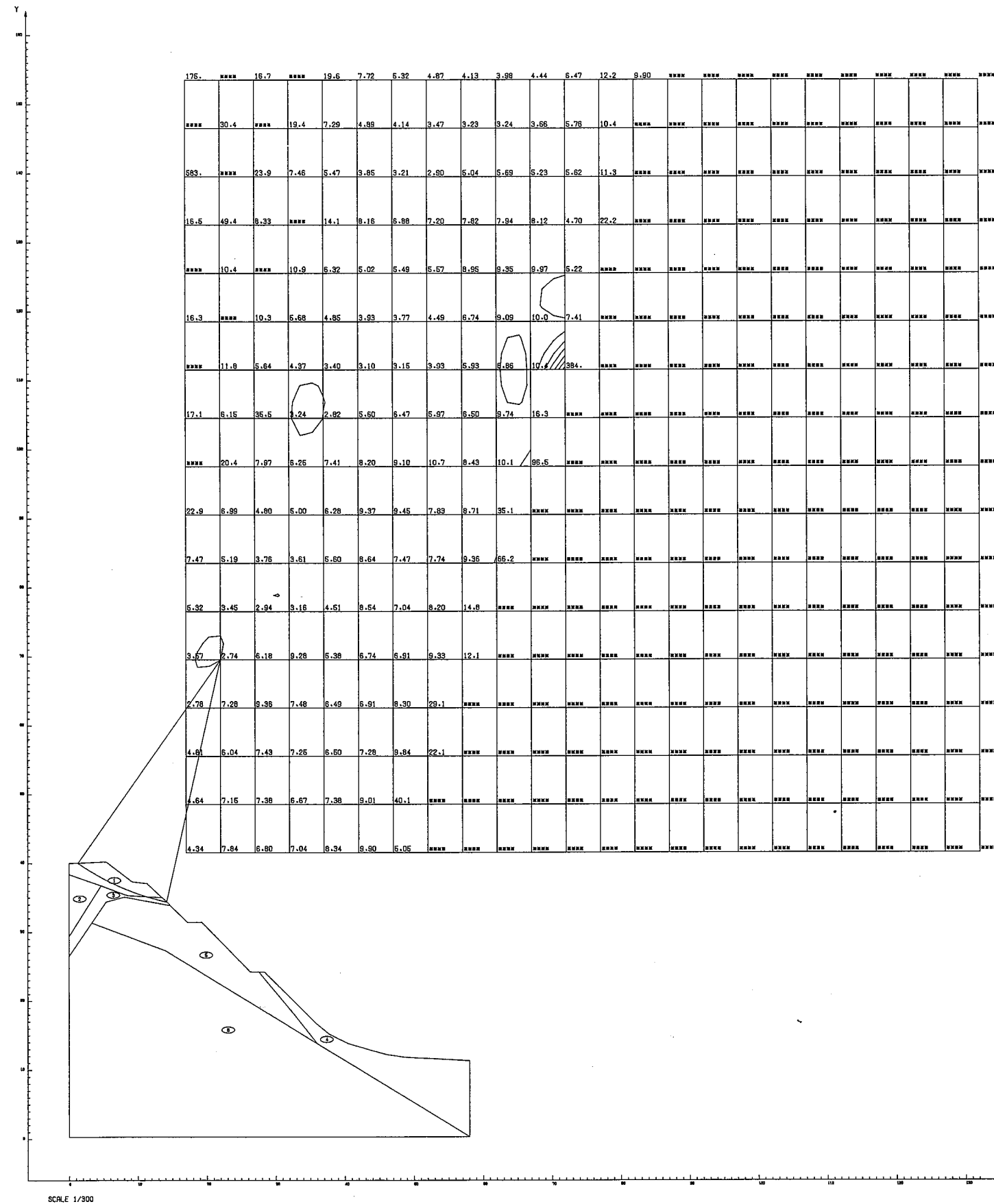


円弧すべり

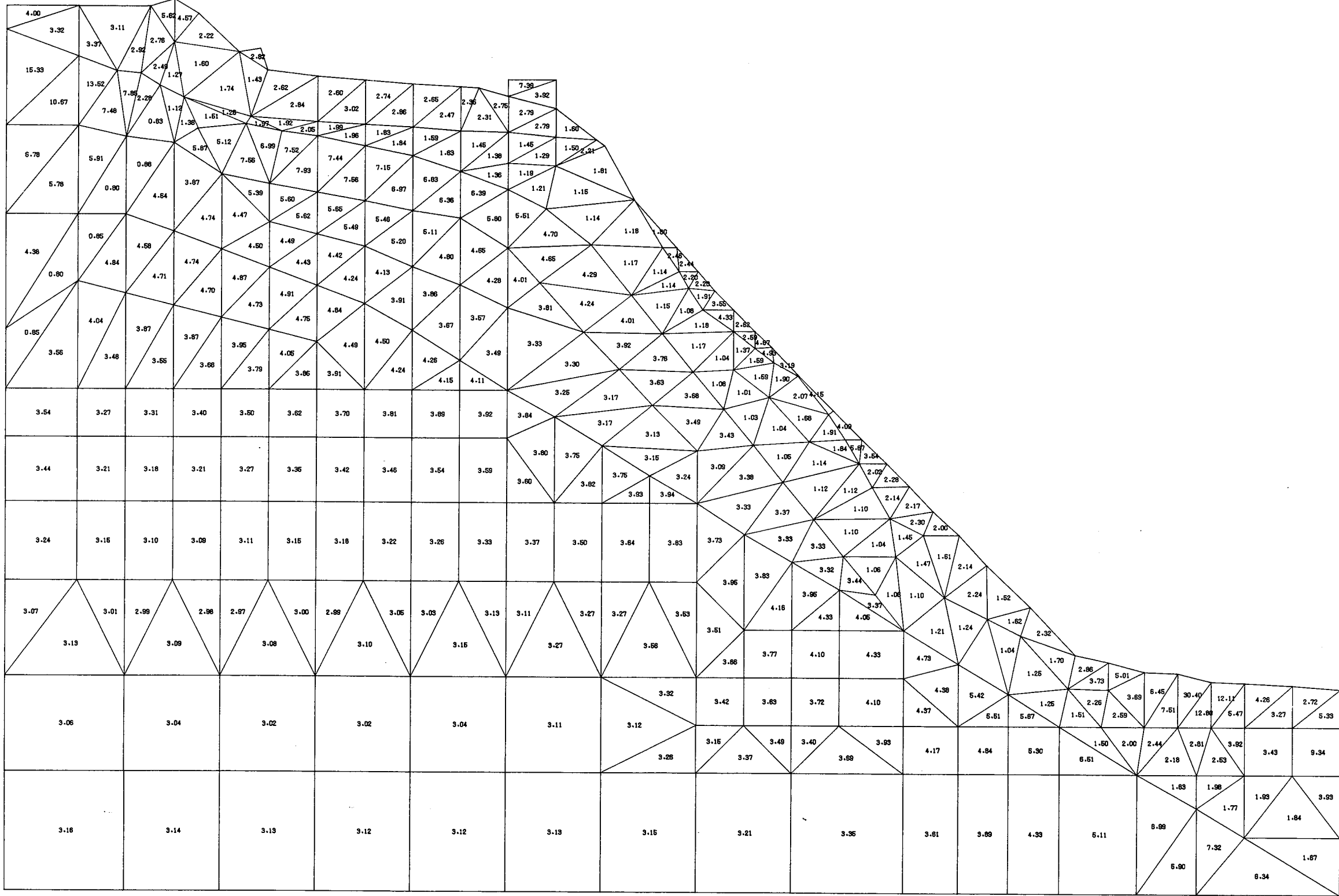
第二堀削

MIN. SAFETY FACTOR = 2.738
 FAILURE CIRCLE X = 22.00
 Y = 68.60
 R = 36.00
 RESISTING MOMENT = 1748.23
 SLIDING MOMENT = 638.57

	H1	H2	K	Y0	C	PHI
1	2.20	2.20	0.000	0.0	2.00	25.00
2	2.20	2.20	0.000	0.0	30.00	35.00
3	2.20	2.20	0.000	0.0	2.50	25.00
4	2.20	2.20	0.000	0.0	2.50	25.00
5	2.20	2.20	0.000	0.0	30.00	35.00
6	2.20	2.20	0.000	0.0	45.00	40.00

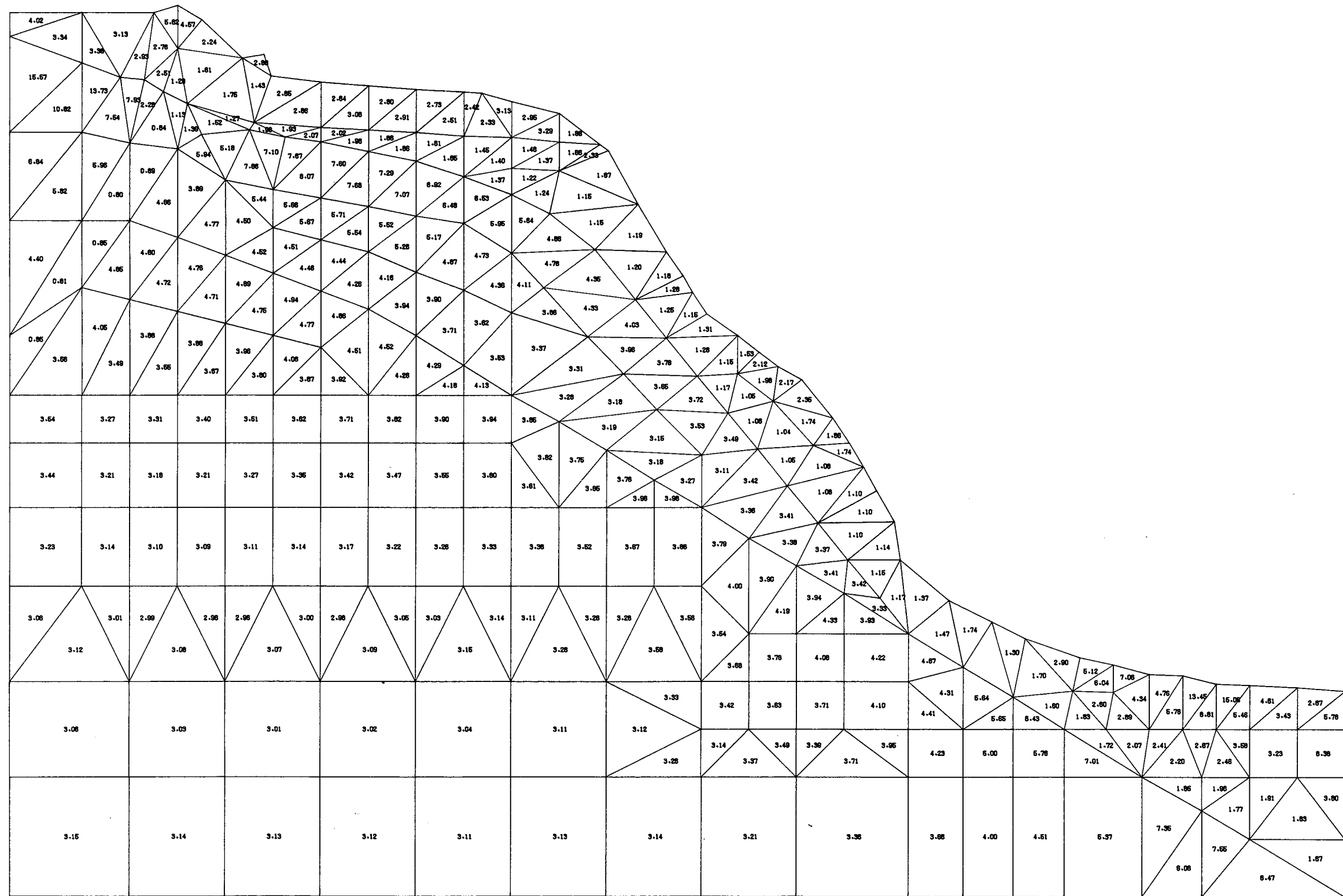


F E M
元地形



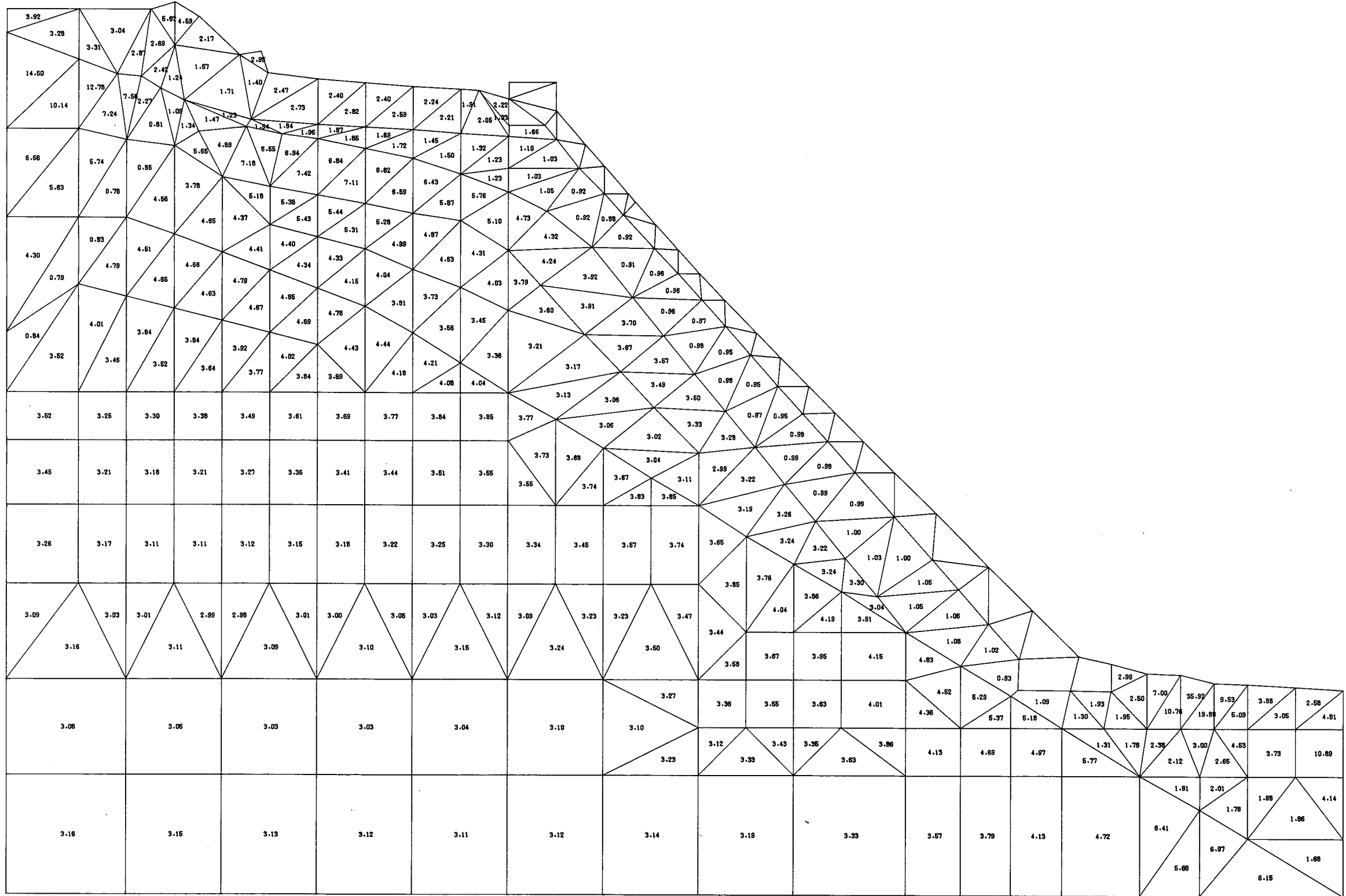
点 安 全 率 图

地 山



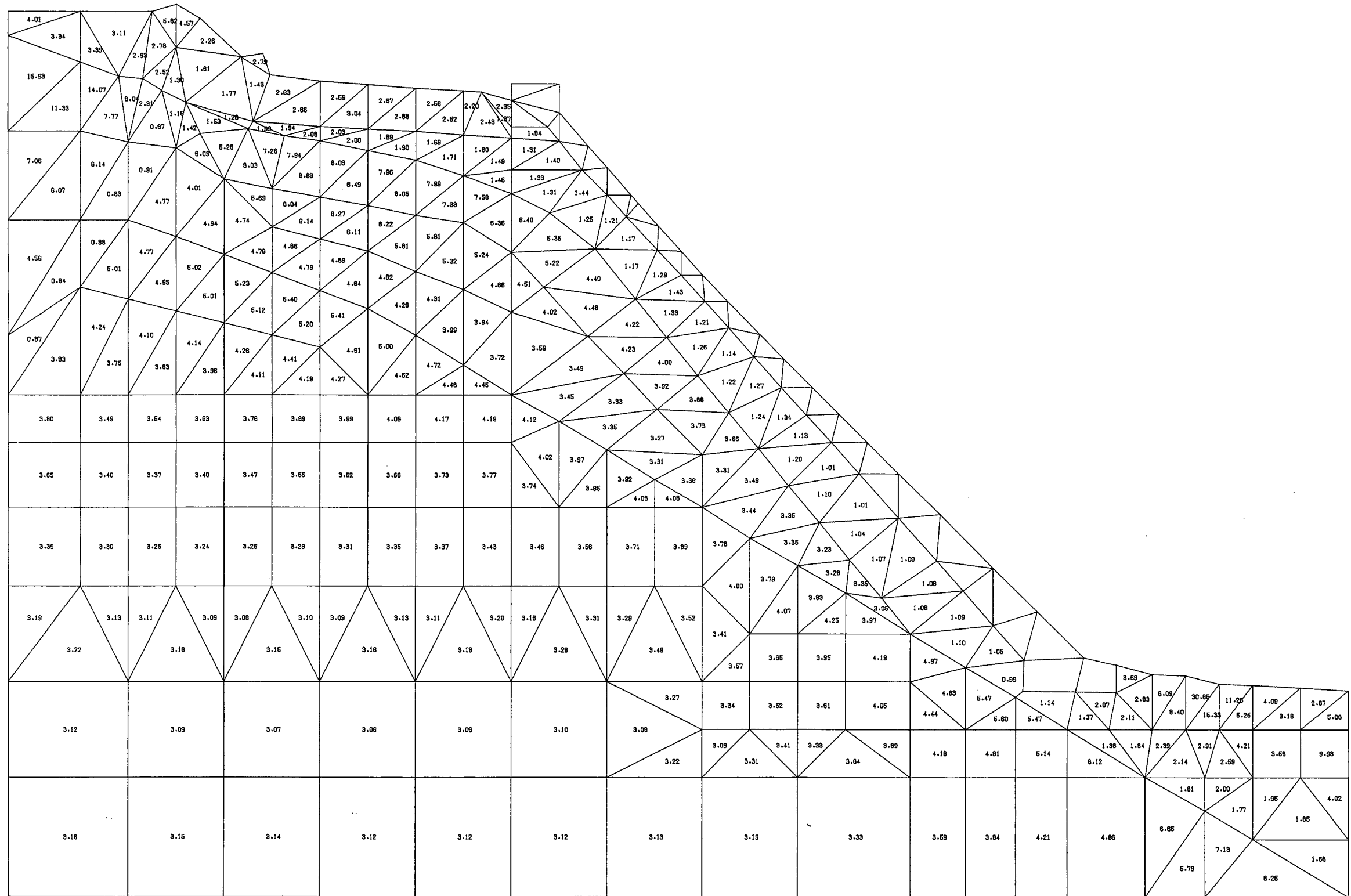
点 安 全 率 $\square$

F E M
完成後



点 安 全 率 図

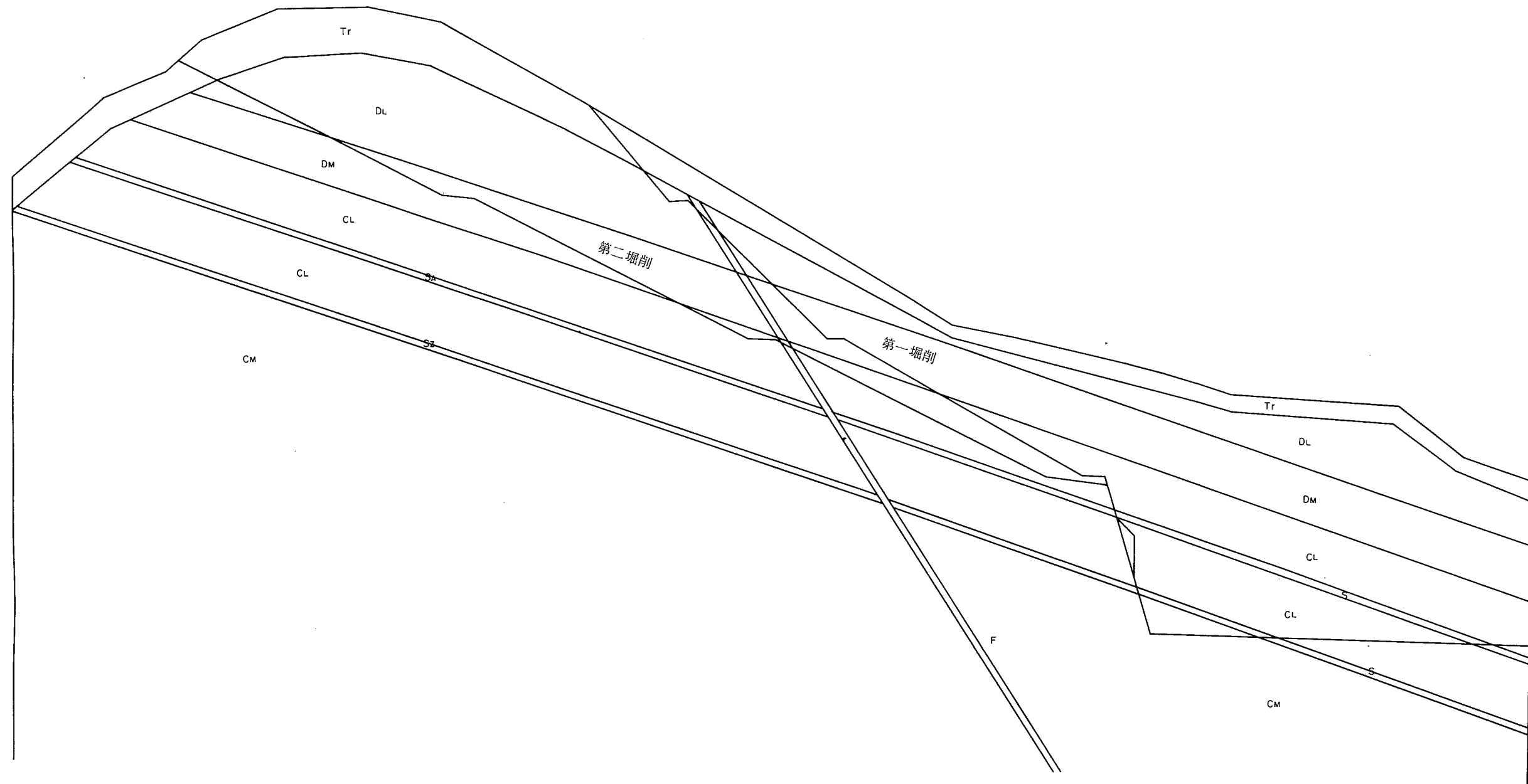
完成後アンカー



点 安 全 率 図

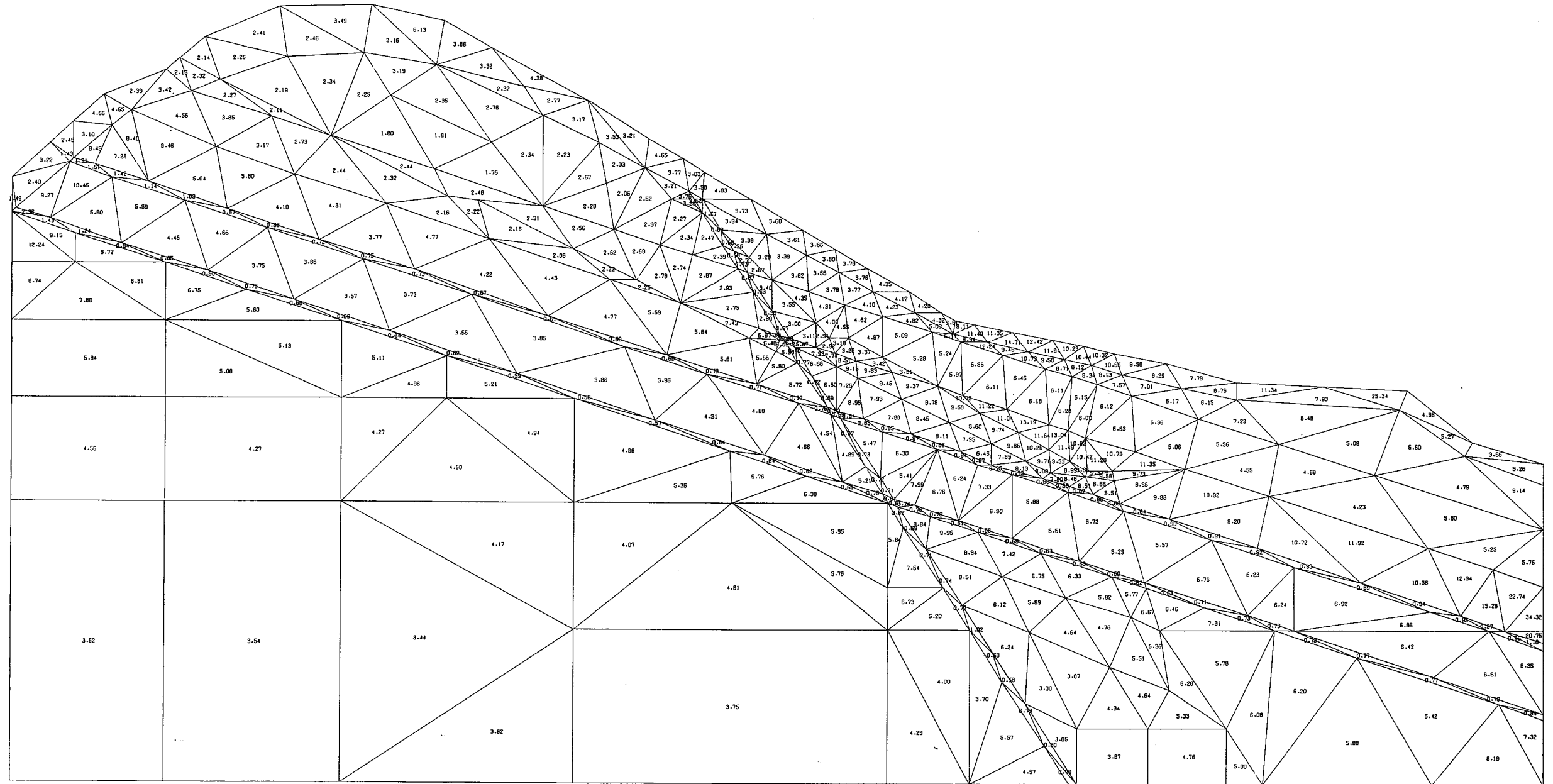
地区名：国道6号線南富岡地区(建設省東北地建磐城国道工事事務所管内)

地質断面図



分 類	変形係数 E (t/m ²)	ポアソン比 ν	γ _t (t/m ³)	C (t/m ³)	φ (度)
表 土 (Tr)	4,000	0.3	1.6	2.0	20
風化岩 (DL)	8,000	0.3	1.7	5.0	20
風化岩 (DM)	10,000	0.3	1.8	10.0	20
軟 岩 (CL)	56,000	0.3	1.9	30.0	23
軟 岩 (CM)	100,000	0.3	2.0	50.0	25
断 層 (F)	6,000	0.3	1.7	0.0	20
すべり粘土層(S)	6,000	0.3	1.7	3.0	10

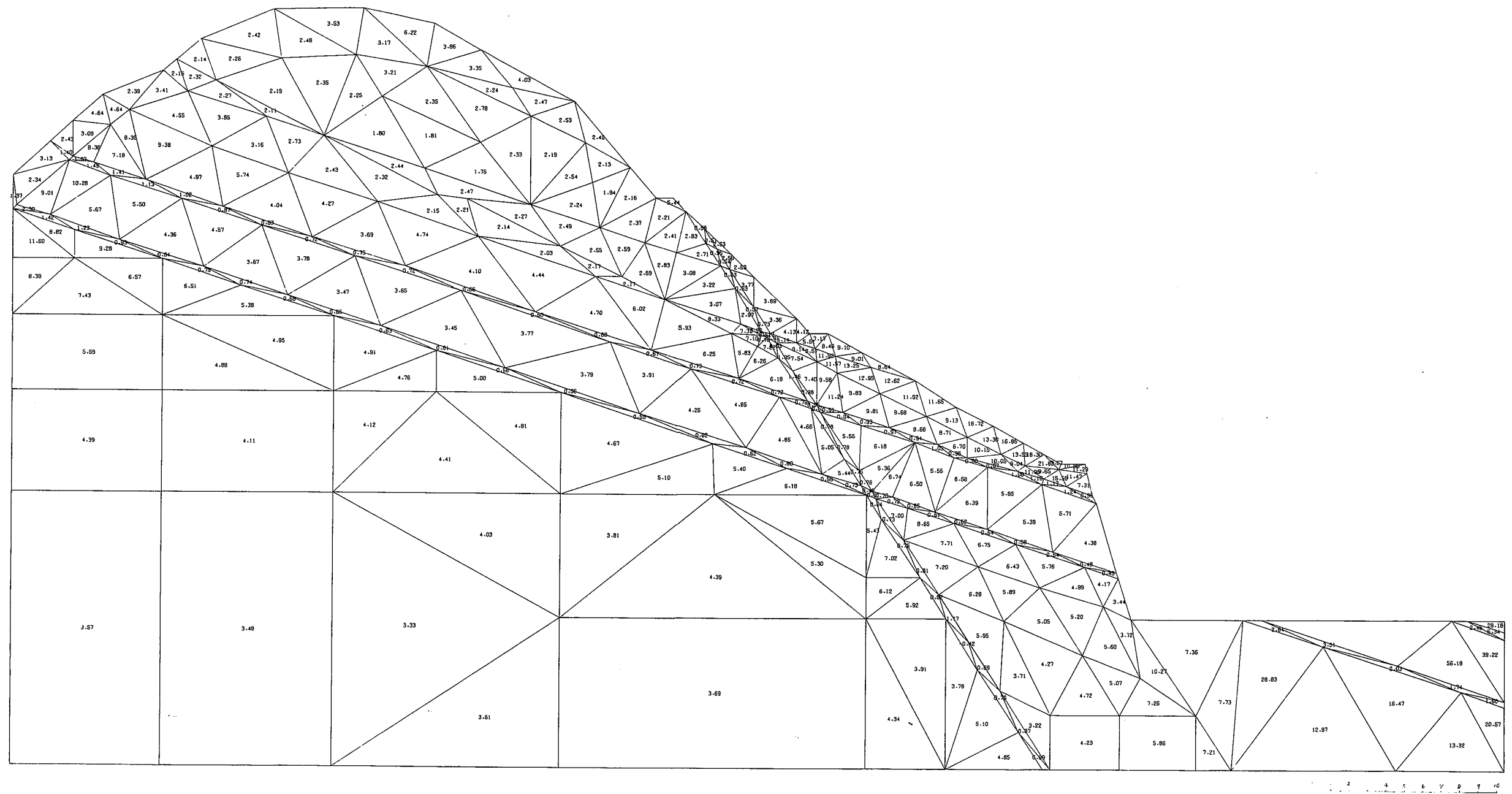
F E M
地 山



1 2 3 4 5 6 7 8 9 10

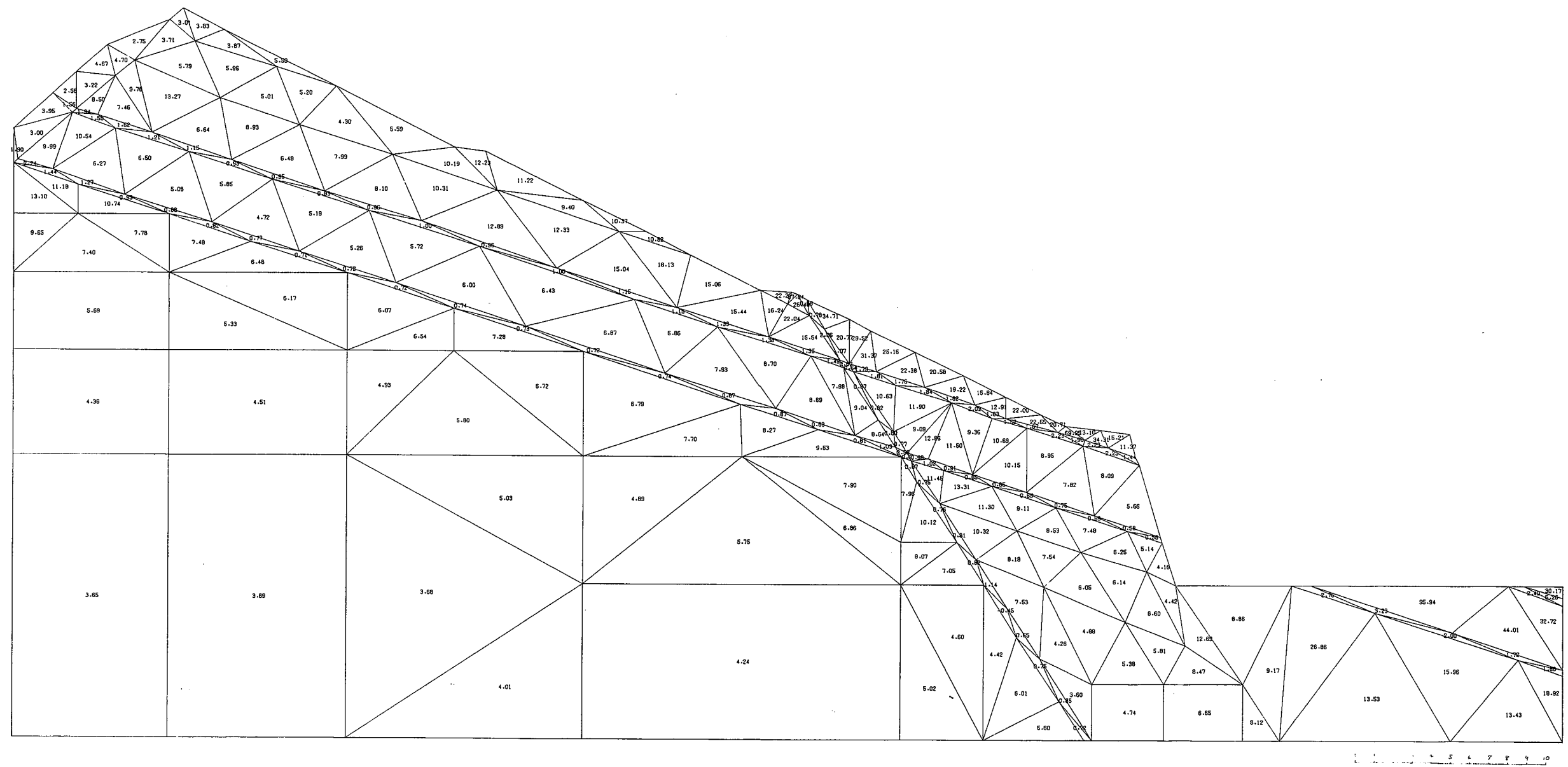
点 安 全 率 图

F E M
第一掘削



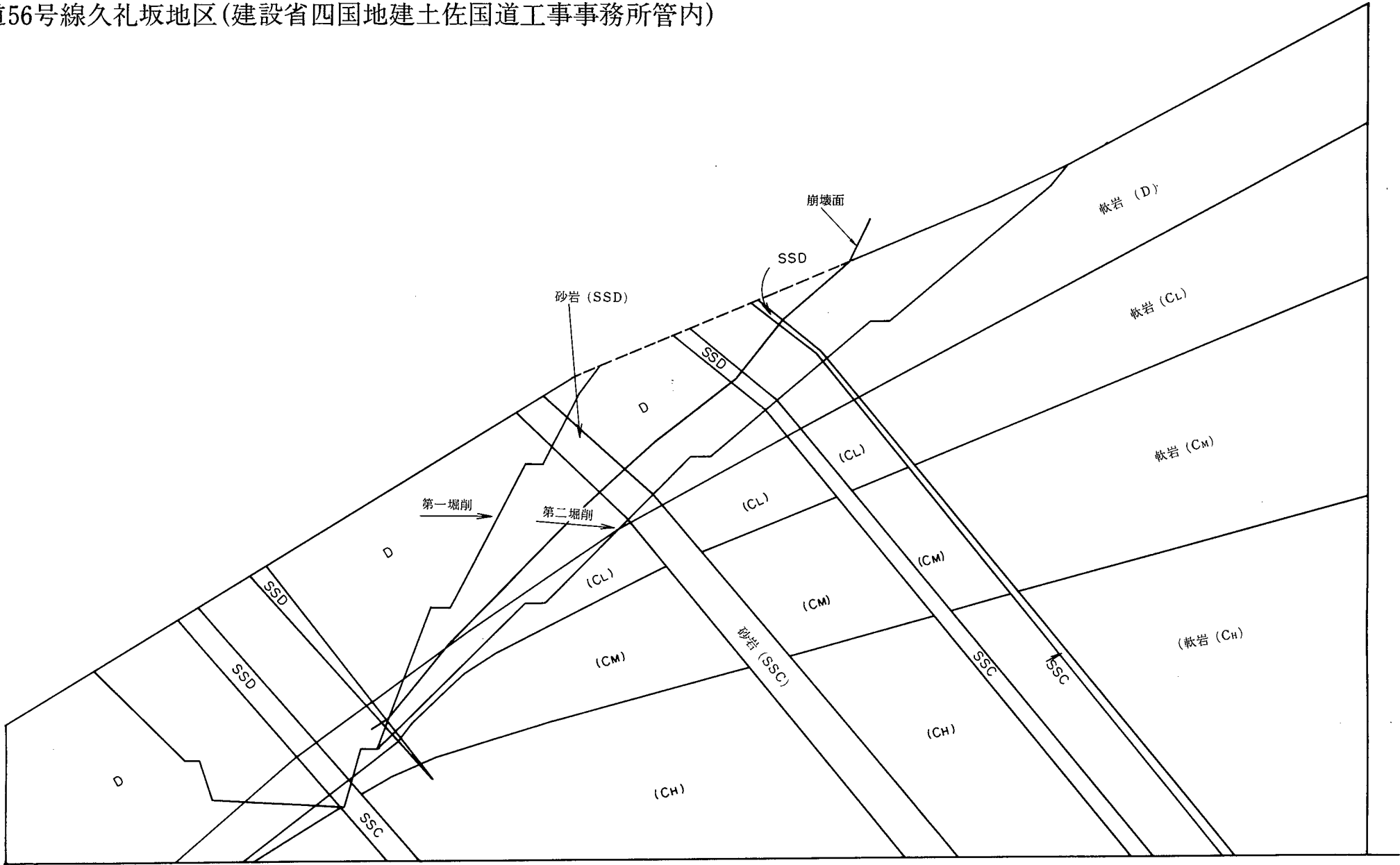
点 安 全 率 图

F E M
第二堀削



点 安 全 率 図

地区名：国道56号線久礼坂地区(建設省四国地建土佐国道工事事務所管内)
 地質断面図

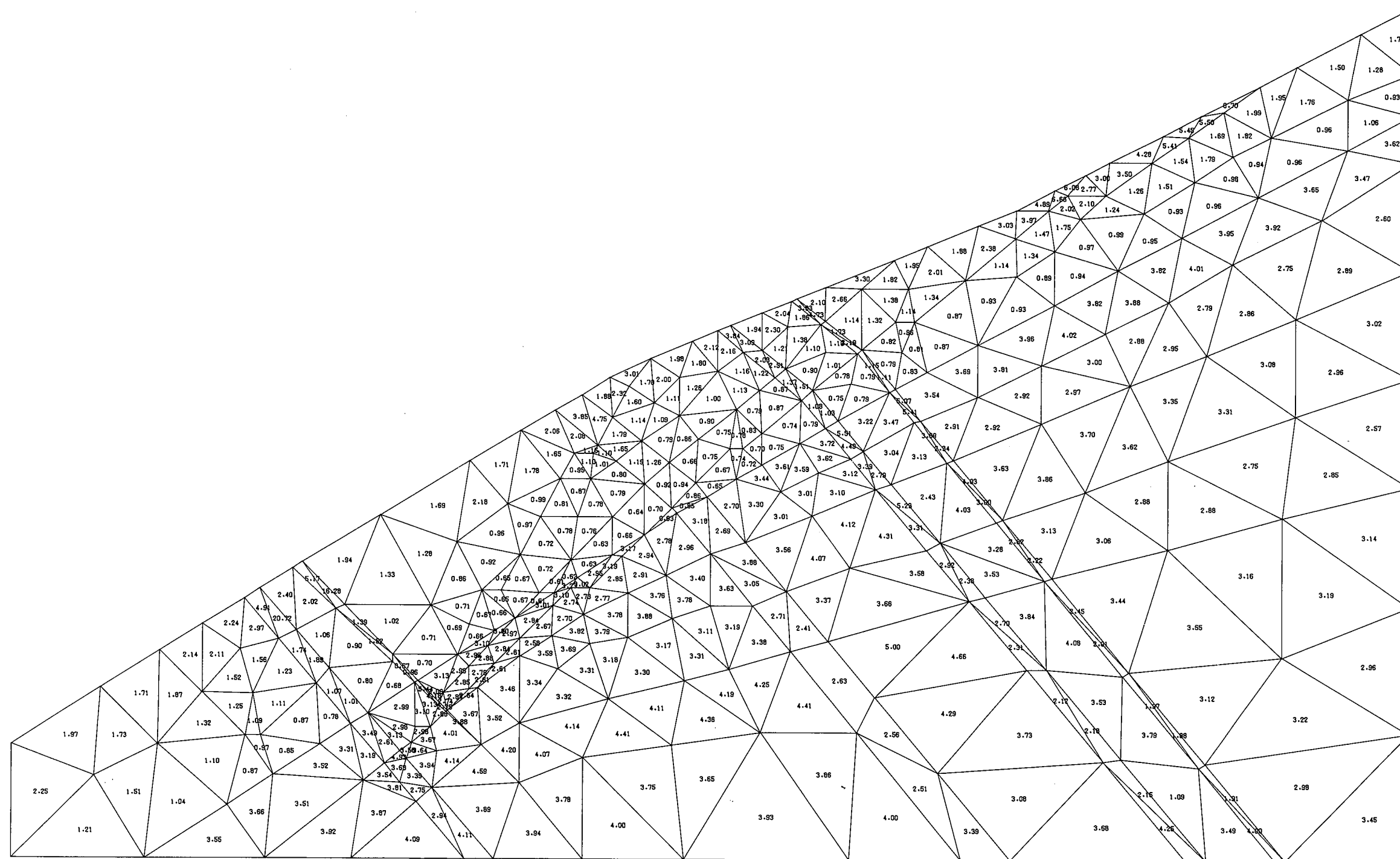


地 盤 定 数

分 類	変形係数 E (t/m ²)	ポアソン比 ν	γ t (t/m ³)	C (t/m ²)	φ (度)
軟岩 (D)	8,000	0.3	1.7	3.45	15
軟岩 (D)	8,000	0.3	1.7	2.98	20
軟岩 (D)	8,000	0.3	1.7	2.47	25
軟岩 (CL)	40,000	0.3	1.9	30	23
軟岩 (CM)	100,000	0.3	2.0	50	25
軟岩 (CH)	200,000	0.3	2.1	80	30
砂岩 (SSD)	12,000	0.3	1.7	6.0	20
砂岩 (SSC)	80,000	0.3	1.9	40	25

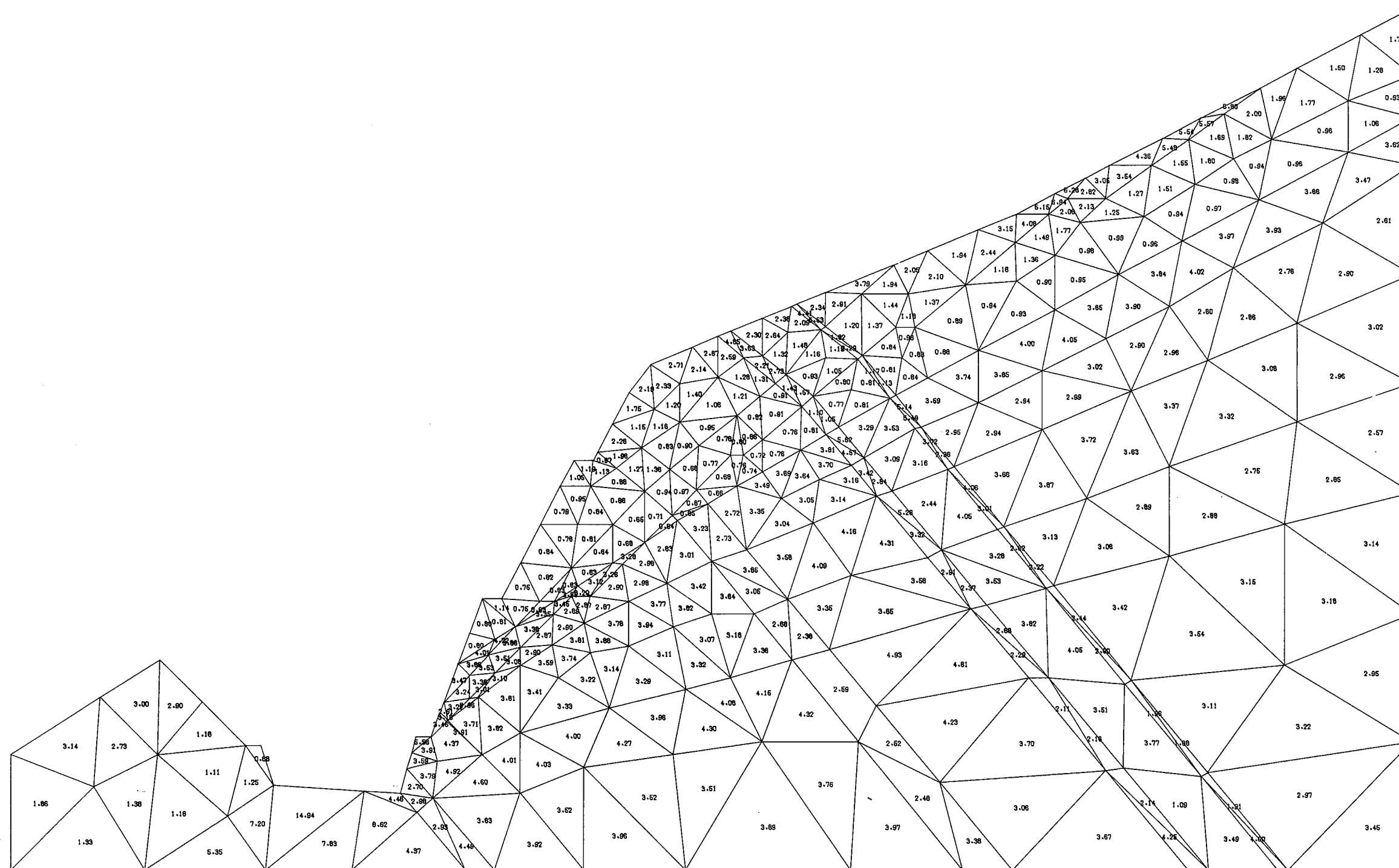
：Fs= 1 と仮定して，第一掘削面に対して，崩壊面を直線すべりとして，軟岩 (CL) の φ = 23 度，C = 30 t/m²，軟岩 (D) の φ = 15，20，25 度として，それぞれの C を求めたものである。

FEM
地 山
$C = 3.45$
$\phi = 15$



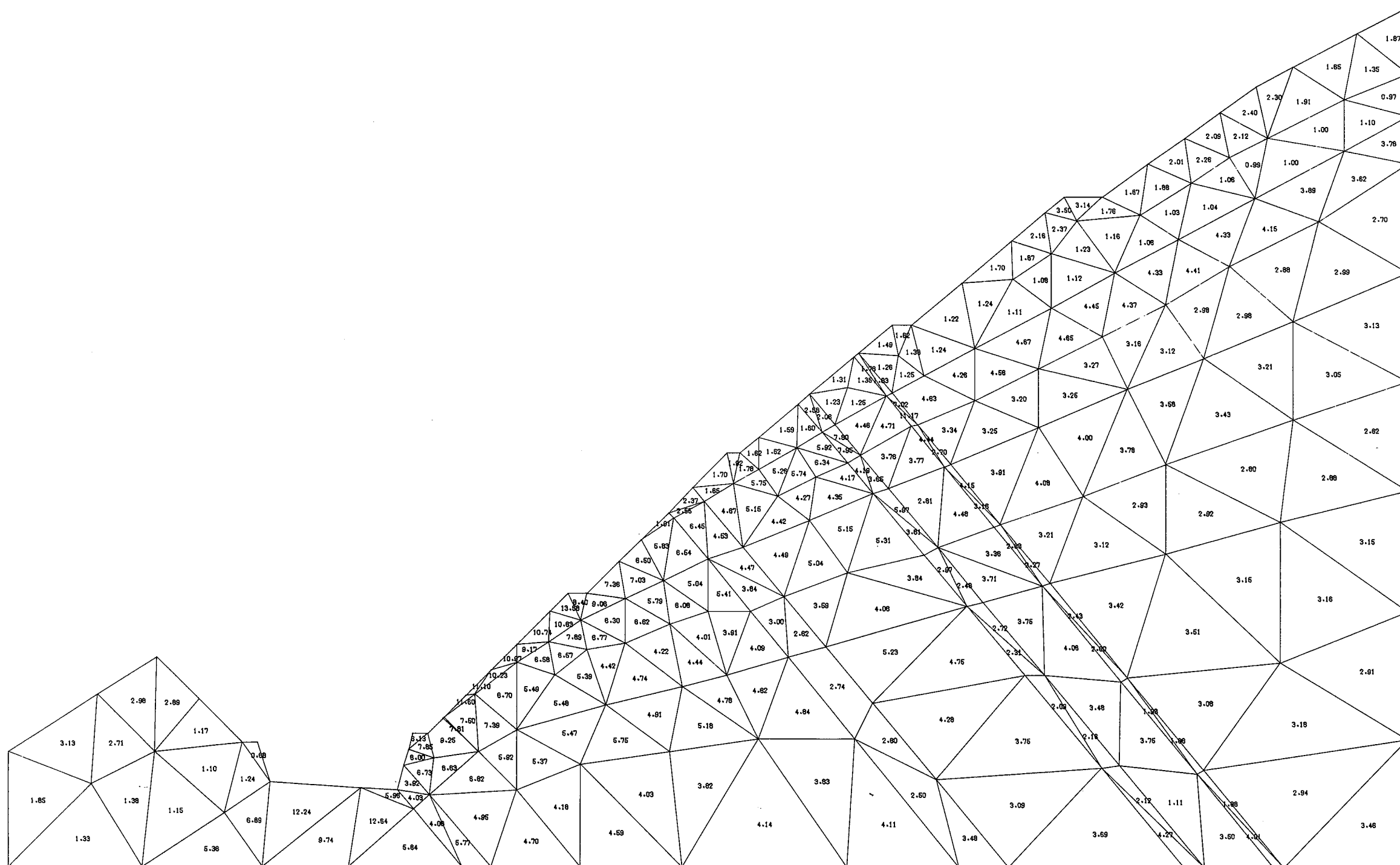
点 安 全 率 图

F E M
第一掘削
$C = 3.45$
$\phi = 15$



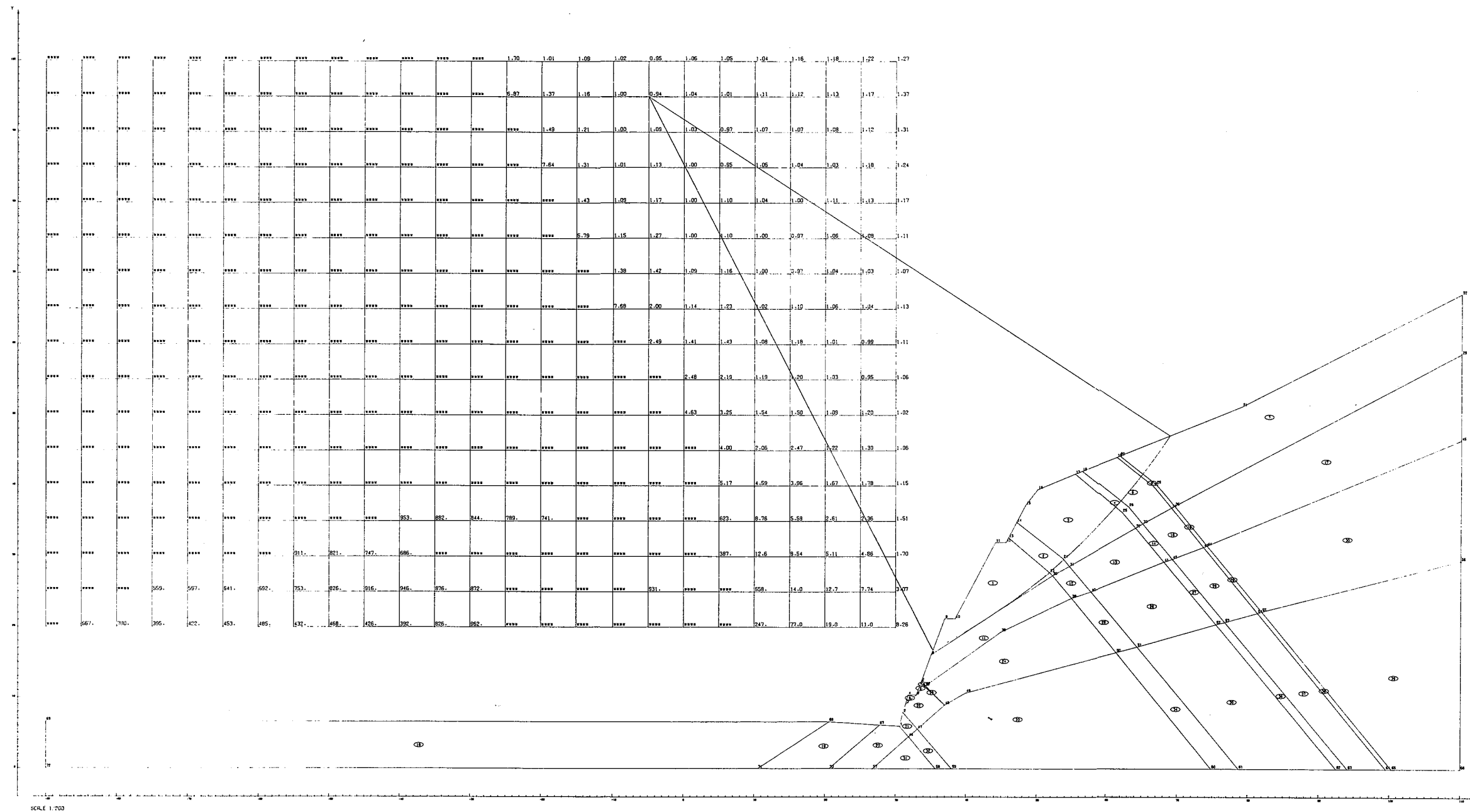
点 安 全 率 图

F E M
第二堀削
C = 3.4 5
$\phi = 1.5$



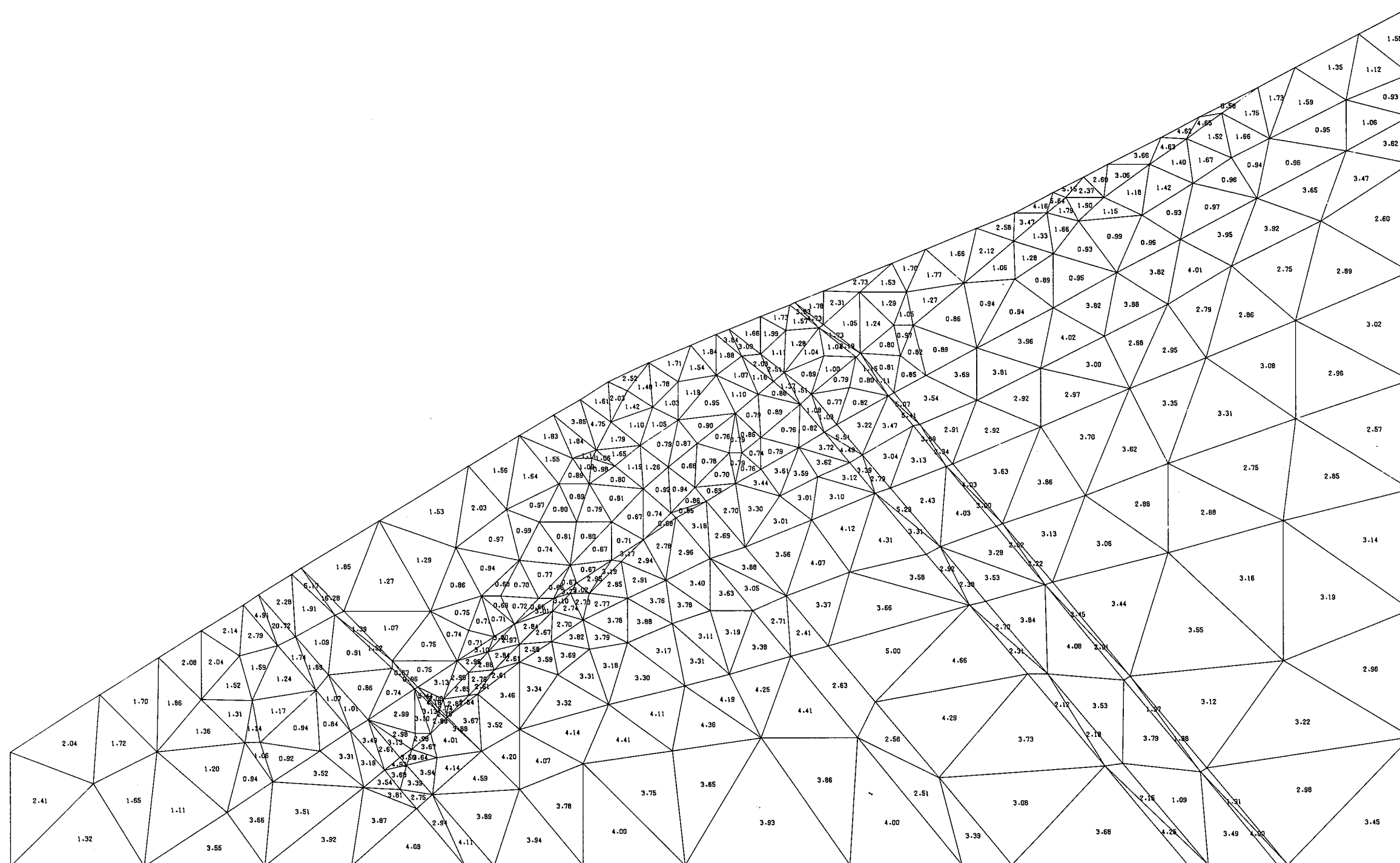
円弧すべり
第一堀削
C = 3.4 5
 $\phi = 1.5$

T O S A K O K U D O U CASE 1

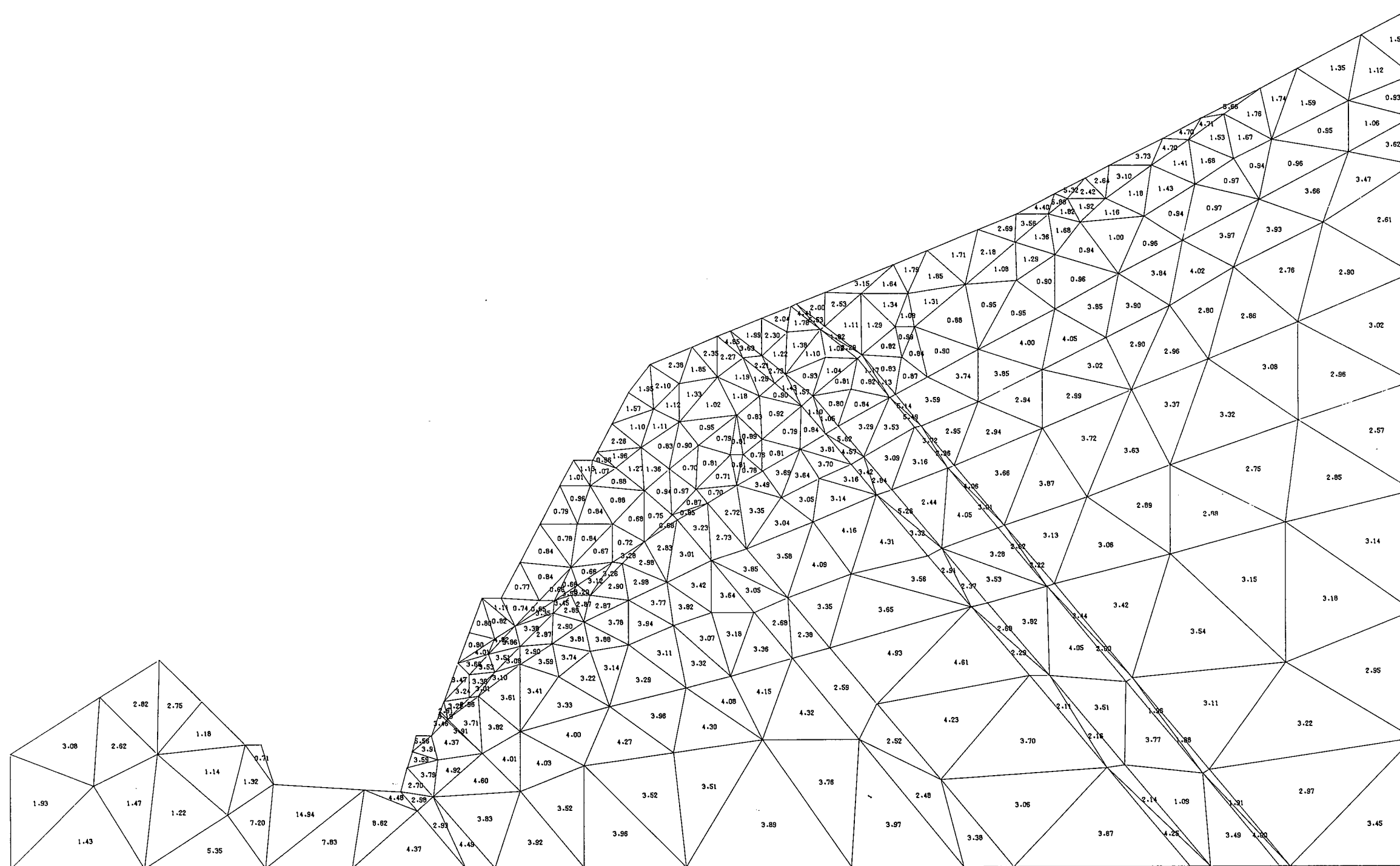


1	1.70	1.70	0.000	0.0	3.45	15.00
2	1.70	1.70	0.000	0.0	3.45	15.00
3	1.70	1.70	0.000	0.0	3.45	15.00
4	1.70	1.70	0.000	0.0	3.45	15.00
5	1.70	1.70	0.000	0.0	3.45	15.00
6	1.70	1.70	0.000	0.0	3.45	15.00
7	1.70	1.70	0.000	0.0	3.45	15.00
8	1.90	1.90	0.000	0.0	30.00	23.00
9	1.90	1.90	0.000	0.0	30.00	23.00
10	1.90	1.90	0.000	0.0	30.00	23.00
11	1.90	1.90	0.000	0.0	30.00	23.00
12	1.90	1.90	0.000	0.0	30.00	23.00
13	1.90	1.90	0.000	0.0	30.00	23.00
14	1.90	1.90	0.000	0.0	30.00	23.00
15	1.90	1.90	0.000	0.0	30.00	23.00
16	1.90	1.90	0.000	0.0	30.00	23.00
17	1.90	1.90	0.000	0.0	30.00	23.00
18	1.90	1.90	0.000	0.0	30.00	23.00
19	1.90	1.90	0.000	0.0	30.00	23.00
20	2.00	2.00	0.000	0.0	30.00	25.00
21	2.00	2.00	0.000	0.0	30.00	25.00
22	2.00	2.00	0.000	0.0	30.00	25.00
23	2.00	2.00	0.000	0.0	30.00	25.00
24	2.00	2.00	0.000	0.0	30.00	25.00
25	2.00	2.00	0.000	0.0	30.00	25.00
26	2.00	2.00	0.000	0.0	30.00	25.00
27	1.90	1.90	0.000	0.0	30.00	23.00
28	2.00	2.00	0.000	0.0	30.00	25.00
29	1.90	1.90	0.000	0.0	30.00	23.00
30	2.00	2.00	0.000	0.0	30.00	25.00
31	2.10	2.10	0.000	0.0	30.00	25.00
32	2.10	2.10	0.000	0.0	30.00	25.00
33	2.10	2.10	0.000	0.0	30.00	25.00
34	1.90	1.90	0.000	0.0	30.00	23.00
35	2.10	2.10	0.000	0.0	30.00	25.00
36	1.90	1.90	0.000	0.0	30.00	23.00
37	2.10	2.10	0.000	0.0	30.00	25.00
38	1.90	1.90	0.000	0.0	30.00	23.00
39	2.10	2.10	0.000	0.0	30.00	25.00

F E M
地 山
$C = 2.98$
$\phi = 20$

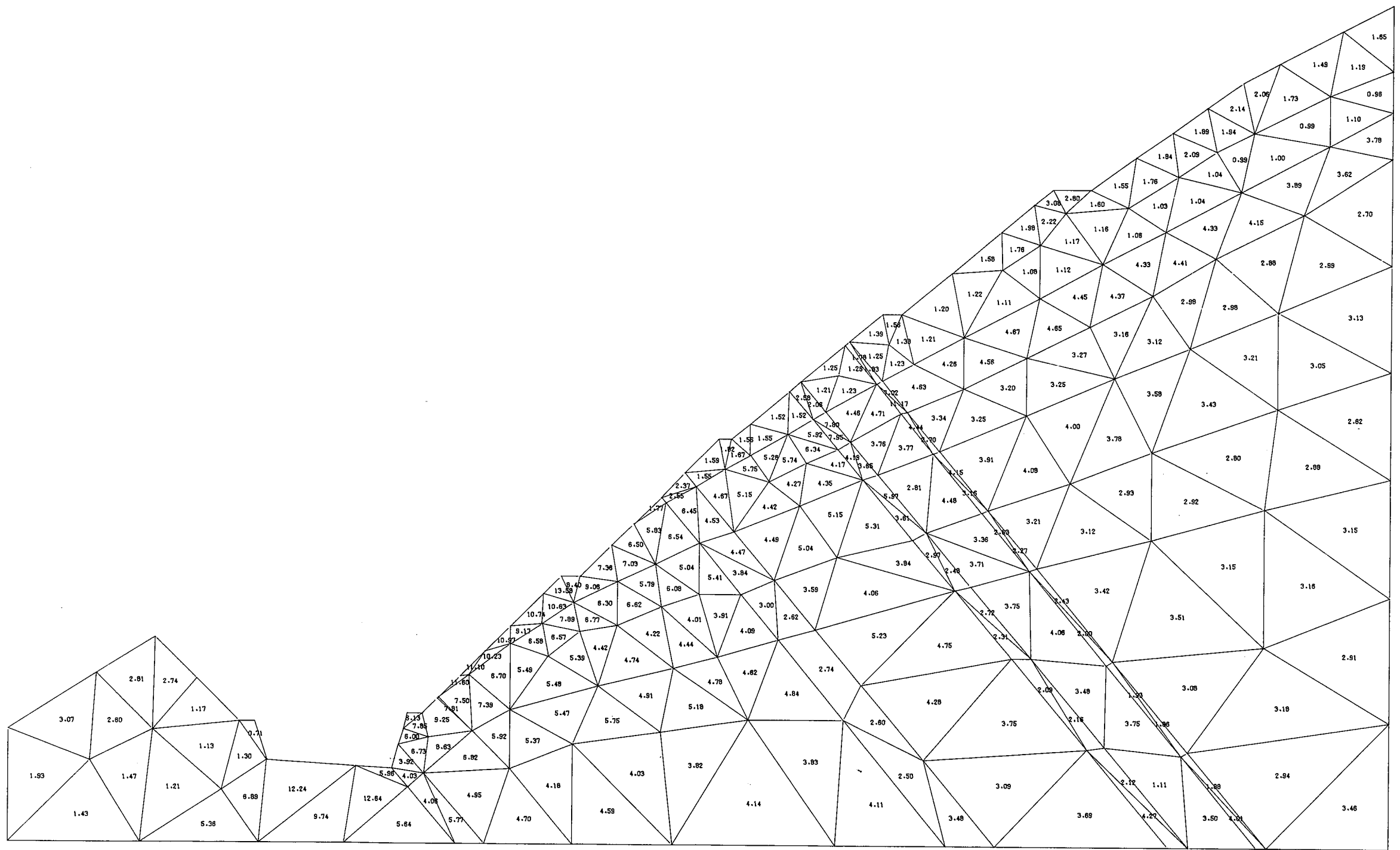


F E M
第一掘削
$C = 2.98$
$\phi = 20$



点安全率图

F E M
第二掘削
$C = 2.98$
$\phi = 20$



点 安 全 率 図

$$\phi = 20$$

1.62 1.01 1.09 1.04 0.88 1.09 1.02 1.09 1.21 1.24 1.29 1.34

1.07 1.73 1.15 1.01 0.96 1.07 1.04 1.15 1.16 1.19 1.24 1.43

1.43 1.13 1.00 1.09 1.06 1.01 1.10 1.11 1.13 1.18 1.36

1.71 1.27 1.01 1.12 1.01 0.88 1.09 1.09 1.09 1.22 1.29

1.36 1.07 1.15 1.01 1.10 1.07 1.04 1.14 1.17 1.23

5.10 1.11 1.23 1.00 1.09 1.01 1.30 1.34 1.08 1.14 1.00 1.00 1.06 1.07 1.12

5.72 1.85 1.10 1.19 1.02 1.09 1.08 1.07 1.16

2.42 1.33 1.35 1.07 1.16 1.03 1.07 1.14

2.32 2.02 1.15 1.16 1.03 1.07 1.09

4.36 3.17 1.45 1.42 1.07 1.13 1.03

3.79 1.87 2.28 1.17 1.26 1.06

4.55 4.06 1.92 1.59 1.68 1.13

933. 853. 860. 804. 786. 830. 8.88 5.52 2.34 2.13 1.48

843. 850. 773. 710. 892. 12.5 8.50 4.50 4.31 1.58

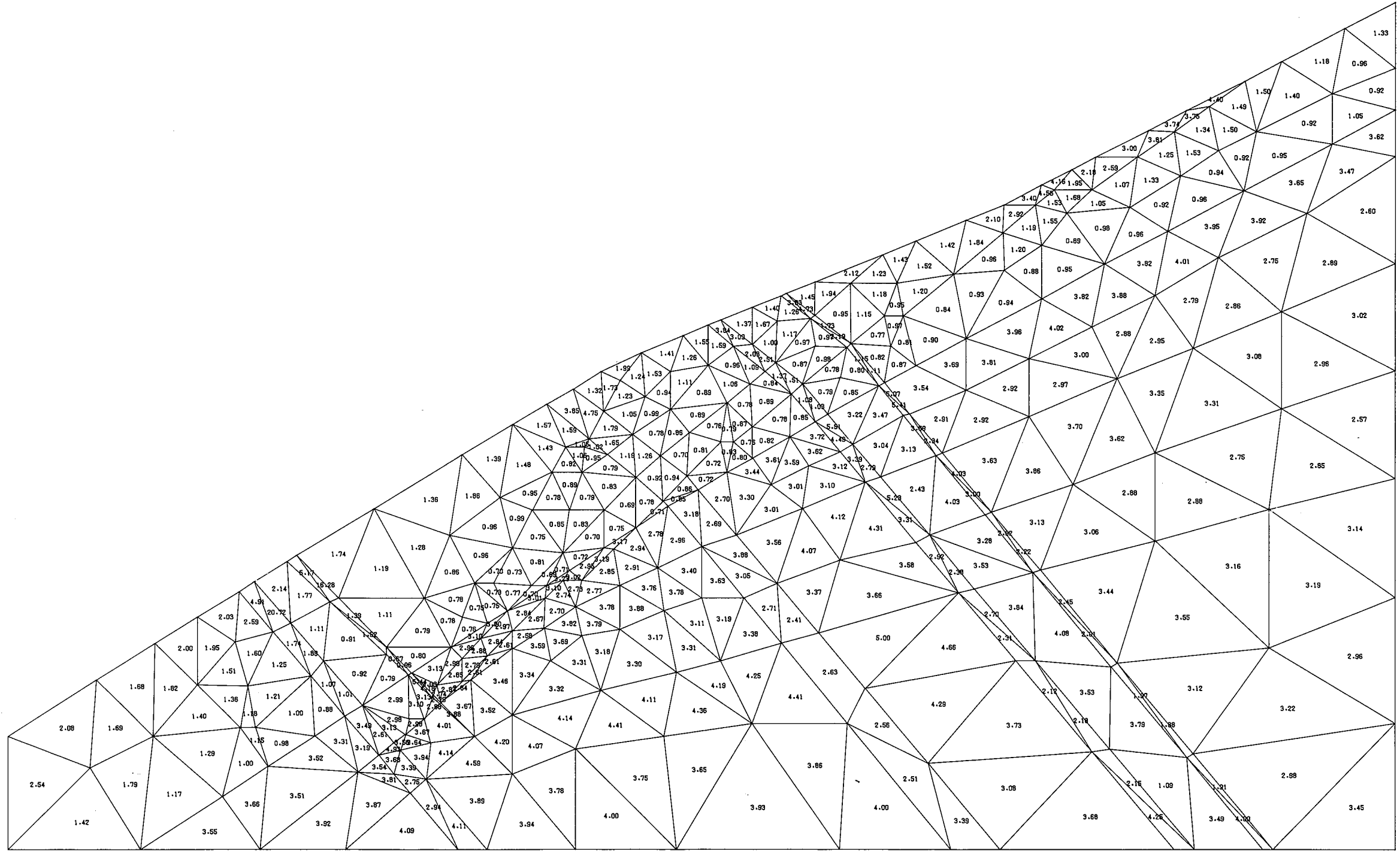
848. 803. 826. 876. 735. 807. 885. 861. 850. 886. 846. 861. 13.8 12.7 7.68 2.77

893. 822. 894. 420. 450. 486. 444. 445. 426. 773. 823. 858. 849. 77.0 18.0 11.0 0.25

SCALE 1/200

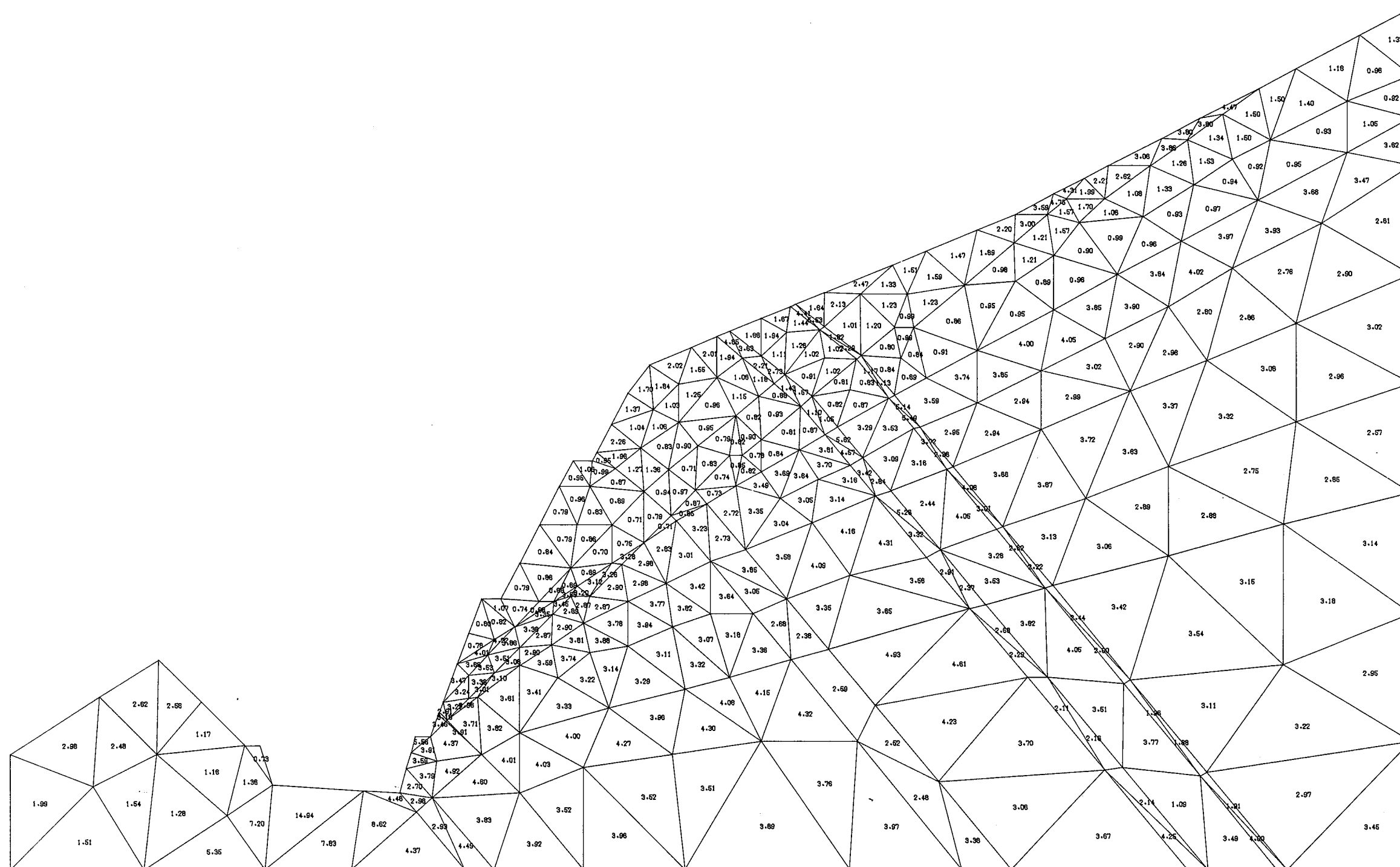
| | | | | | | |
|----------------------|------|-----------|-------|-----|------|-------|
| MIN. SAFETY FACTOR | | = 0.964 | | | | |
| FAILURE CRITERION | | = -5.00 | | | | |
| T | | = 85.00 | | | | |
| C | | = 48.00 | | | | |
| RESISTING RESISTANCE | | = 2330.00 | | | | |
| SLIDING RESISTANCE | | = 2417.57 | | | | |
| | M1 | M2 | X | Y | C | PHI |
| 1 | 1.70 | 1.70 | 0.000 | 0.0 | 2.68 | 20.00 |
| 2 | 1.70 | 1.70 | 0.000 | 0.0 | 6.00 | 20.00 |
| 3 | 1.70 | 1.70 | 0.000 | 0.0 | 2.68 | 20.00 |
| 4 | 1.70 | 1.70 | 2.000 | 0.0 | 6.00 | 20.00 |
| 5 | 1.70 | 1.70 | 0.000 | 0.0 | 2.68 | 20.00 |
| 6 | 1.70 | 1.70 | 0.000 | 0.0 | 6.00 | 20.00 |
| 7 | 1.70 | 1.70 | 0.000 | 0.0 | 2.68 | 20.00 |
| 8 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 9 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 10 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 11 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 12 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 13 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 14 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 15 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 16 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 17 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 18 | 1.70 | 1.70 | 0.000 | 0.0 | 2.68 | 20.00 |
| 19 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 20 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 21 | 1.90 | 1.90 | 0.000 | 0.0 | 3.50 | 23.00 |
| 22 | 2.00 | 2.00 | 0.000 | 0.0 | 0.50 | 25.00 |
| 23 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 24 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 25 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 26 | 2.00 | 2.00 | 0.000 | 3.0 | 0.50 | 25.00 |
| 27 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 28 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 29 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 30 | 2.00 | 2.00 | 0.000 | 0.0 | 0.50 | 25.00 |
| 31 | 2.10 | 2.10 | 0.000 | 0.0 | 0.80 | 30.00 |
| 32 | 2.10 | 2.10 | 0.000 | 0.0 | 4.00 | 25.00 |
| 33 | 2.10 | 2.10 | 0.000 | 0.0 | 4.00 | 25.00 |
| 34 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 35 | 2.10 | 2.10 | 0.000 | 0.0 | 0.80 | 30.00 |
| 36 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 37 | 1.80 | 1.80 | 0.000 | 0.0 | 4.00 | 25.00 |
| 38 | 1.90 | 1.90 | 0.000 | 0.0 | 4.00 | 25.00 |
| 39 | 2.10 | 2.10 | 0.000 | 0.0 | 0.80 | 30.00 |

| |
|-------------|
| F E M |
| 地 山 |
| $C = 2.47$ |
| $\phi = 25$ |



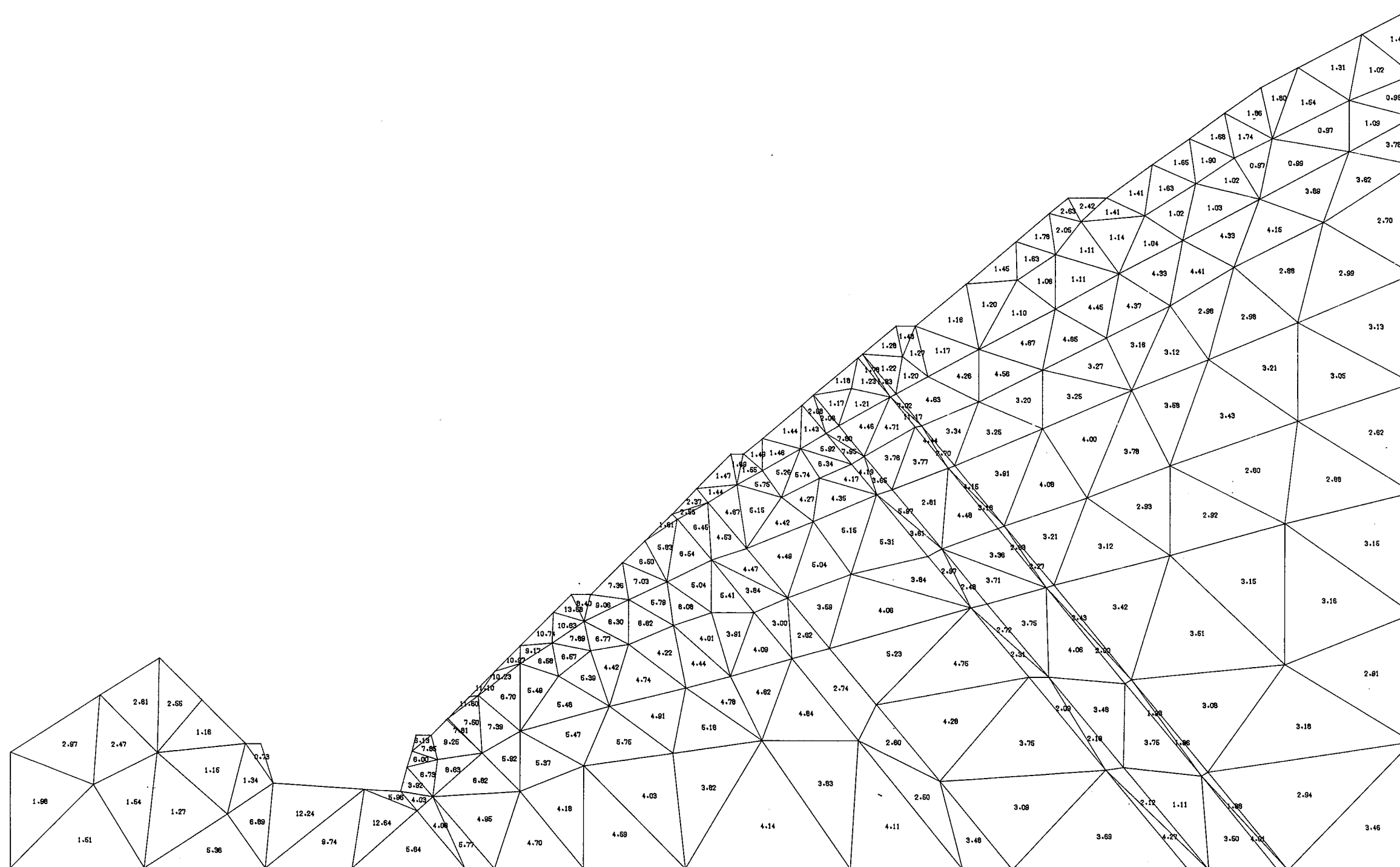
点 安 全 率 图

| |
|-------------|
| F E M |
| 第一掘削 |
| $C = 2.47$ |
| $\phi = 25$ |



点 安 全 率 図

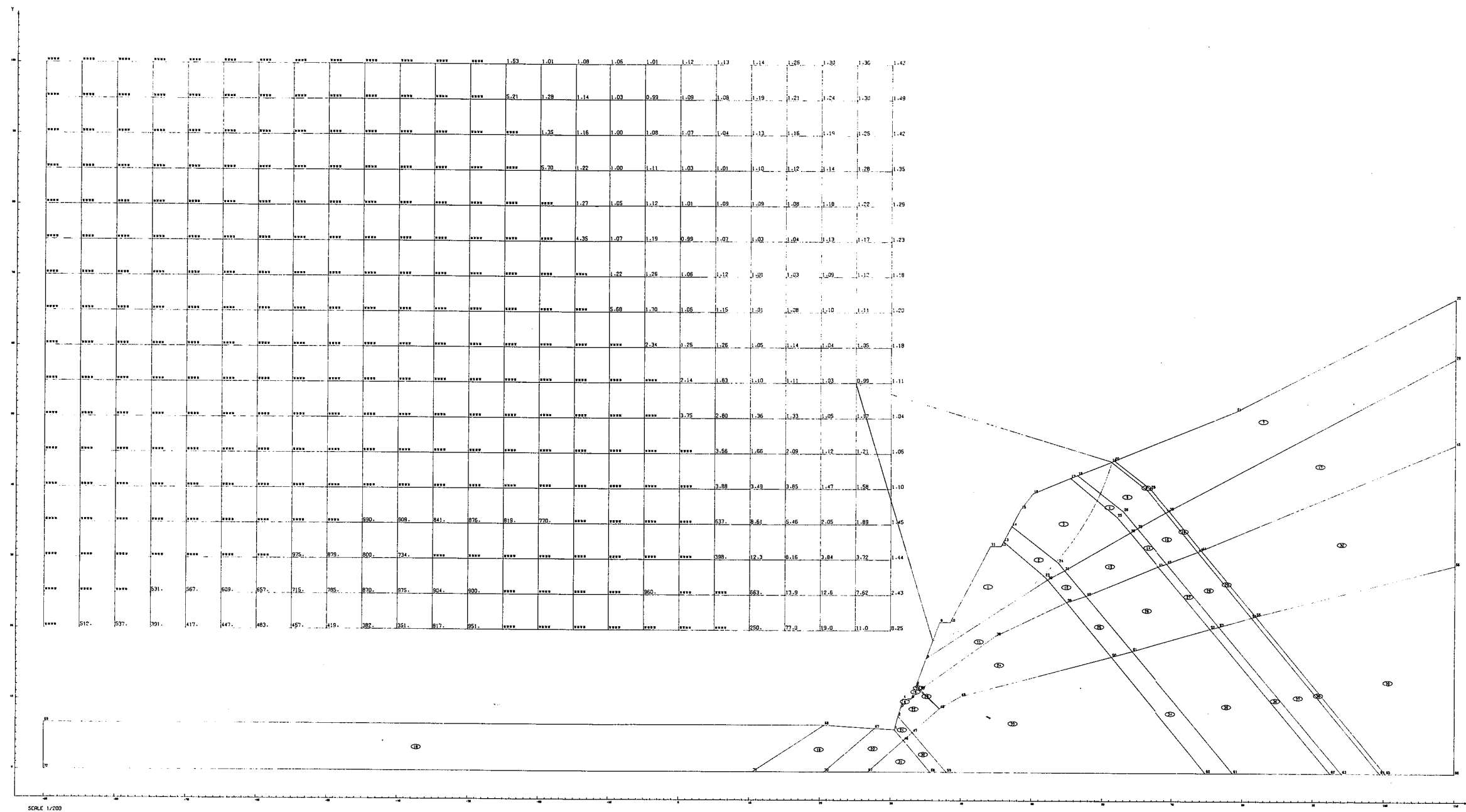
| |
|-------------|
| F E M |
| 第二掘削 |
| $C = 2.47$ |
| $\phi = 25$ |



点 安 全 率 图

円弧すべり
第一堀削
C = 2.47
 $\phi = 25$

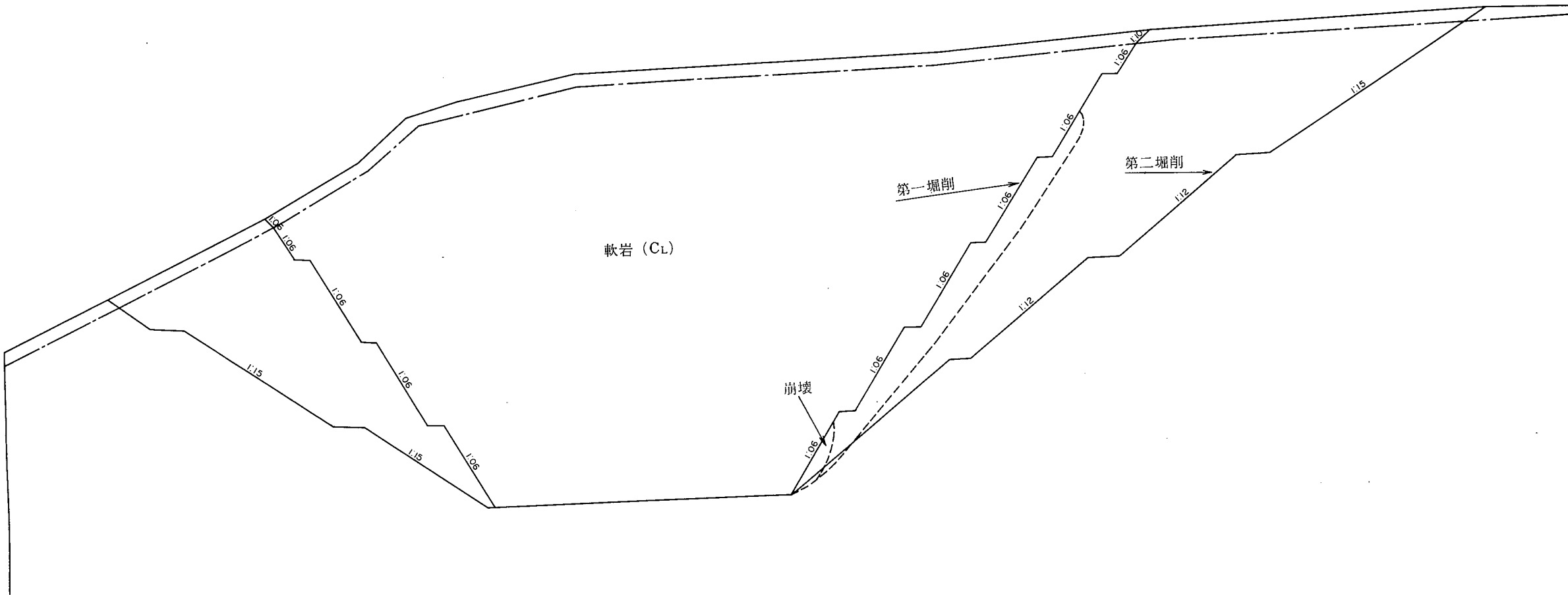
T O S A K O K U D O U CASE 3



| | | |
|--------------------|-----|---------|
| MIN. SAFETY FACTOR | = | 0.993 |
| FAILURE CIRCLE | X = | 25.00 |
| | Y = | 55.00 |
| | R = | 38.00 |
| RESISTING MOMENT | = | 8110.07 |
| SLIDING MOMENT | = | 8171.32 |

| NO | X | Y | U | V | W | P |
|----|------|------|-------|-----|-------|-------|
| 1 | 1.70 | 1.70 | 0.000 | 0.0 | 2.47 | 25.00 |
| 2 | 1.70 | 1.70 | 0.000 | 0.0 | 6.00 | 20.00 |
| 3 | 1.70 | 1.70 | 0.000 | 0.0 | 2.47 | 25.00 |
| 4 | 1.70 | 1.70 | 0.000 | 0.0 | 5.90 | 20.00 |
| 5 | 1.70 | 1.70 | 0.000 | 0.0 | 2.47 | 25.00 |
| 6 | 1.70 | 1.70 | 0.000 | 0.0 | 6.00 | 20.00 |
| 7 | 1.70 | 1.70 | 0.000 | 0.0 | 2.47 | 25.00 |
| 8 | 1.80 | 1.80 | 0.000 | 0.0 | 20.00 | 25.00 |
| 9 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 10 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 11 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 12 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 13 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 14 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 15 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 16 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 17 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 18 | 1.70 | 1.70 | 0.000 | 0.0 | 2.47 | 25.00 |
| 19 | 1.90 | 1.90 | 0.000 | 0.0 | 30.00 | 23.00 |
| 20 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 21 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 22 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 23 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 24 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 25 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 26 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 27 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 28 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 29 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 30 | 2.00 | 2.00 | 0.000 | 0.0 | 50.00 | 25.00 |
| 31 | 2.10 | 2.10 | 0.000 | 0.0 | 80.00 | 30.00 |
| 32 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 33 | 2.10 | 2.10 | 0.000 | 0.0 | 80.00 | 30.00 |
| 34 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 35 | 2.10 | 2.10 | 0.000 | 0.0 | 80.00 | 30.00 |
| 36 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 37 | 2.10 | 2.10 | 0.000 | 0.0 | 80.00 | 30.00 |
| 38 | 1.90 | 1.90 | 0.000 | 0.0 | 40.00 | 28.00 |
| 39 | 2.10 | 2.10 | 0.000 | 0.0 | 80.00 | 30.00 |

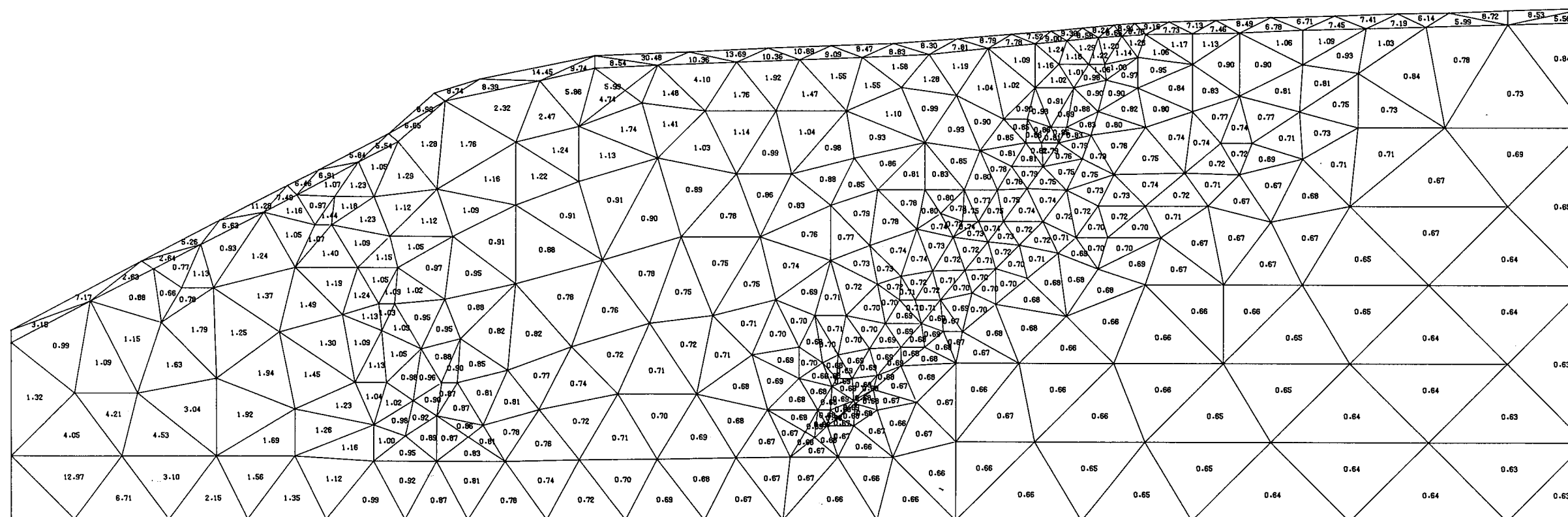
地区名：国道10号線高岡バイパス(建設省九州地建宮崎工事事務所管内)
 地質断面図



| 地 盤 定 数 | | | | | |
|---------|-------------------------------|------------|-------------------------|-----------------------|-------|
| 分 類 | 変形係数
E (t/m ²) | ポアソン比
ν | γ t (t/m ³) | C (t/m ³) | φ (度) |
| 表土 (Tr) | 4,000 | 0.3 | 1.6 | 2.0 | 20 |
| 軟岩 (CL) | 56,000 | 0.3 | 1.9 | 1.950 | 15 |
| | 56,000 | 0.3 | 1.9 | 1.618 | 23 |
| | 56,000 | 0.3 | 1.9 | 1.294 | 30 |

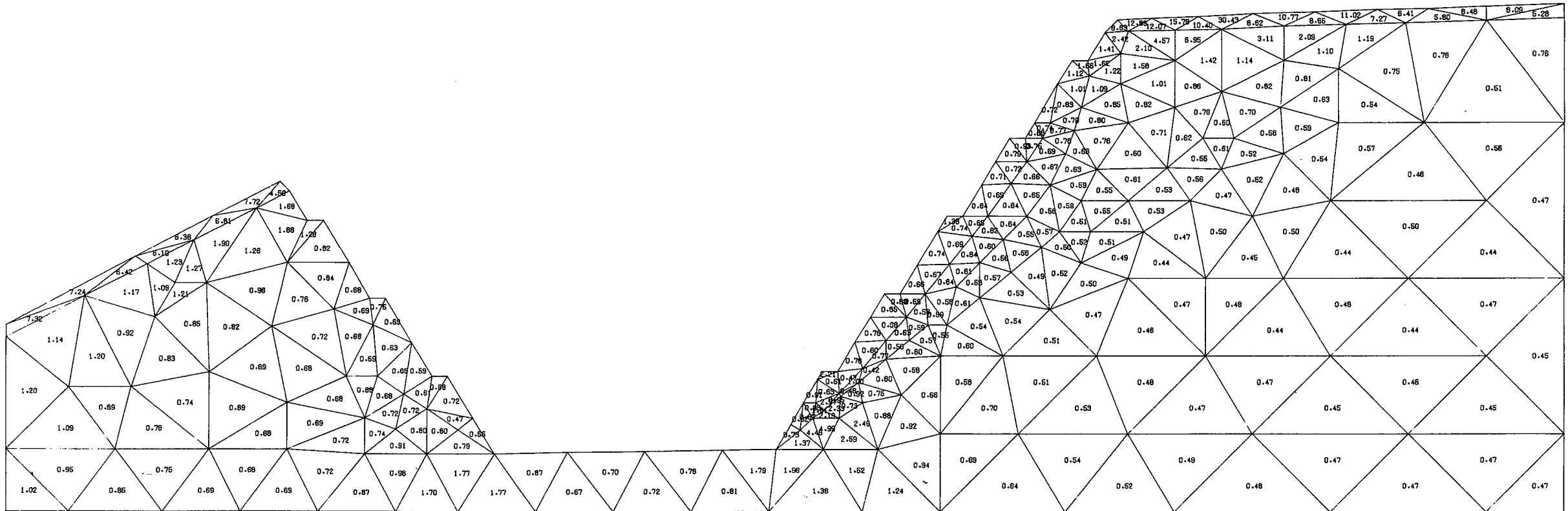
：Fs=1と仮定して、第一堀削面に対して、崩壊面を円弧すべりとして、軟岩 (CL) の φ = 15, 23, 30度として、それぞれのCを求めたものである。

| |
|-------------|
| F E M |
| 地 山 |
| $C = 1.950$ |
| $\phi = 15$ |



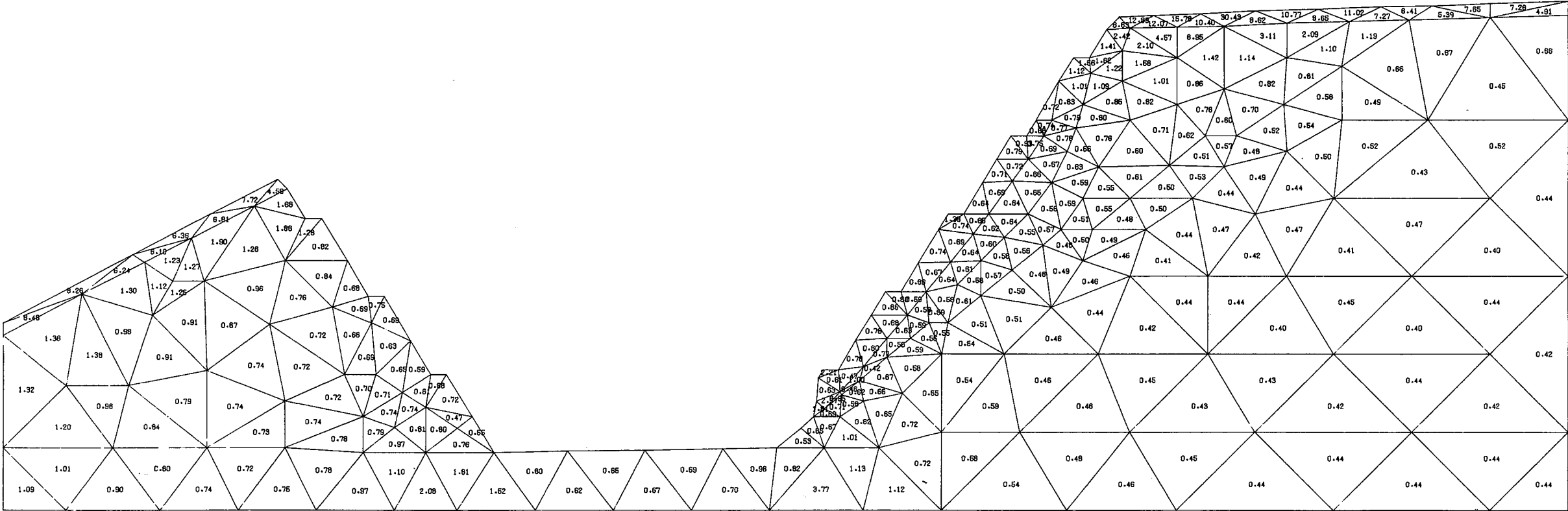
点 安 全 率 图

| |
|-------------|
| F E M |
| 第一掘削 |
| $C = 1.950$ |
| $\phi = 15$ |



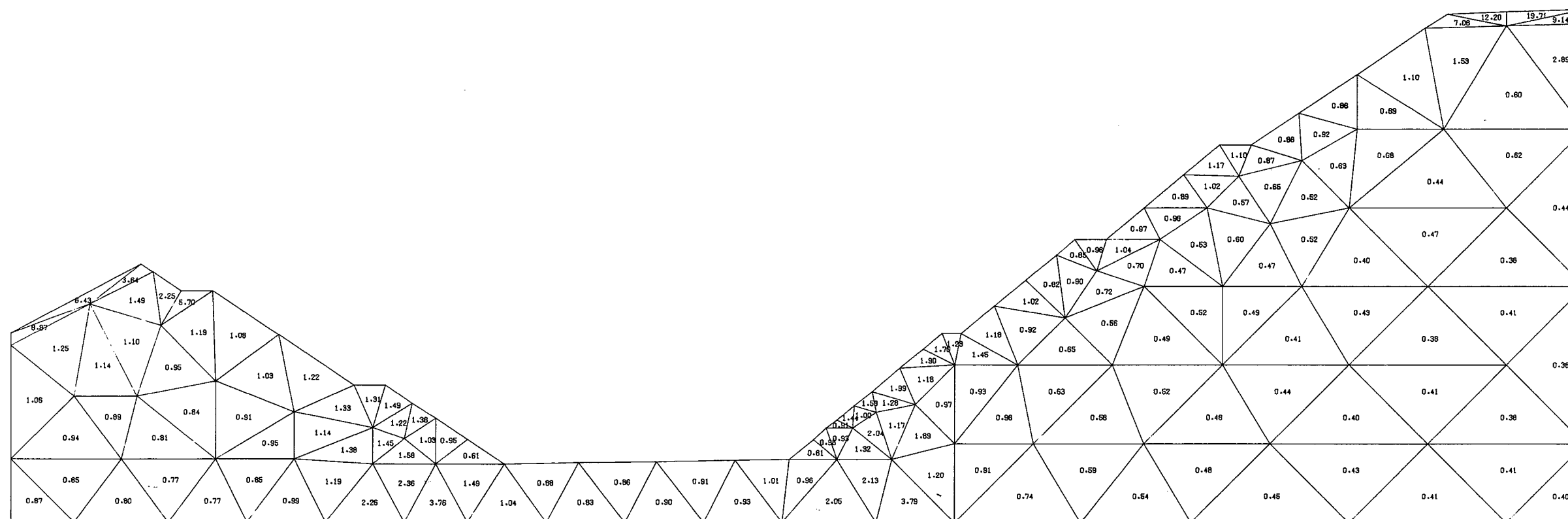
点 安 全 率 图

| |
|-------------|
| F E M |
| 崩 壊 |
| $C = 1.950$ |
| $\phi = 15$ |



点 安 全 率 図

| |
|-------------|
| F E M |
| 第二堀削 |
| $C = 1.950$ |
| $\phi = 15$ |



点 安 全 率 図

| |
|-------------|
| 円弧すべり |
| 第一堀削 |
| $C = 1.950$ |
| $\phi = 15$ |

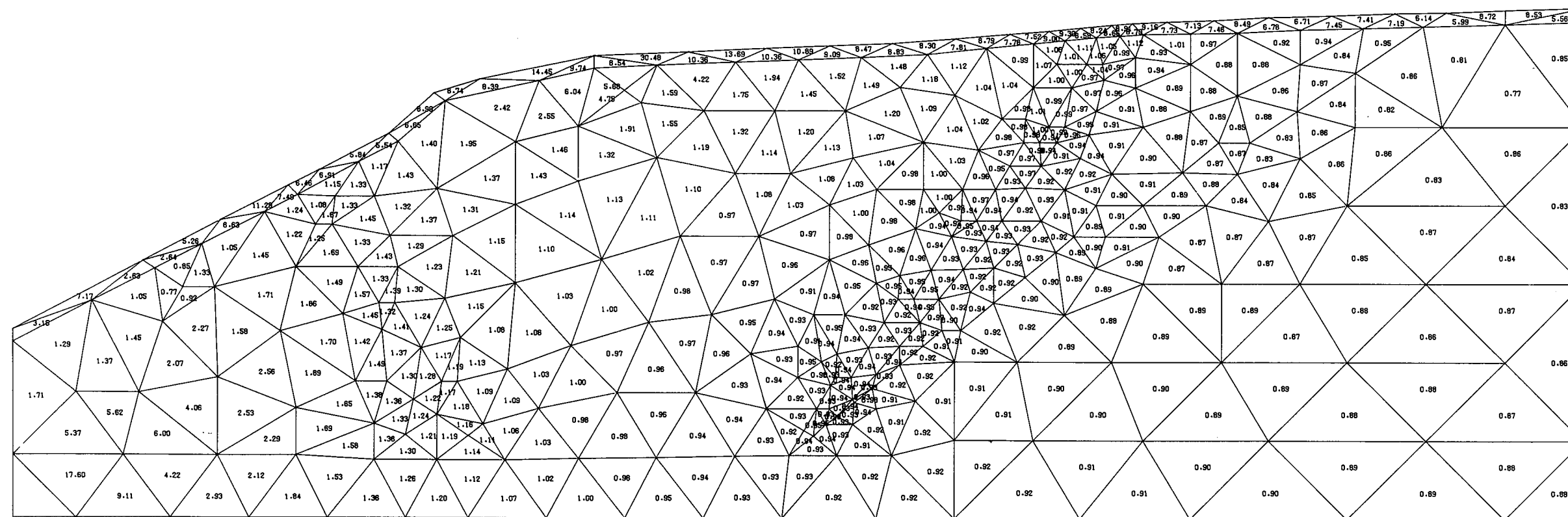
DAI-1 KUSSAKU DANMEN CASE 2

MIN. SAFETY FACTOR = 0.591
FAILURE CIRCLE X = 42.00
Y = 40.00
R = 36.00
RESISTING MOMENT = 5833.90
SLIDING MOMENT = 8971.76

| M1 | M2 | N | VO | C | PHI |
|----|------|------|-------|-----|------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 1.95 |
| 2 | 1.50 | 1.50 | 0.000 | 0.0 | 2.00 |

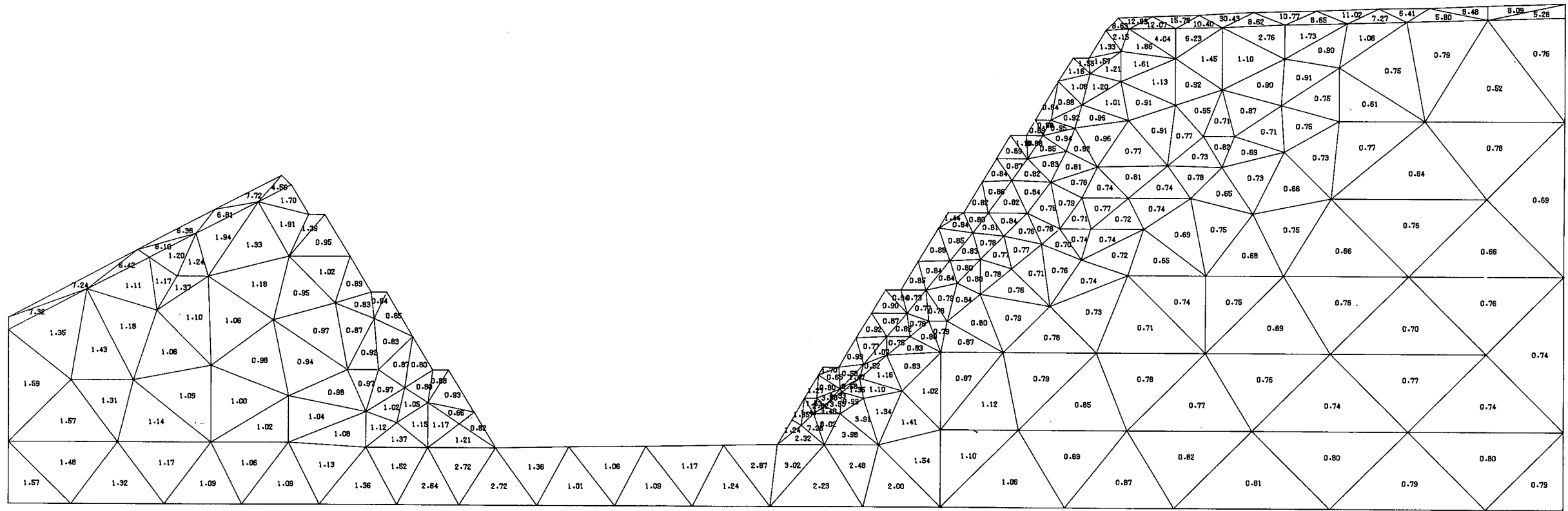
SCALE 1:200

| |
|-------------|
| F E M |
| 地 山 |
| $C = 1.618$ |
| $\phi = 23$ |



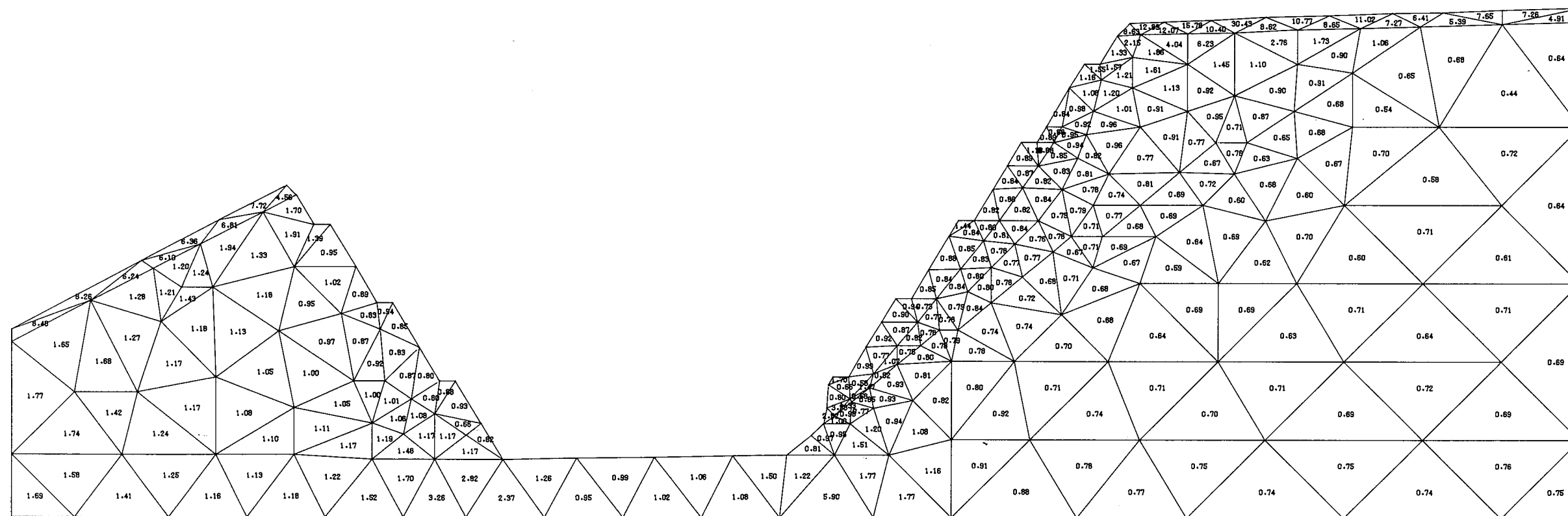
点 安 全 率 图

| |
|-------------------|
| F E M |
| 第一掘削 |
| $C = 1.6 \ 1 \ 8$ |
| $\phi = 2 \ 3$ |



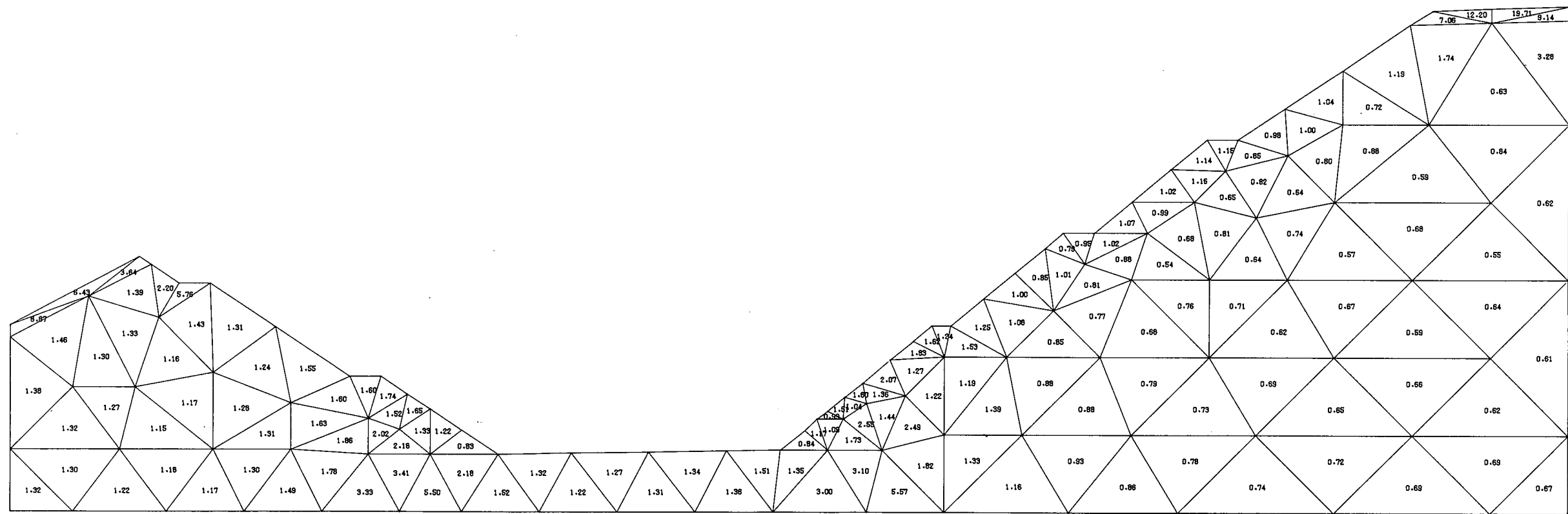
点 安 全 率 图

| |
|-------------------|
| F E M |
| 崩 壊 |
| $C = 1.6 \ 1 \ 8$ |
| $\phi = 2 \ 3$ |



点 安 全 率 図

| |
|-------------------|
| F E M |
| 第二堀削 |
| $C = 1.6 \ 1 \ 8$ |
| $\phi = 2 \ 3$ |

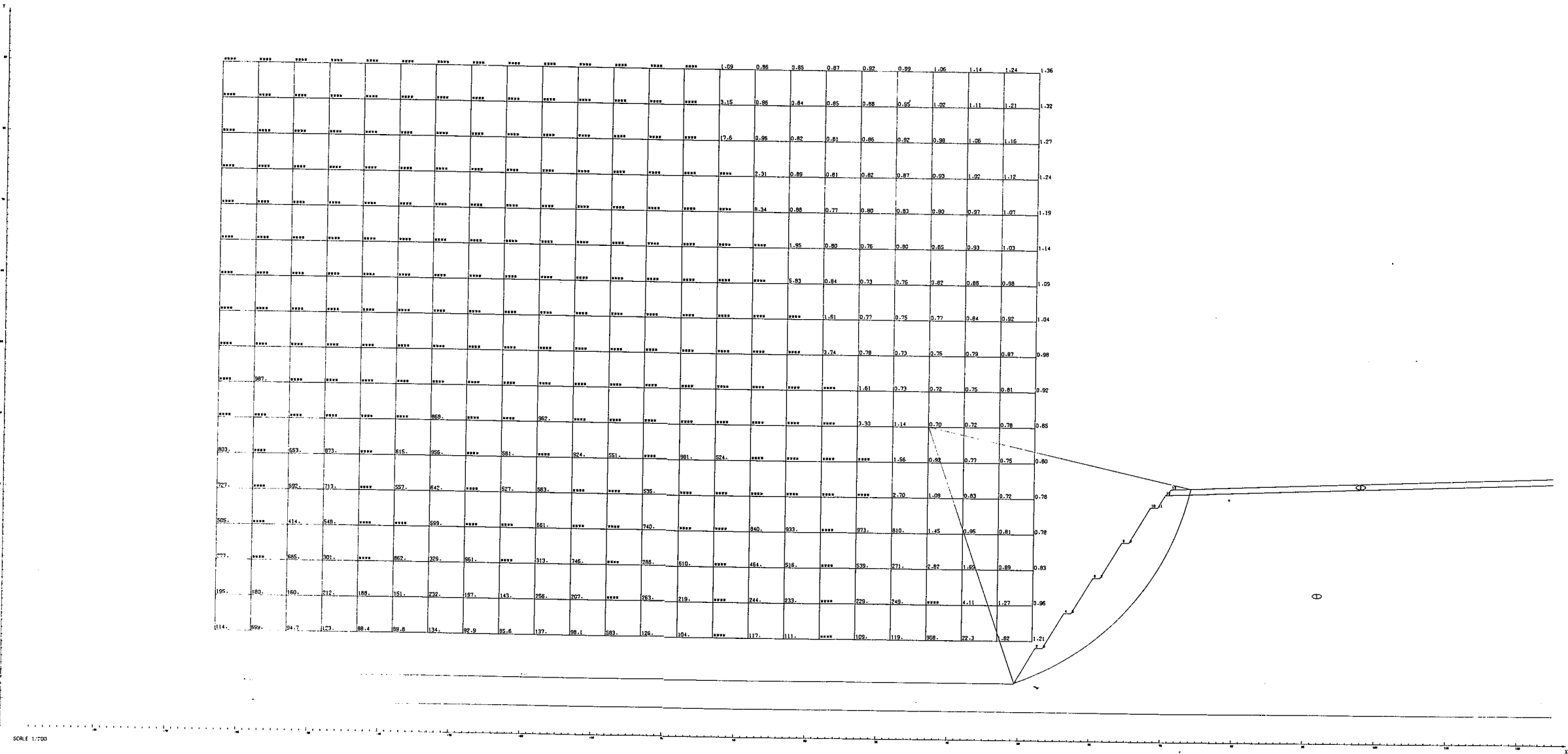


点安全率図

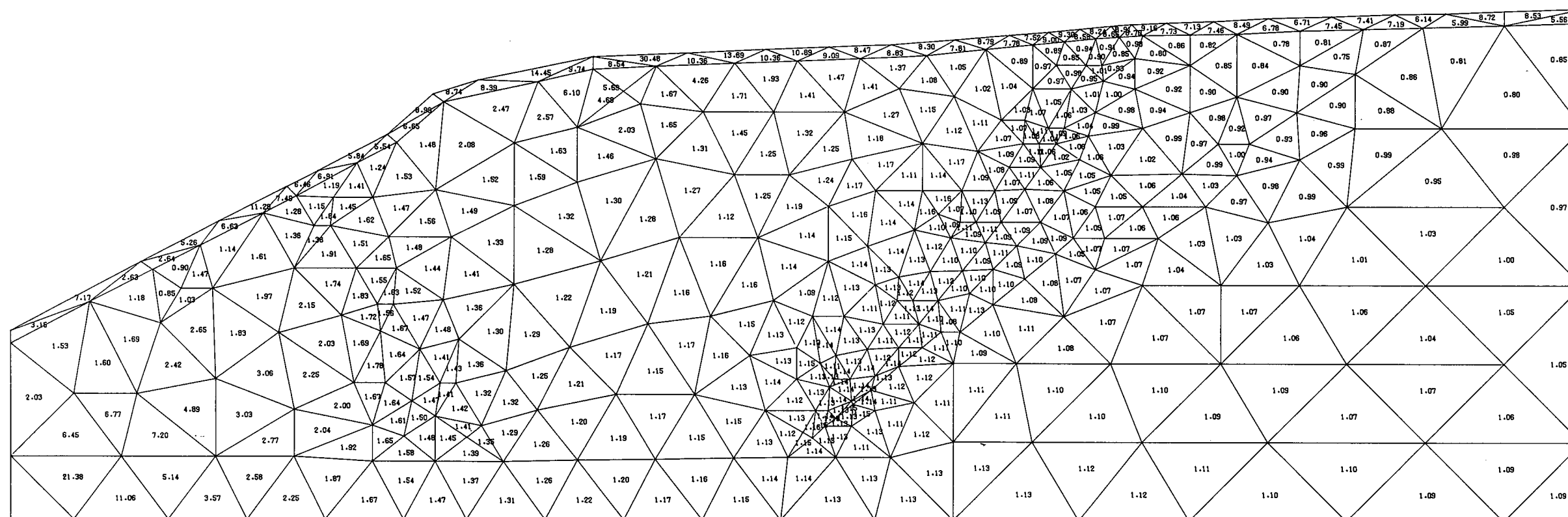
| |
|--------------|
| 円弧すべり |
| 第一堀削 |
| C = 1.6 1 8 |
| $\phi = 2 3$ |

DAI-1 KUSSAKU DAMMEN CASE 1

| | | | | | |
|----------------------------|------|------|-------|-----|------------|
| MIN. SAFETY FACTOR = 0.704 | | | | | |
| FAILURE CIRCLE X = 37.00 | | | | | |
| Y = 40.00 | | | | | |
| R = 28.00 | | | | | |
| RESISTING MOMENT = 8993.88 | | | | | |
| SLIDING MOMENT = 8770.55 | | | | | |
| SL | SE | N | TD | C | PHI |
| 1 | 1.80 | 1.80 | 0.000 | 0.0 | 1.62 23.00 |
| 2 | 1.60 | 1.60 | 0.000 | 0.0 | 2.00 20.00 |

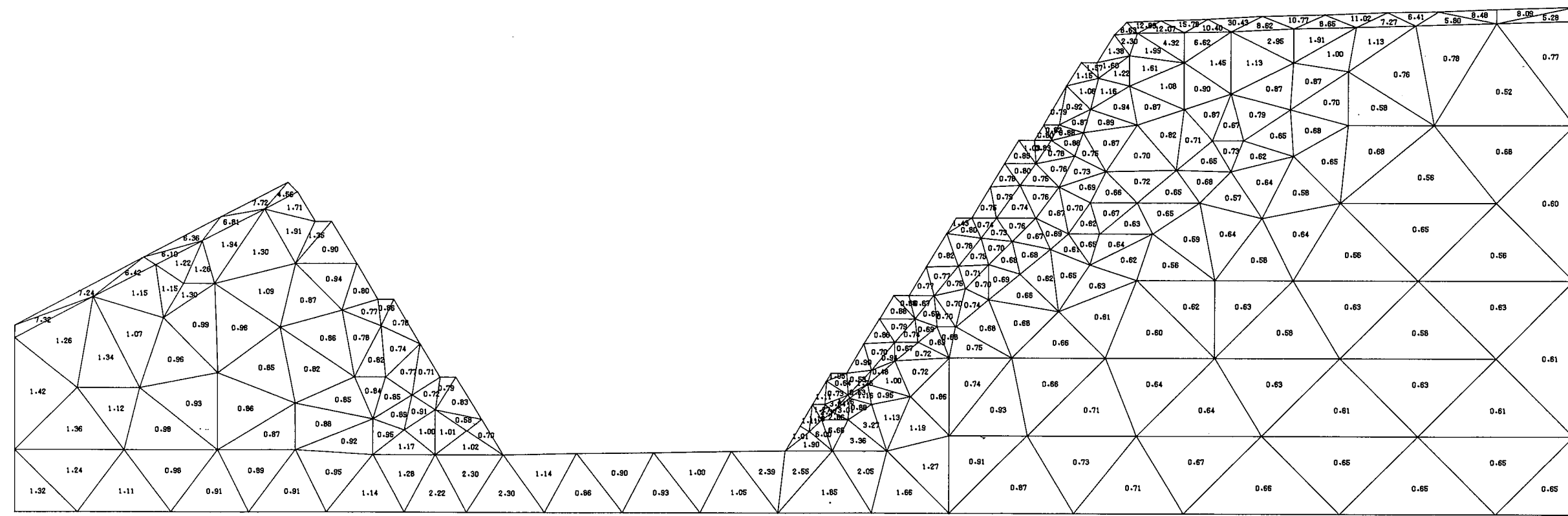


| |
|-------------|
| FEM |
| 地 山 |
| $C = 1.294$ |
| $\phi = 30$ |



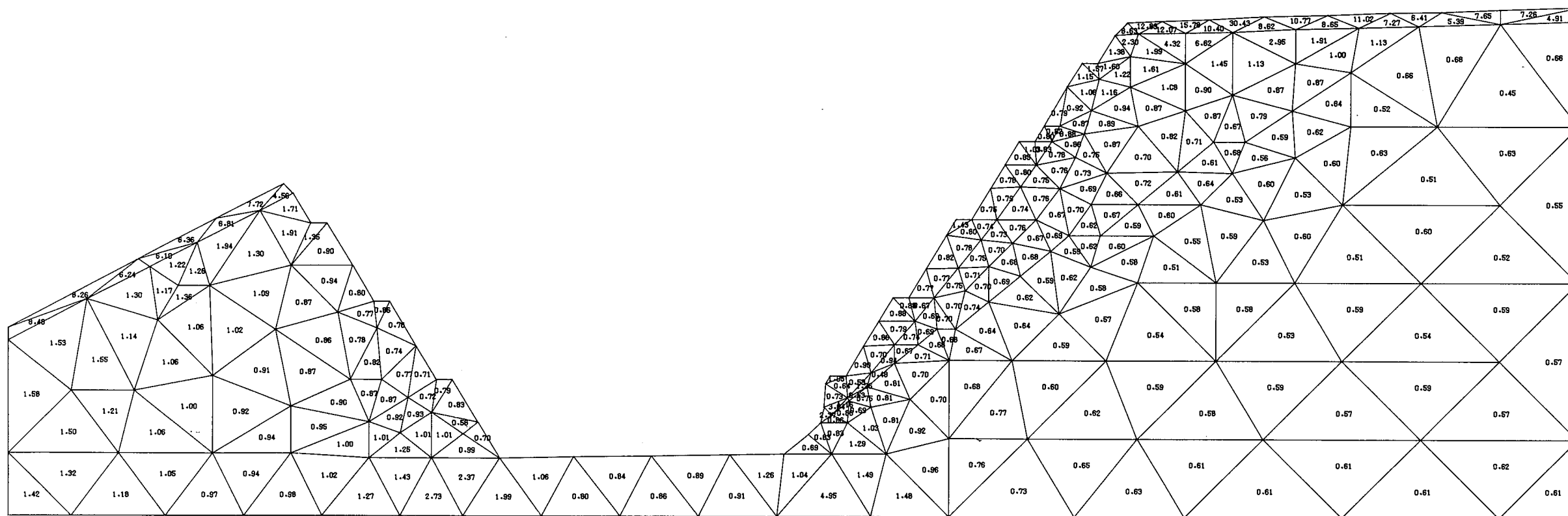
点 安 全 率 图

| |
|-------------|
| F E M |
| 第一掘削 |
| $C = 1.294$ |
| $\phi = 30$ |



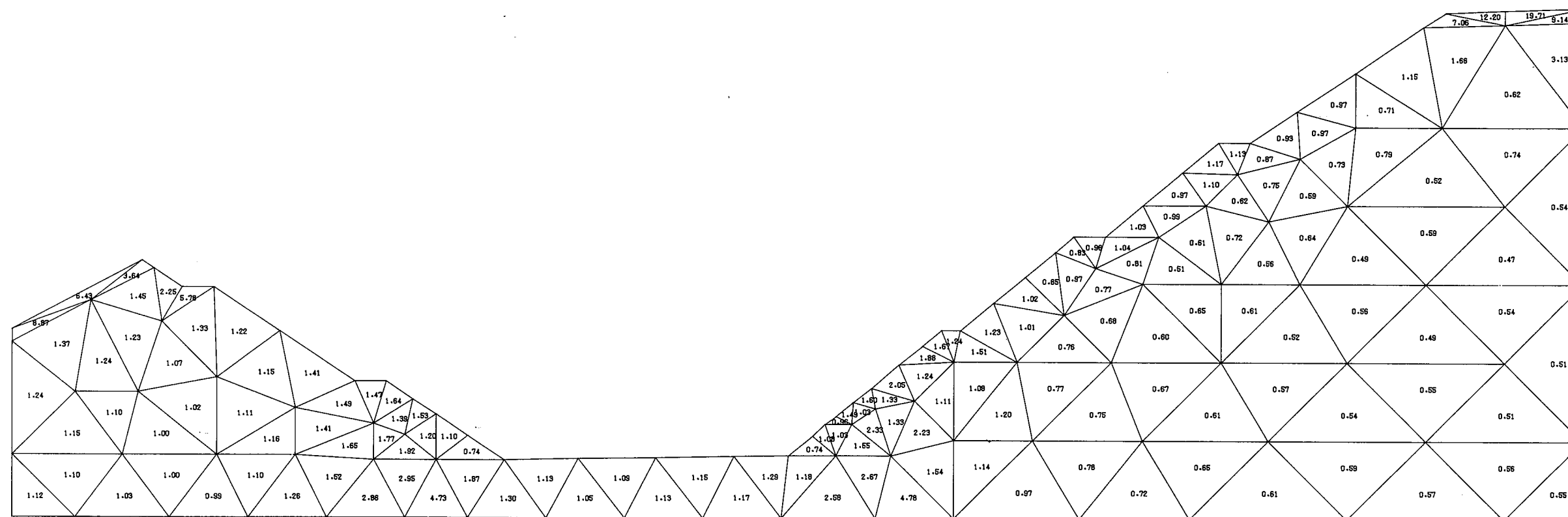
点 安 全 率 图

| |
|-------------|
| FEM |
| 崩 壞 |
| $C = 1.294$ |
| $\phi = 30$ |



点 安 全 率 图

| |
|-------------|
| F E M |
| 第二堀削 |
| $C = 1.294$ |
| $\phi = 30$ |

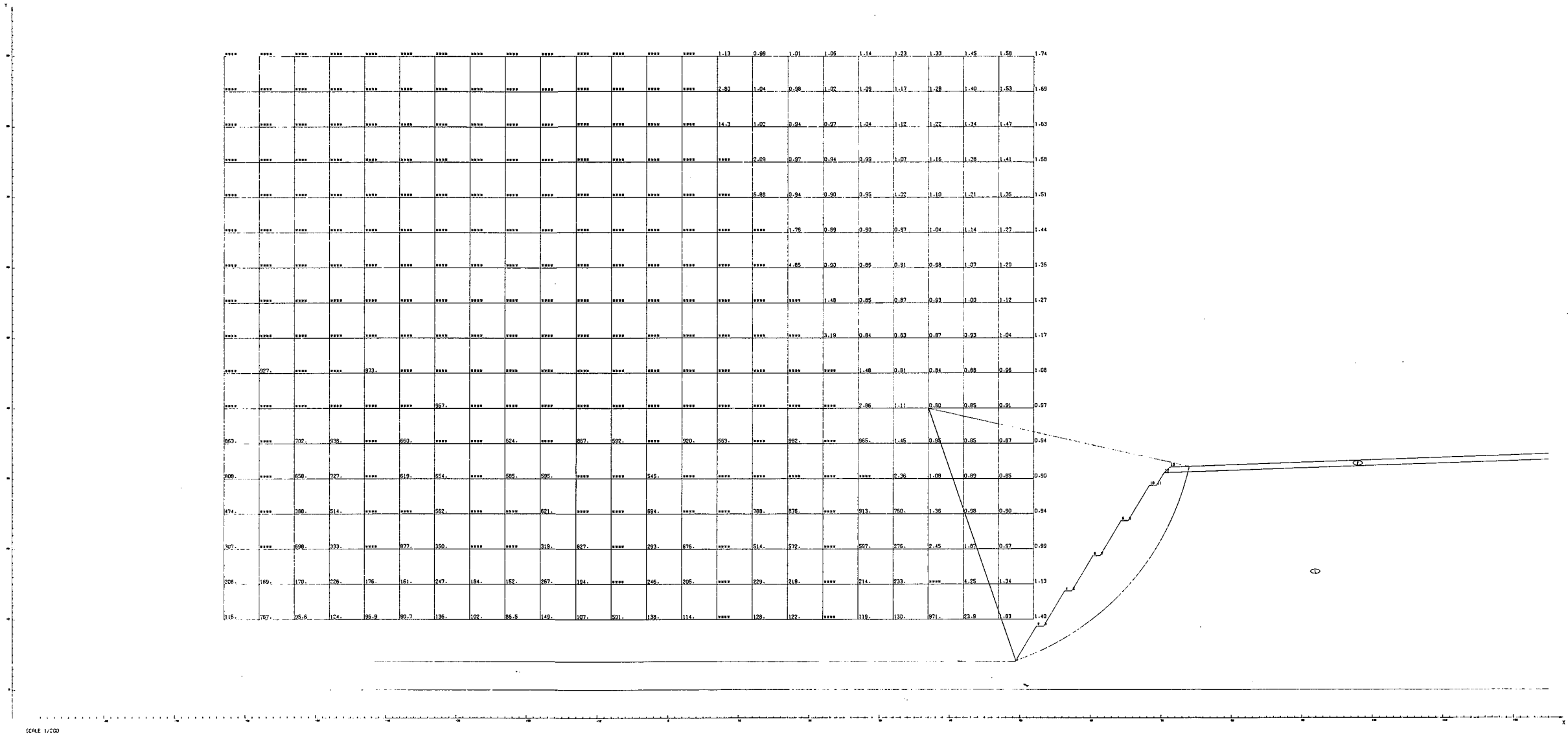


点 安 全 率 図

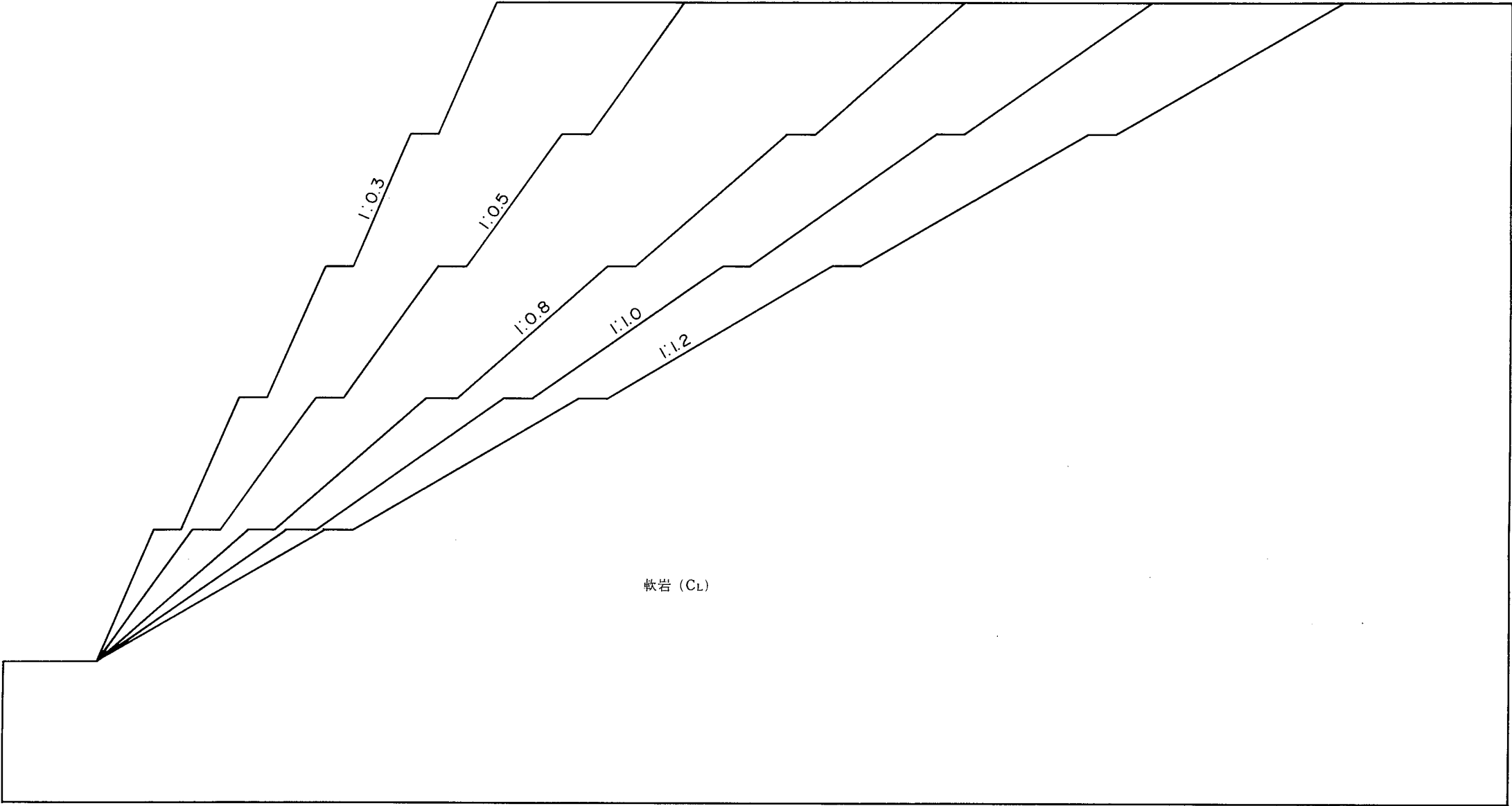
| |
|-------------|
| 円弧すべり |
| 第一堀削 |
| C = 1.2 9 4 |
| $\phi = 30$ |

DR1-1 KUSAKU DAMMEN CASE 3

| MIN. SAFETY FACTOR | = | 0.799 | | | | | | | | | | | | | | | | | | | | |
|---|------|---------|-------|-----|------|-------|---|-----|---|------|------|-------|-----|------|-------|---|------|------|-------|-----|------|-------|
| FAILURE CIRCLE | X = | 37.00 | | | | | | | | | | | | | | | | | | | | |
| | Y = | 40.00 | | | | | | | | | | | | | | | | | | | | |
| | R = | 38.00 | | | | | | | | | | | | | | | | | | | | |
| RESISTING MOMENT | = | 6685.54 | | | | | | | | | | | | | | | | | | | | |
| SLIDING MOMENT | = | 8370.55 | | | | | | | | | | | | | | | | | | | | |
| <table><tr><th>M1</th><th>M2</th><th>K</th><th>VO</th><th>C</th><th>PHI</th></tr><tr><td>1</td><td>1.90</td><td>1.90</td><td>0.000</td><td>0.0</td><td>1.29</td><td>30.00</td></tr><tr><td>2</td><td>1.60</td><td>1.60</td><td>0.000</td><td>0.0</td><td>2.00</td><td>20.00</td></tr></table> | | | M1 | M2 | K | VO | C | PHI | 1 | 1.90 | 1.90 | 0.000 | 0.0 | 1.29 | 30.00 | 2 | 1.60 | 1.60 | 0.000 | 0.0 | 2.00 | 20.00 |
| M1 | M2 | K | VO | C | PHI | | | | | | | | | | | | | | | | | |
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 1.29 | 30.00 | | | | | | | | | | | | | | | | |
| 2 | 1.60 | 1.60 | 0.000 | 0.0 | 2.00 | 20.00 | | | | | | | | | | | | | | | | |



地区名：モデルのり面
地質断面図

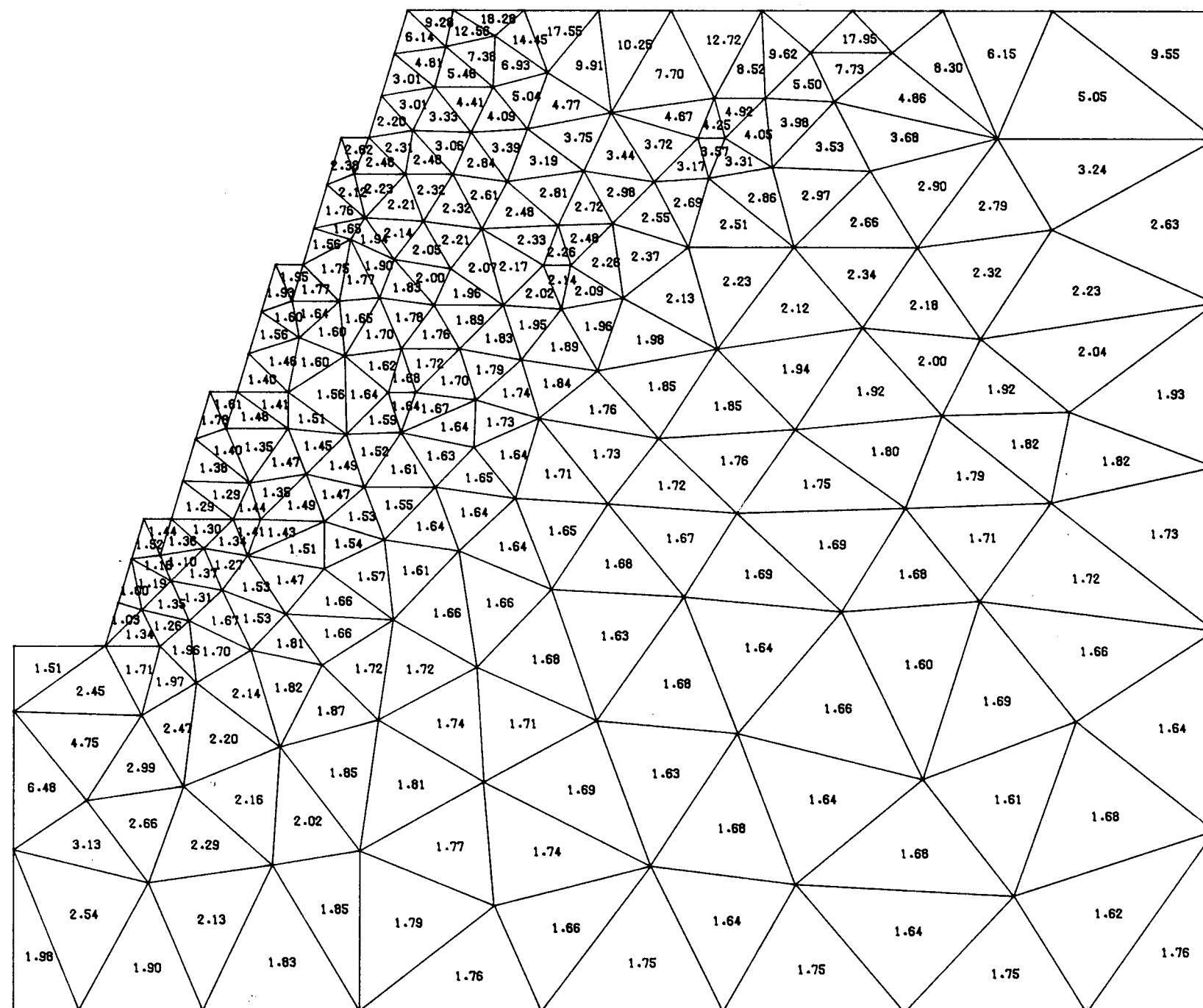


地盤定数

| 分類 | 変形係数
E (t/m ²) | ポアソン比
ν | γ t (t/m ³) | C (t/m ³) | φ (度) |
|---------|-------------------------------|------------|-------------------------|-----------------------|-------|
| 軟岩 (CL) | 56,000 | 0.3 | 1.9 | 15.82 | 30 |
| | 56,000 | 0.3 | 1.9 | 14.92 | 30 |
| | 56,000 | 0.3 | 1.9 | 7.921 | 30 |
| | 56,000 | 0.3 | 1.9 | 6.138 | 30 |
| | 56,000 | 0.3 | 1.9 | 4.254 | 30 |

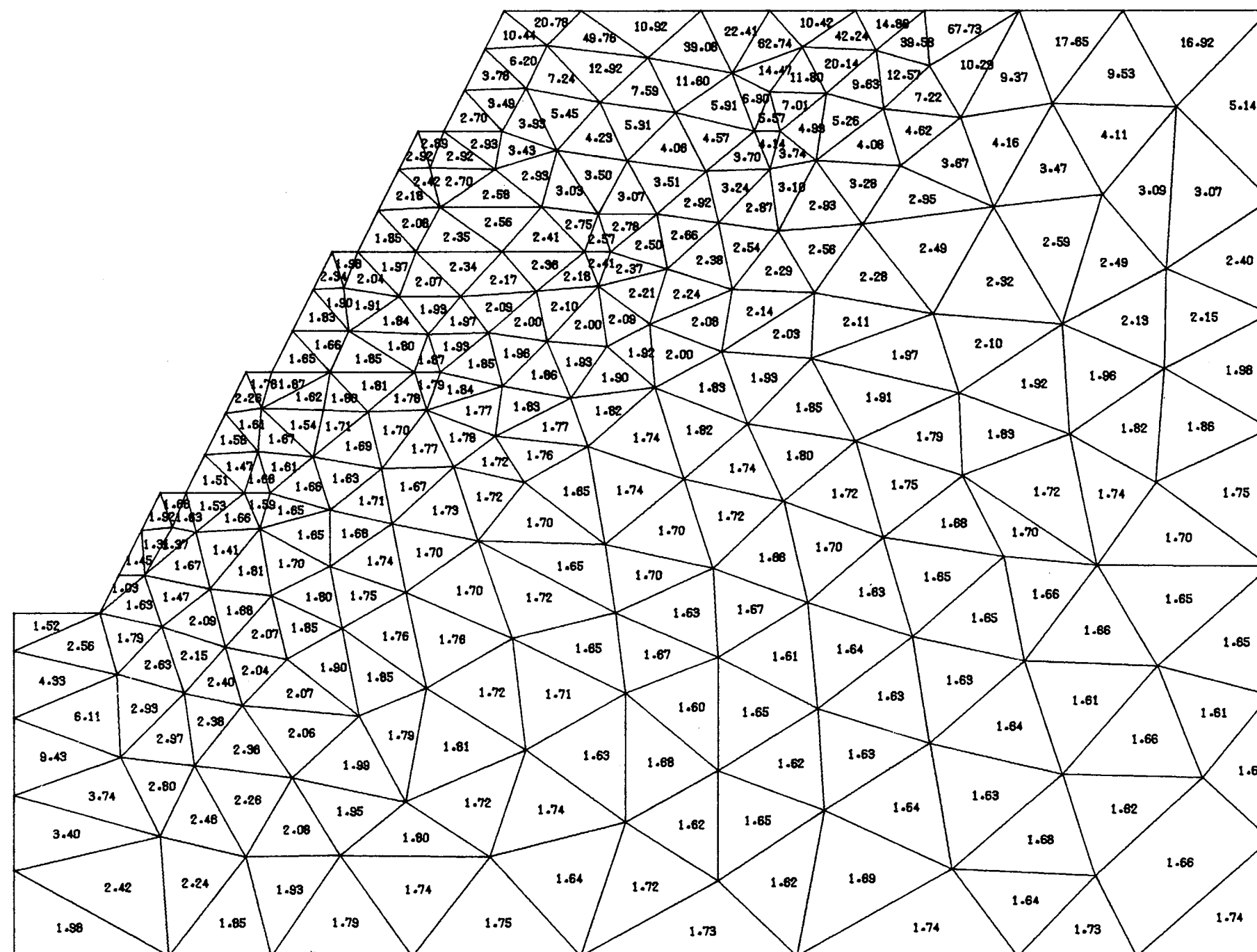
のり面をメッシュに切った三角形（1 m²以下の極小的なものは除く）に対し
φ = 30 度，最小点安全率（各のり面勾配に対して）Fs= 1.0 に対応する C
を求めた。

| |
|-------------|
| FEM |
| 3 分 |
| $C = 15.82$ |
| $\phi = 30$ |



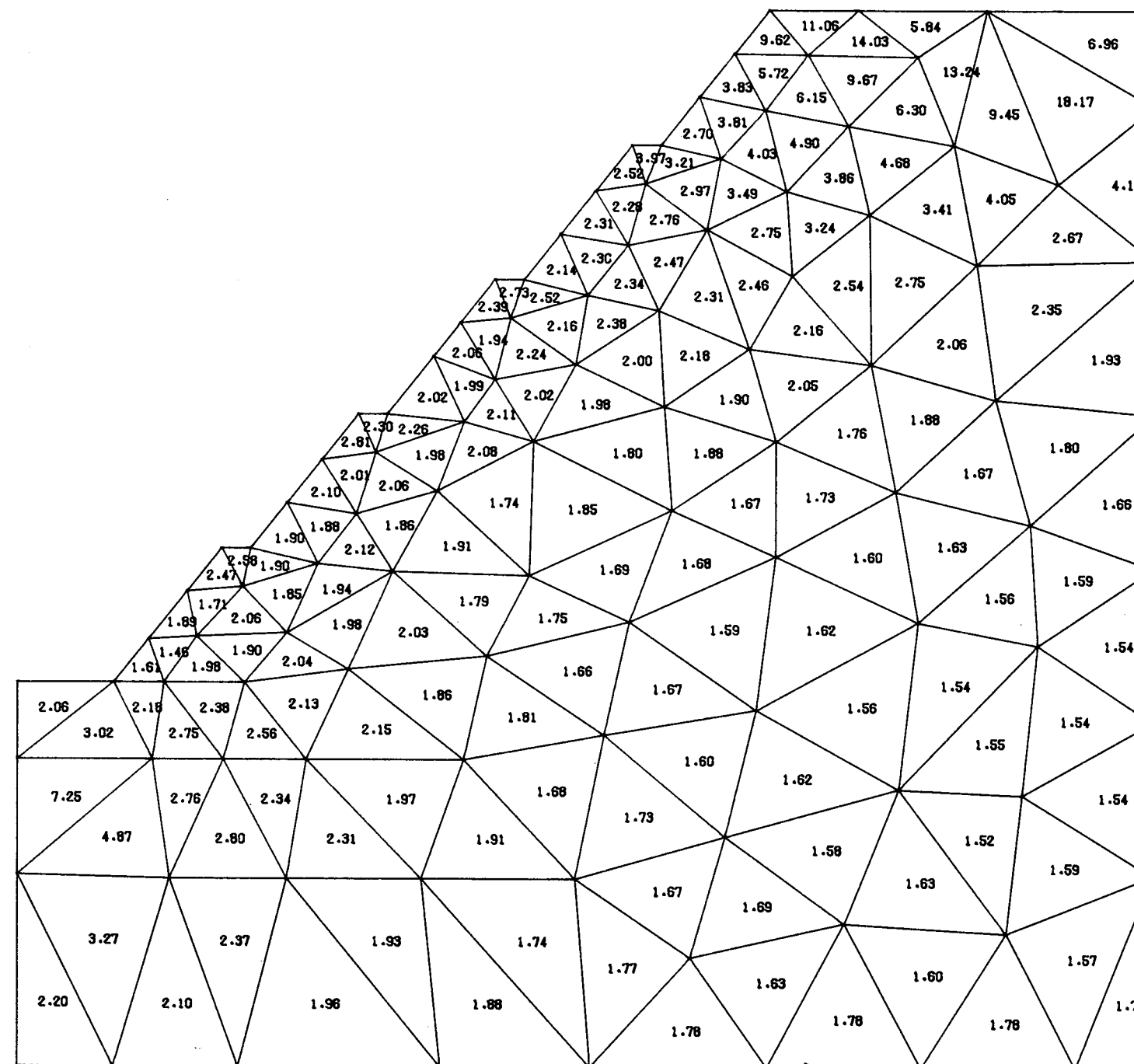
点 安 全 率 图

| |
|-------------|
| F E M |
| 5 分 |
| $C = 15.82$ |
| $\phi = 30$ |



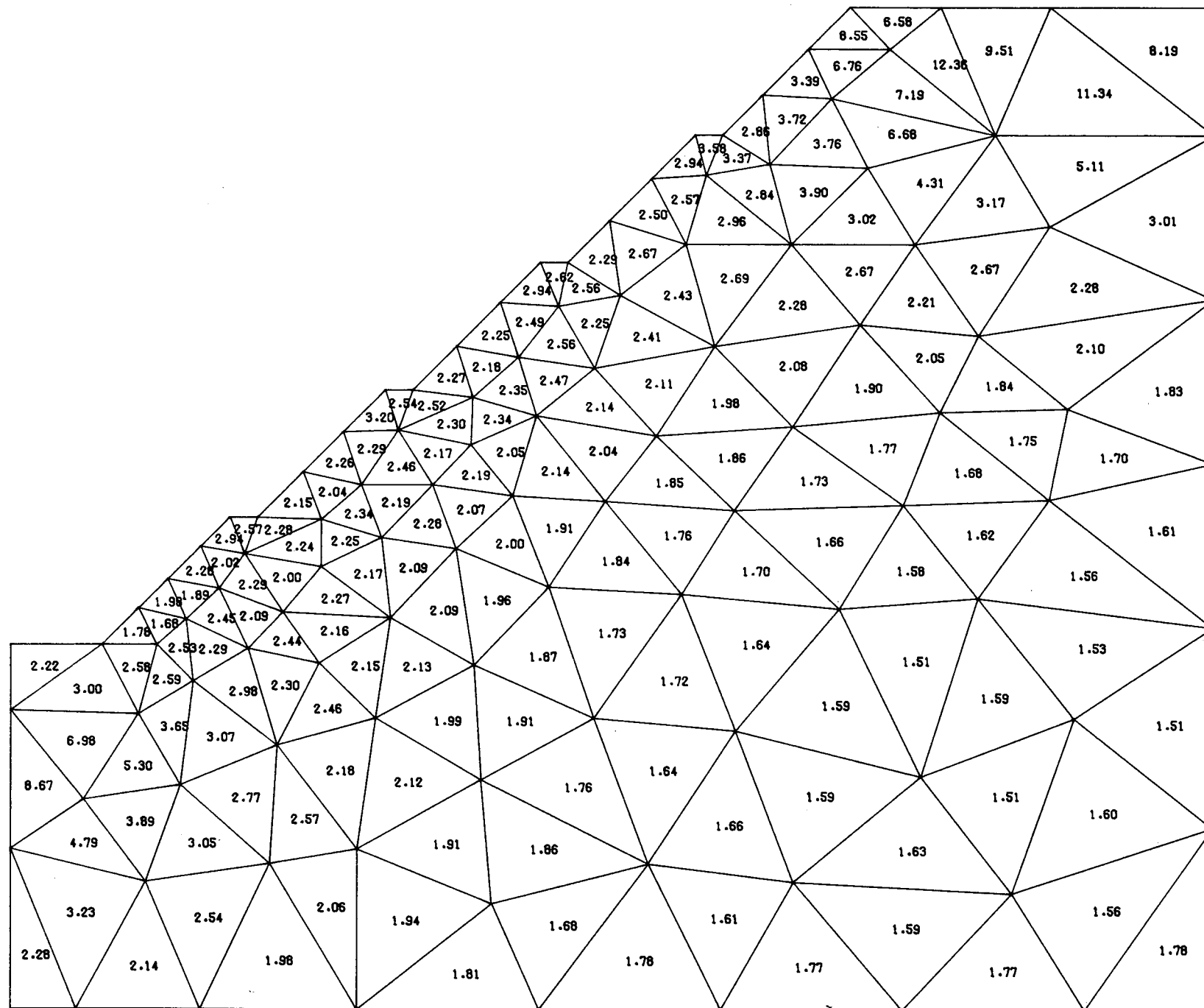
点 安 全 率 图

| |
|-------------|
| FEM |
| 8 分 |
| $C = 15.82$ |
| $\phi = 30$ |



点 安 全 率 图

| |
|-------------|
| F E M |
| 1 割 |
| $C = 15.82$ |
| $\phi = 30$ |

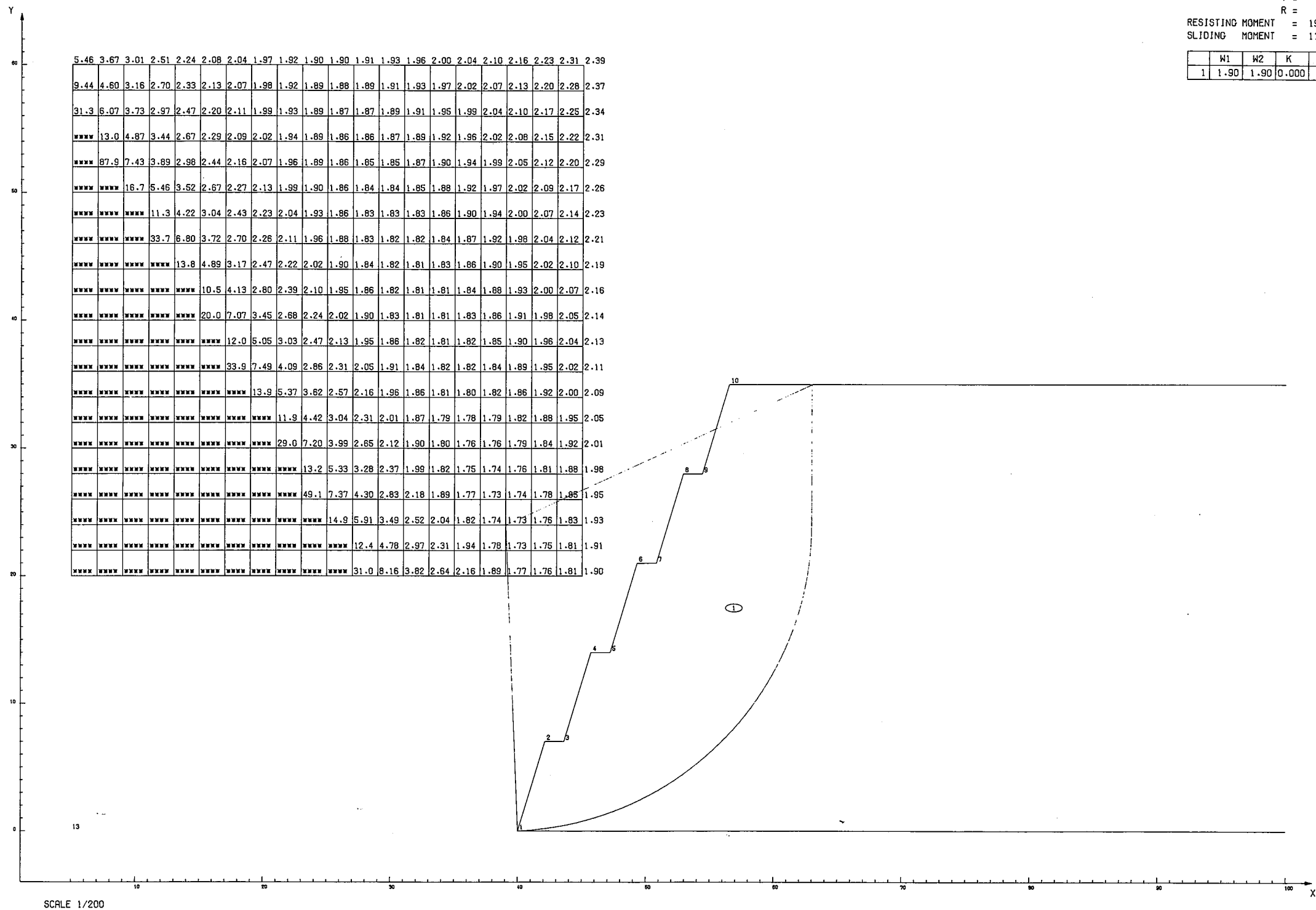


| |
|-------------|
| 円弧すべり |
| 3 分 |
| C = 1 5.8 2 |
| $\phi = 30$ |

MODEL NORIMEN NO ANTEIKEISAN(1-0.3)

MIN. SAFTY FACTOR = 1.729
FAILURE CIRCLE X = 39.00
Y = 24.00
R = 24.00
RESISTING MOMENT = 19107.08
SLIDING MOMENT = 11053.91

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 13.20 | 30.00 |

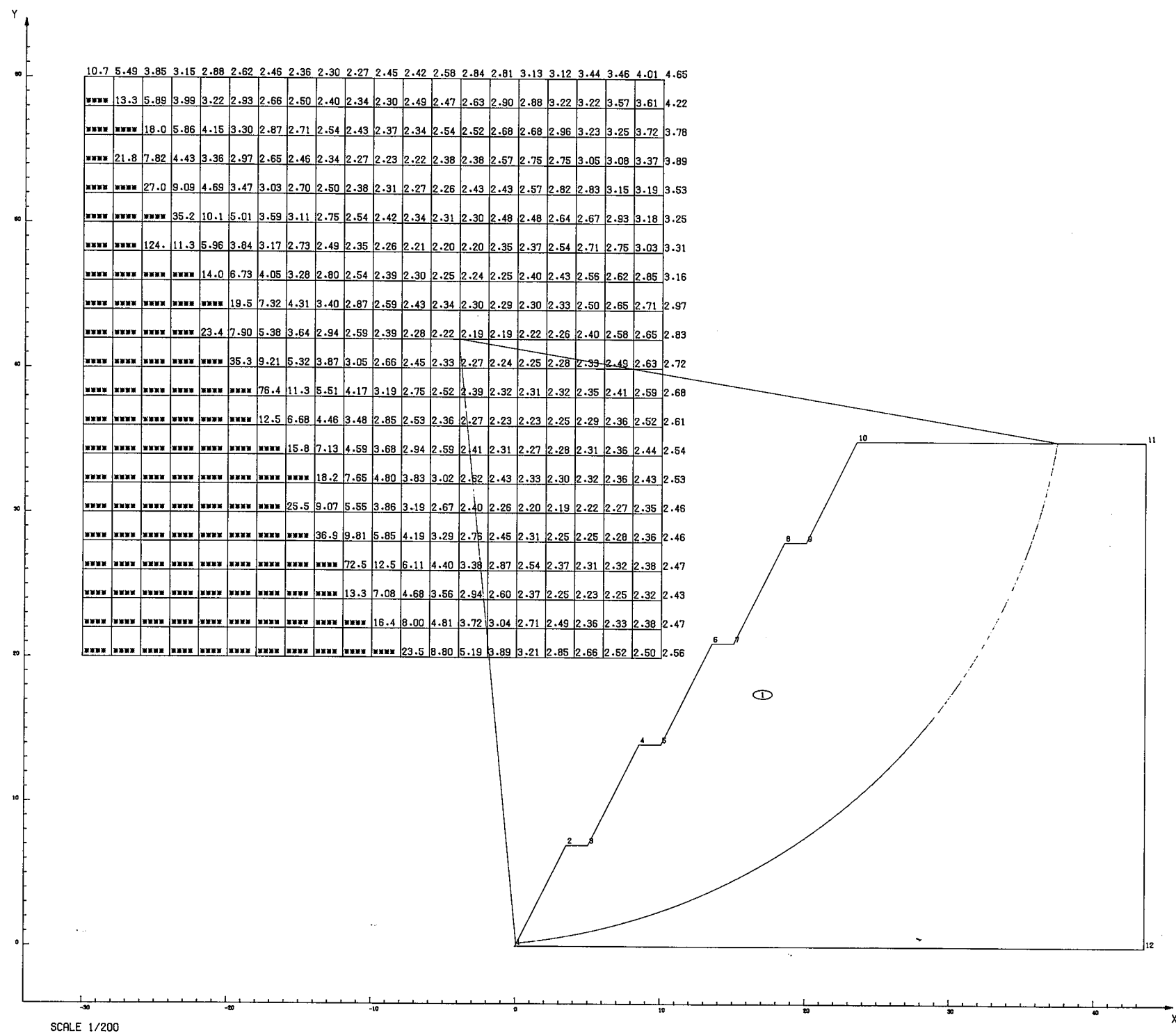


| |
|-------------|
| 円弧すべり |
| 5 分 |
| C = 1 5.8 2 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-1 C=15.82 (1-0.5)

MIN. SAFTY FACTOR = 2.193
 FAILURE CIRCLE X = -4.00
 Y = 42.00
 R = 42.00
 RESISTING MOMENT = 55612.34
 SLIDING MOMENT = 25356.70

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

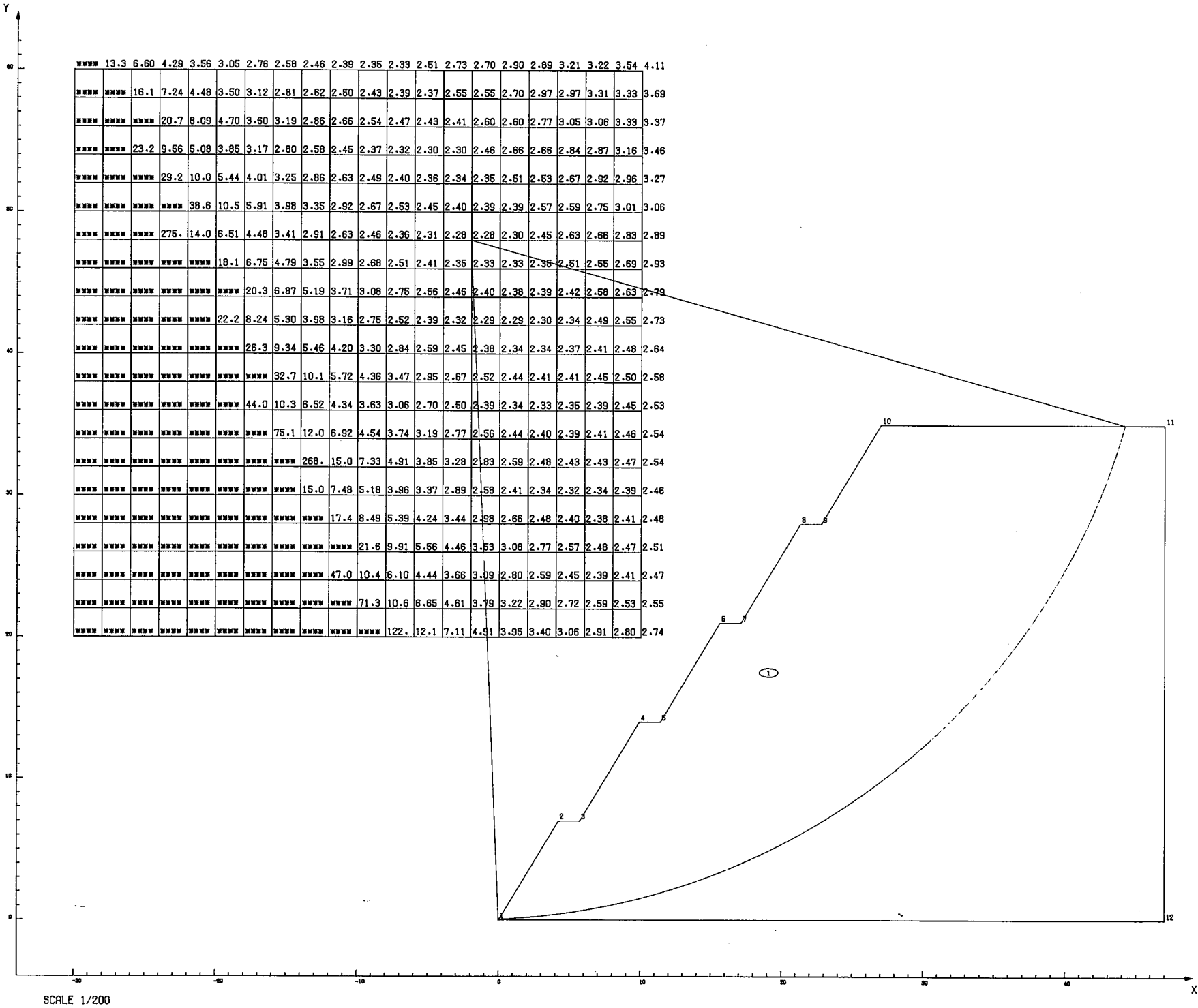


| |
|-------------|
| 円弧すべり |
| 6 分 |
| C = 1 5.8 2 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-2 C=15.82 (1-0.6)

MIN. SAFTY FACTOR = 2.283
FAILURE CIRCLE X = -2.00
Y = 48.00
R = 48.00
RESISTING MOMENT = 73237.93
SLIDING MOMENT = 32086.66

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

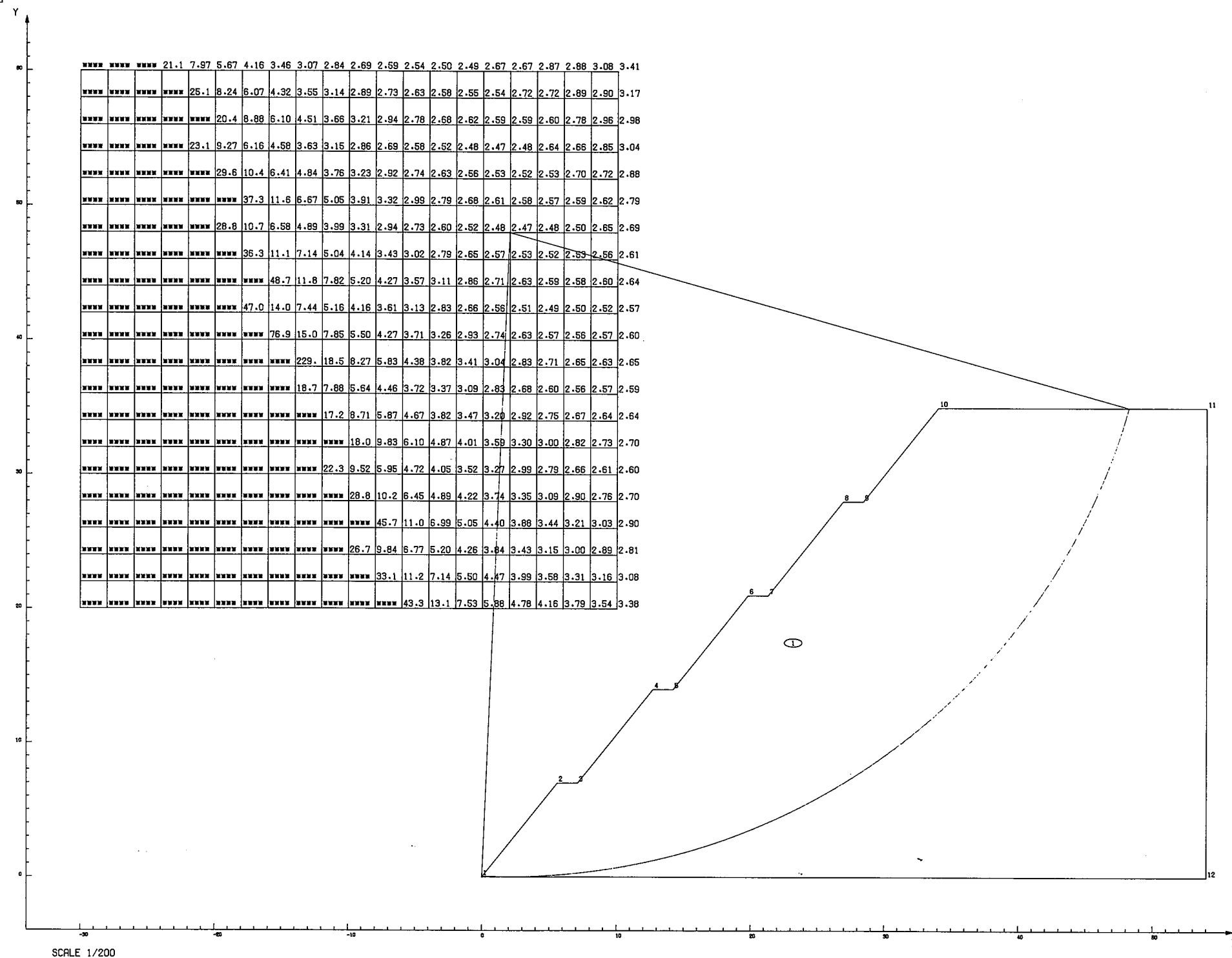


| |
|-------------|
| 円弧すべり |
| 8 分 |
| C = 1 5.8 2 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-3 C=15.82 (1-0.8)

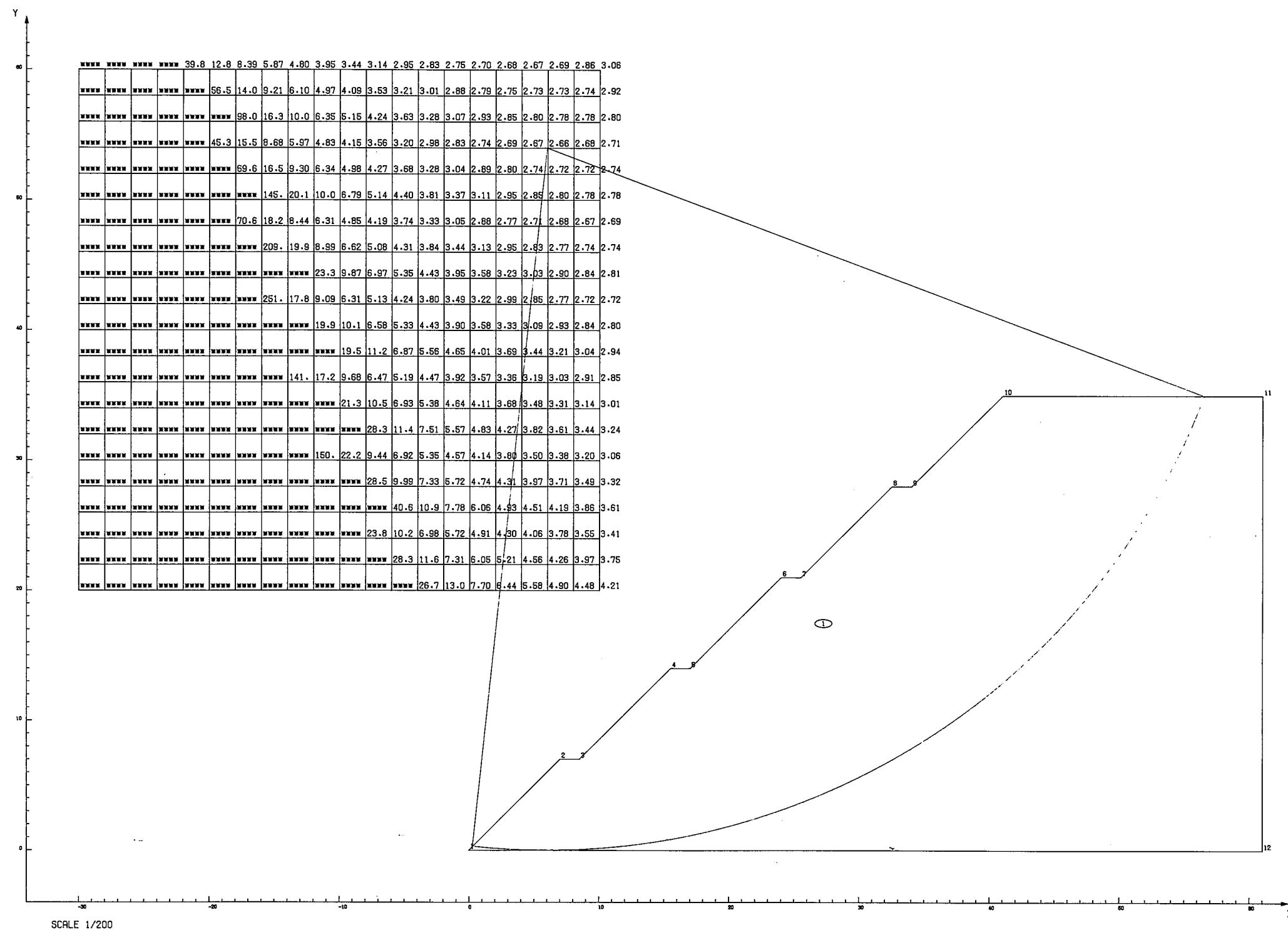
MIN. SAFTY FACTOR = 2.467
 FAILURE CIRCLE X = 2.00
 Y = 48.00
 R = 48.00
 RESISTING MOMENT = 77375.92
 SLIDING MOMENT = 31360.14

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |



| |
|-------------|
| 円弧すべり |
| 1 割 |
| C = 15.82 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-4 C=15.82 (1-1.0)

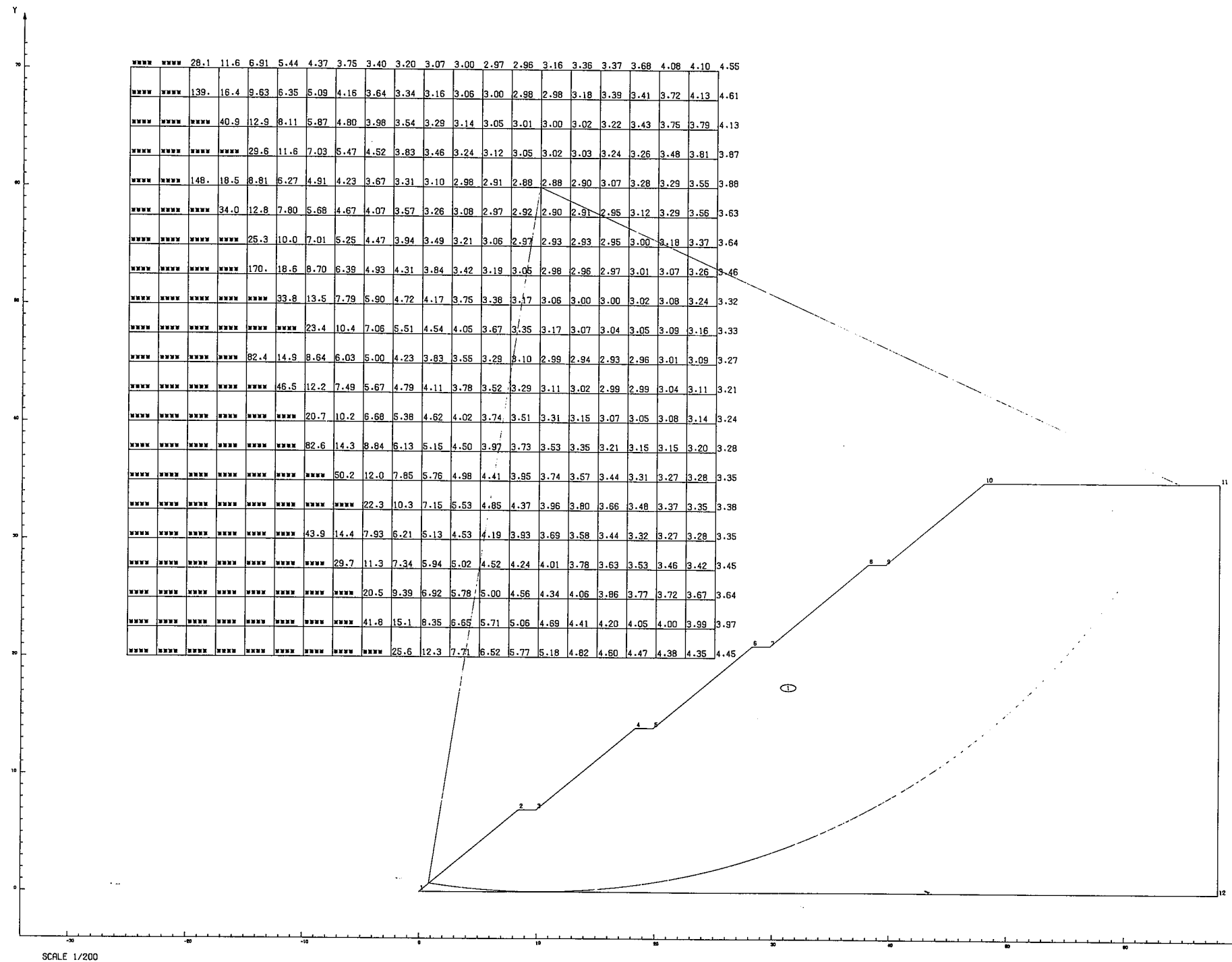


MIN. SAFTY FACTOR = 2.665
 FAILURE CIRCLE X = 6.00
 Y = 54.00
 R = 54.00
 RESISTING MOMENT = 99493.18
 SLIDING MOMENT = 37336.22

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

円弧すべり
1 割 2 分
C = 1 5.8 2
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-5 C=15.82 (1-1.2)



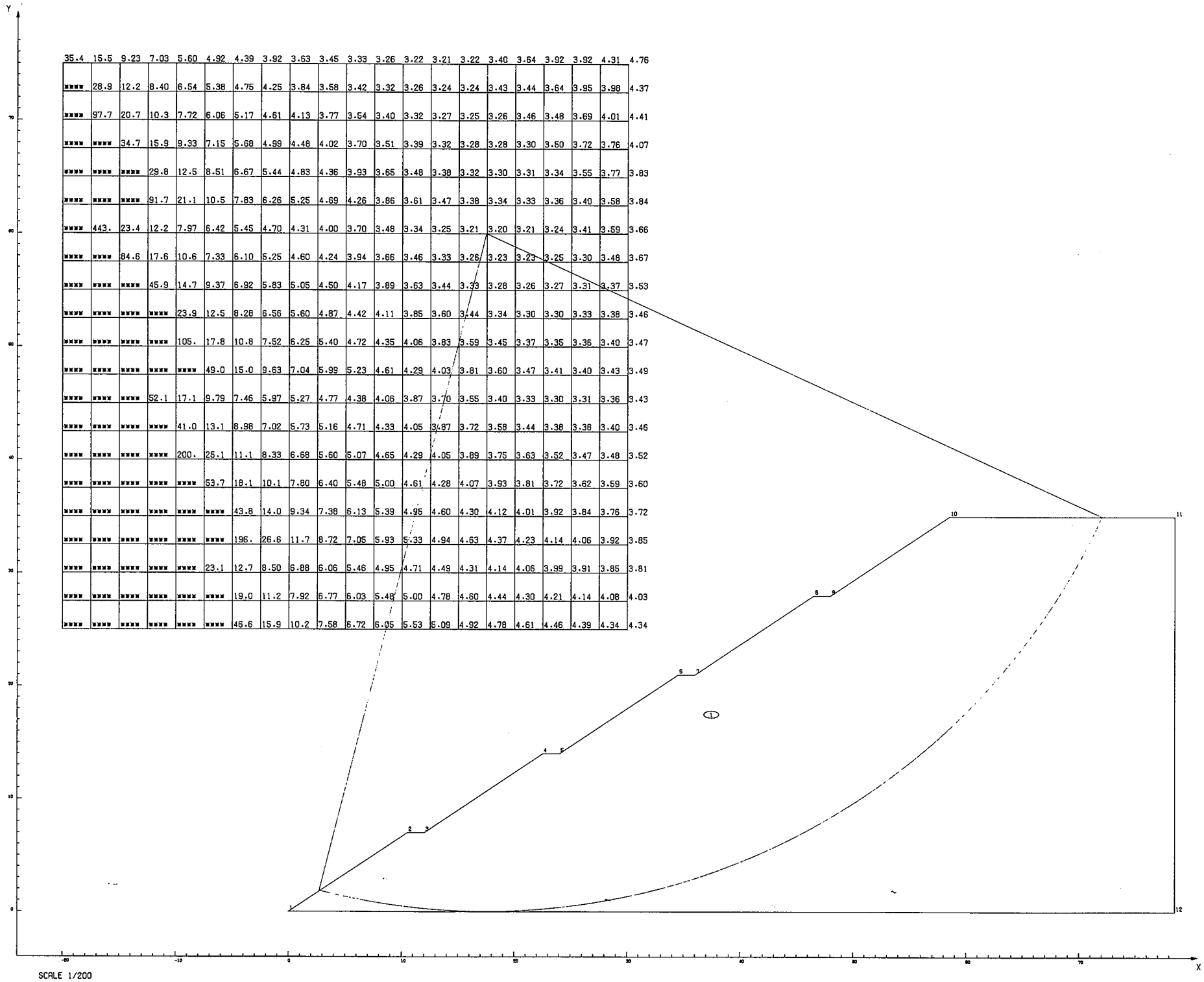
MIN. SAFETY FACTOR = 2.881
FAILURE CIRCLE X = 10.00
Y = 60.00
R = 60.00
RESISTING MOMENT = 123914.18
SLIDING MOMENT = 43012.97

| | H1 | H2 | K | YO | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

円弧すべり
1 割 5 分
C = 1 5.8 2
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-6 C=15.82 (1-1.5)

| | | | | | | |
|--------------------|------|-----------|-------|-----|-------|-------|
| MIN. SAFETY FACTOR | = | 3.195 | | | | |
| FAILURE CIRCLE | X = | 17.50 | | | | |
| | Y = | 60.00 | | | | |
| | R = | 60.00 | | | | |
| RESISTING MOMENT | = | 134028.20 | | | | |
| SLIDING MOMENT | = | 41943.14 | | | | |
| | | | | | | |
| | W1 | W2 | K | YO | C | PHI |
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |



$$\phi = 3 \ 0$$

8-70 7-19 6-11 5-43 4-96 4-87 4-22 4-00 3-86 3-78 3-74 3-73 3-95 4-20 4-20 4-55 5-00 5-56 5-55 6-39 7-50

10-1 8-02 6-74 5-78 5-24 4-81 4-43 4-13 3-95 3-84 3-78 3-75 3-76 3-69 4-24 4-60 4-61 5-07 5-63 6-53 8-53

12-8 9-08 7-46 6-34 5-56 5-07 4-68 4-31 4-07 3-92 3-83 3-79 3-78 4-02 4-03 4-29 4-65 5-13 6-10 6-74 8-65

16-8 10-8 8-35 6-97 5-93 5-37 4-92 4-54 4-22 4-02 3-90 3-84 3-81 3-82 4-05 4-32 4-70 4-72 5-15 5-82 6-89

24-5 13-9 9-50 7-74 6-56 5-70 5-19 4-78 4-41 4-15 3-99 3-89 3-85 3-85 3-87 4-08 4-38 4-76 5-21 5-27 6-95

55-7 18-9 11-6 8-72 7-22 6-15 5-50 5-03 4-66 4-31 4-09 3-97 3-90 3-88 3-89 4-11 4-42 4-46 4-84 5-32 6-03

12-2 9-04 7-26 6-30 5-59 5-04 4-69 4-39 4-12 3-92 3-79 3-73 3-70 3-71 3-74 3-94 4-17 4-48 4-88 4-91 5-45

15-4 10-7 8-05 6-85 6-00 5-32 4-91 4-58 4-31 4-05 3-88 3-79 3-74 3-73 3-76 3-95 3-99 4-25 4-57 4-84 5-50

21-9 13-1 9-53 7-52 6-50 5-75 5-15 4-79 4-50 4-24 4-00 3-87 3-80 3-77 3-78 3-82 4-00 4-27 4-60 4-68 5-08

49-7 16-8 11-4 8-47 7-09 6-19 5-50 5-02 4-69 4-42 4-16 3-97 3-86 3-81 3-81 3-83 3-89 4-09 4-36 4-70 5-11

187- 26-0 14-2 10-1 7-79 6-72 5-92 5-28 4-91 4-61 4-35 4-11 3-95 3-87 3-84 3-85 3-90 4-11 4-19 4-48 4-80

79-9 18-5 12-2 8-98 7-35 6-40 5-70 5-15 4-81 4-53 4-29 4-07 3-95 3-90 3-89 3-90 3-97 4-21 4-49 4-82

21-8 12-2 9-30 7-55 6-39 5-74 5-24 4-80 4-54 4-32 4-14 3-95 3-83 3-76 3-74 3-76 3-81 3-89 4-08 4-33 4-63

40-0 16-2 10-9 8-51 6-98 6-14 5-55 5-10 4-72 4-49 4-28 4-11 3-94 3-84 3-80 3-80 3-83 3-90 4-10 4-34 4-48

94-4 25-4 13-0 9-80 7-88 6-89 5-92 5-40 4-98 4-66 4-45 4-26 4-10 3-94 3-87 3-84 3-85 3-91 4-00 4-23 4-49

53-3 18-4 11-5 8-94 7-34 6-34 5-74 5-27 4-86 4-62 4-42 4-25 4-09 3-95 3-91 3-89 3-94 4-02 4-15 4-39

218- 30-5 14-1 10-4 8-26 6-83 6-13 5-59 5-16 4-80 4-59 4-41 4-25 4-10 4-00 3-95 3-98 4-06 4-17 4-32

76-4 20-9 12-3 9-43 7-70 6-56 5-95 5-46 5-08 4-78 4-58 4-42 4-27 4-11 4-04 4-05 4-11 4-21 4-35

97-6 22-9 13-2 9-37 7-82 6-74 5-92 5-46 5-11 4-82 4-57 4-41 4-29 4-18 4-09 3-99 3-96 3-97 4-05 4-17 4-33

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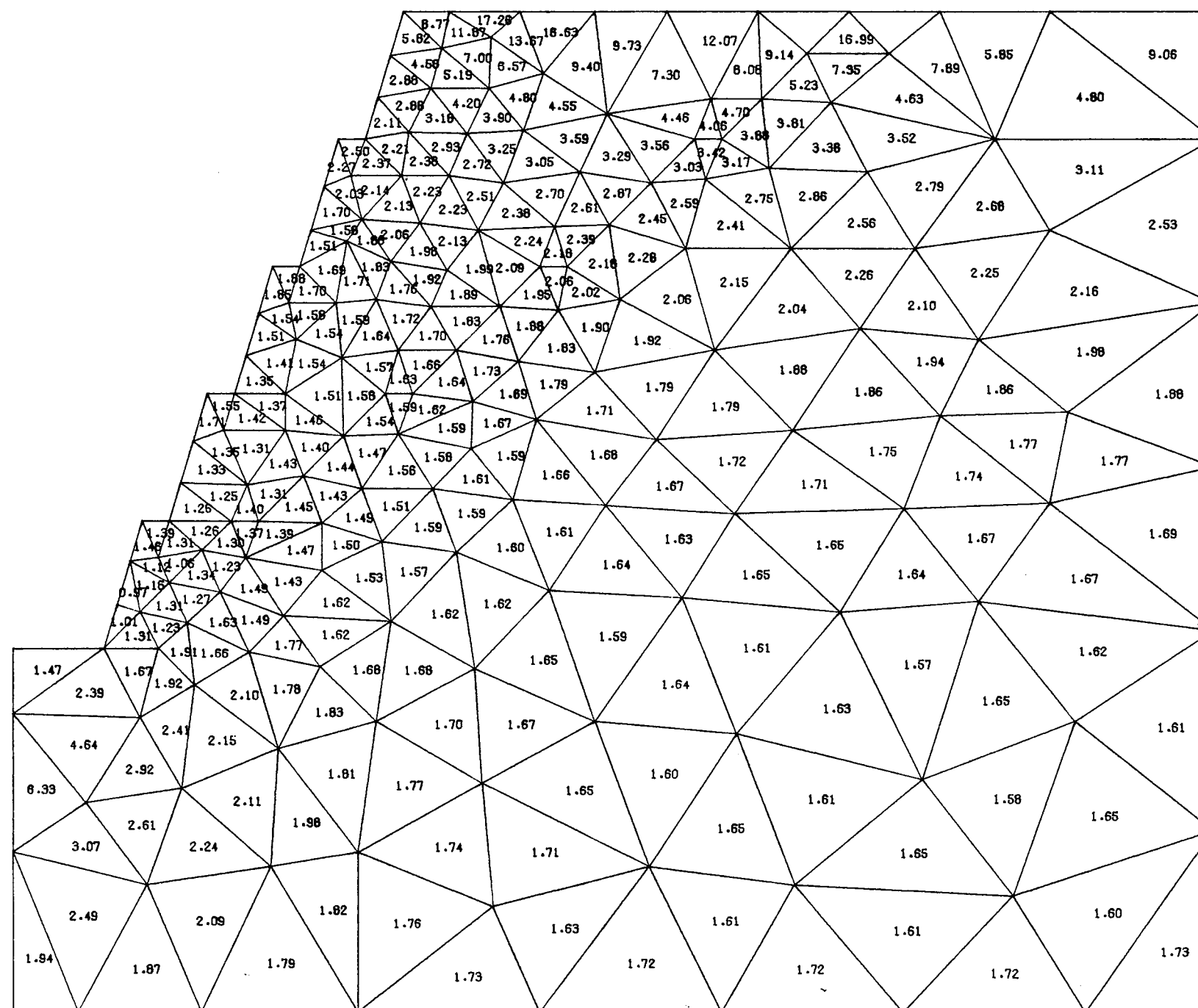
302- 26-4 14-3 9-81 8-19 7-05 6-24 5-67 5-34 5-05 4-81 4-62 4-51 4-41 4-33 4-23 4-20 4-23 4-31 4-46

1 2 3 4 5 6 7 8 9 10 11 12

SCALE 1/200

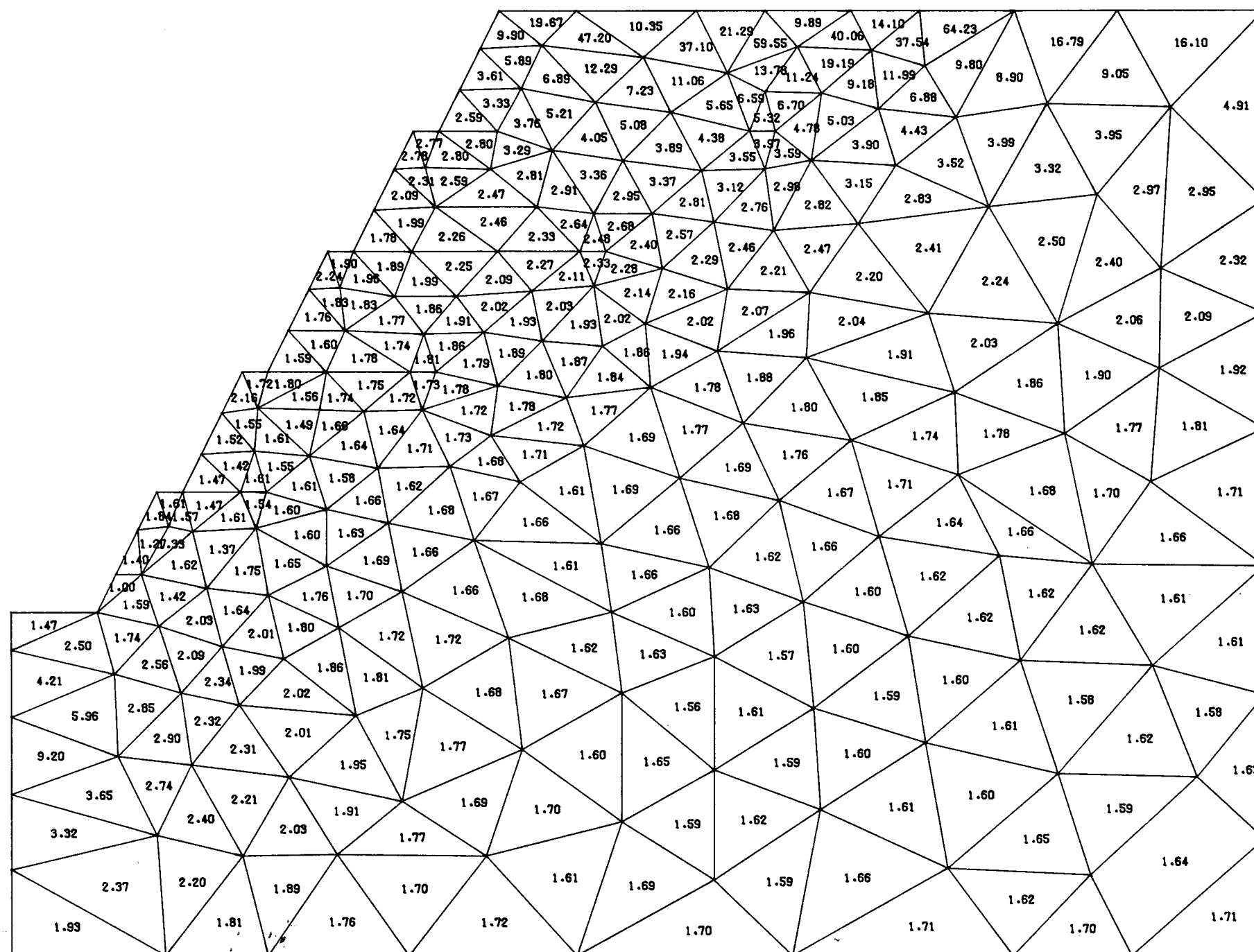
| | | | | | | |
|---|------|------|-------|-----|-------|-------|
| | W1 | W2 | K | YO | C | PHI |
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

| |
|-------------|
| FEM |
| 3 分 |
| $C = 14.92$ |
| $\phi = 30$ |



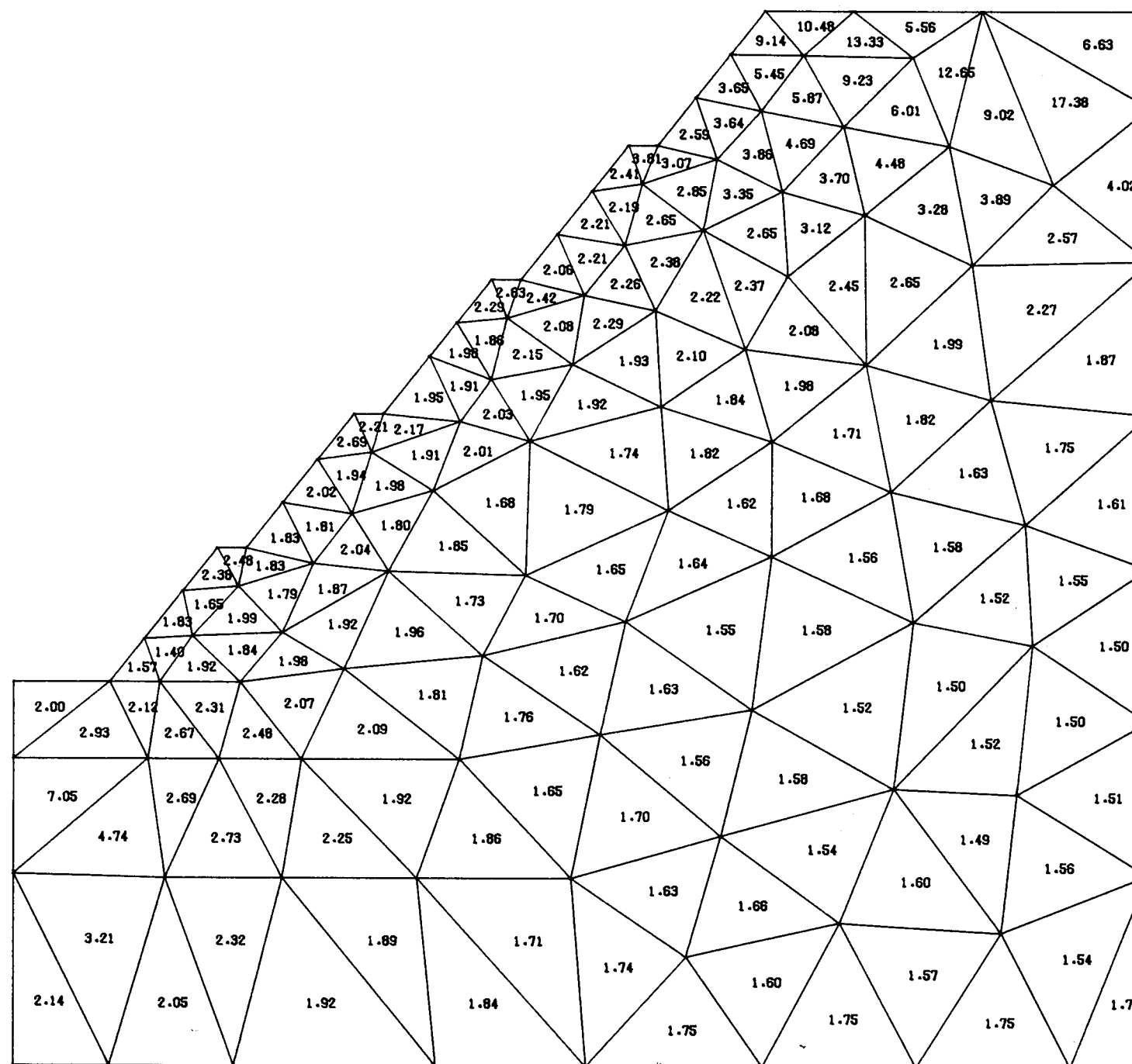
点安全率图

| |
|-------------|
| FEM |
| 5 分 |
| $C = 14.92$ |
| $\phi = 30$ |



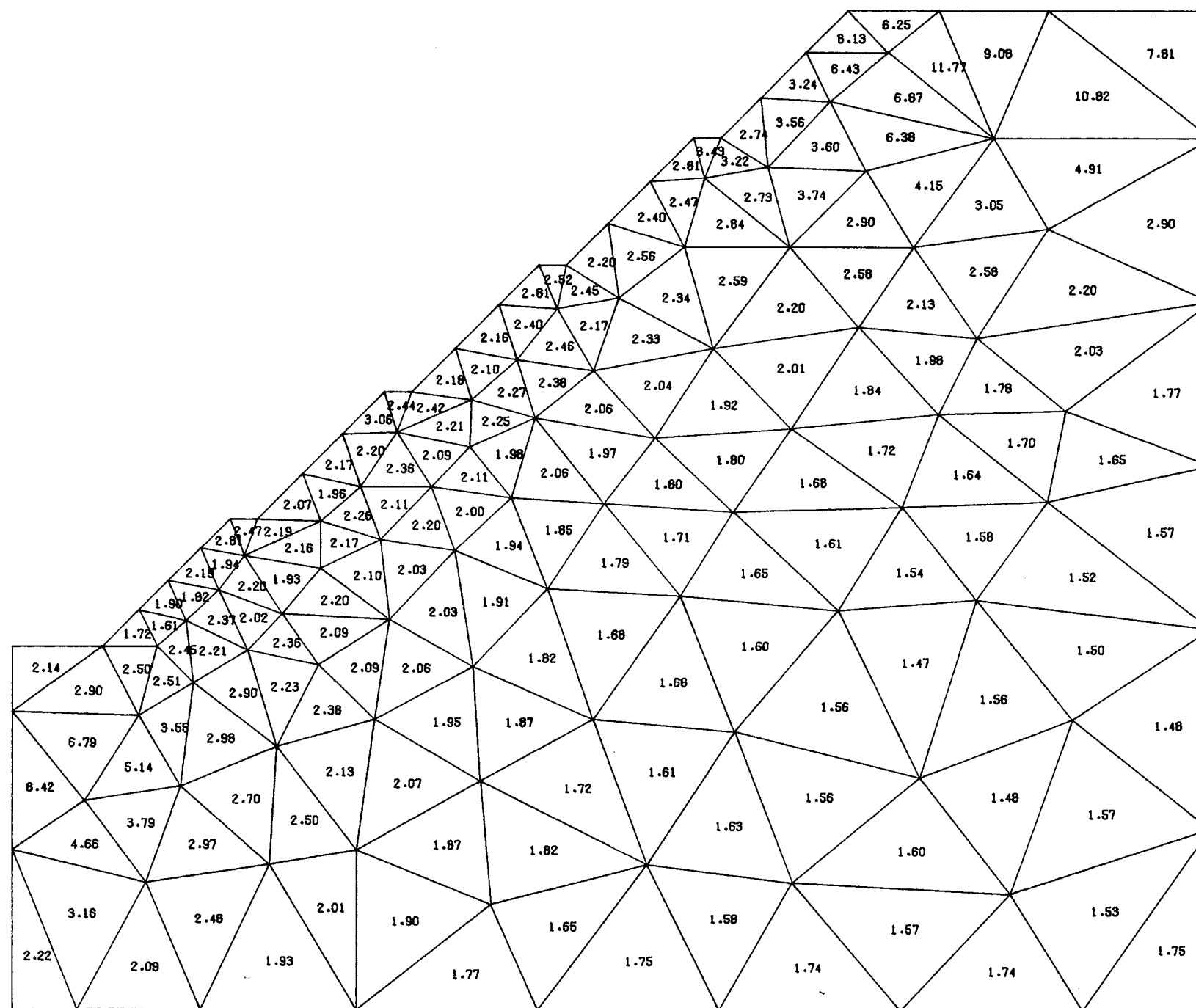
点 安 全 率 图

| |
|--------------|
| F E M |
| 8 分 |
| C = 1 4.9 2 |
| $\phi = 3 0$ |



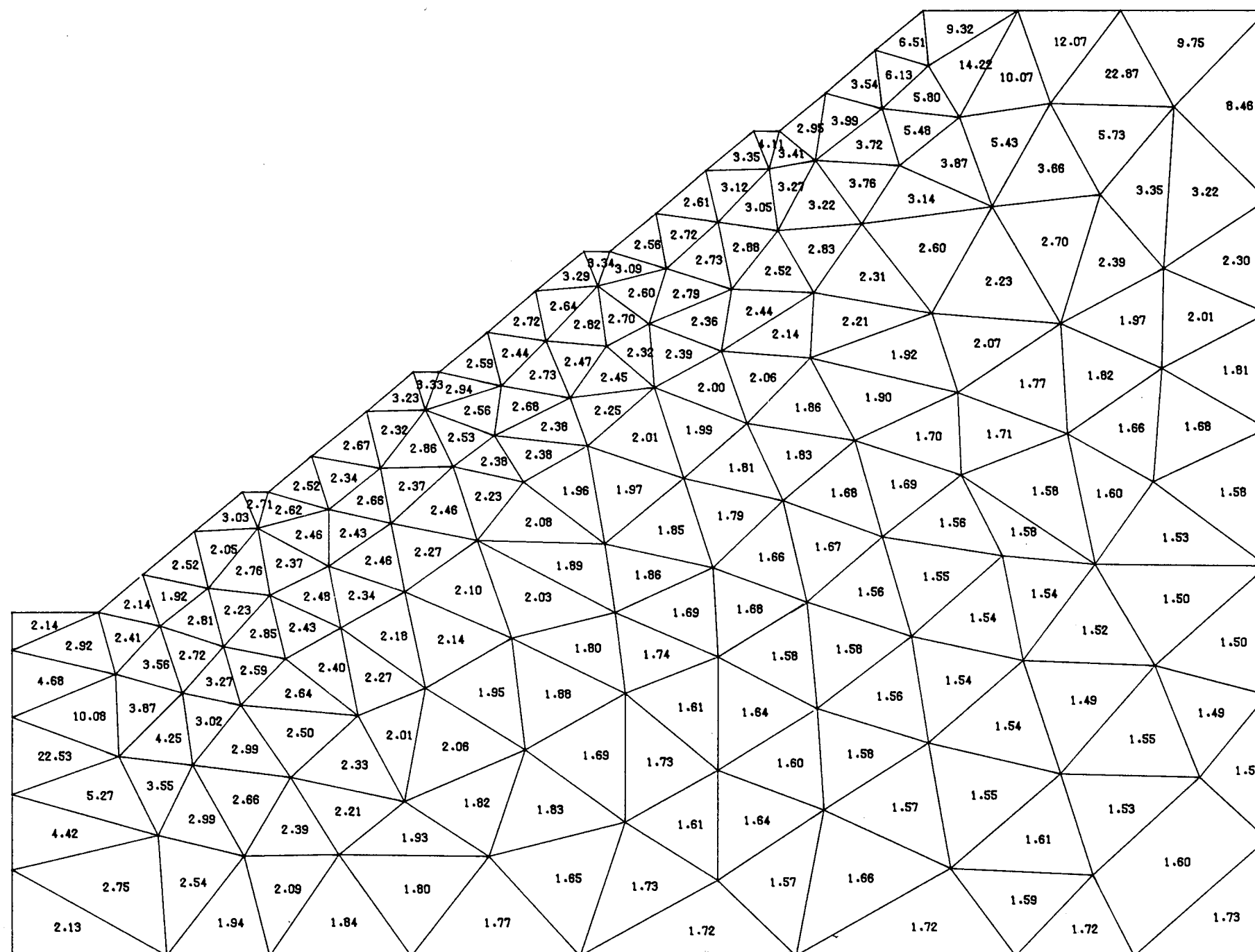
点 安 全 率 图

| |
|-------------|
| F E M |
| 1 割 |
| $C = 14.92$ |
| $\phi = 30$ |



点 安 全 率 図

| |
|-------------|
| FEM |
| 1割2分 |
| $C = 14.92$ |
| $\phi = 30$ |



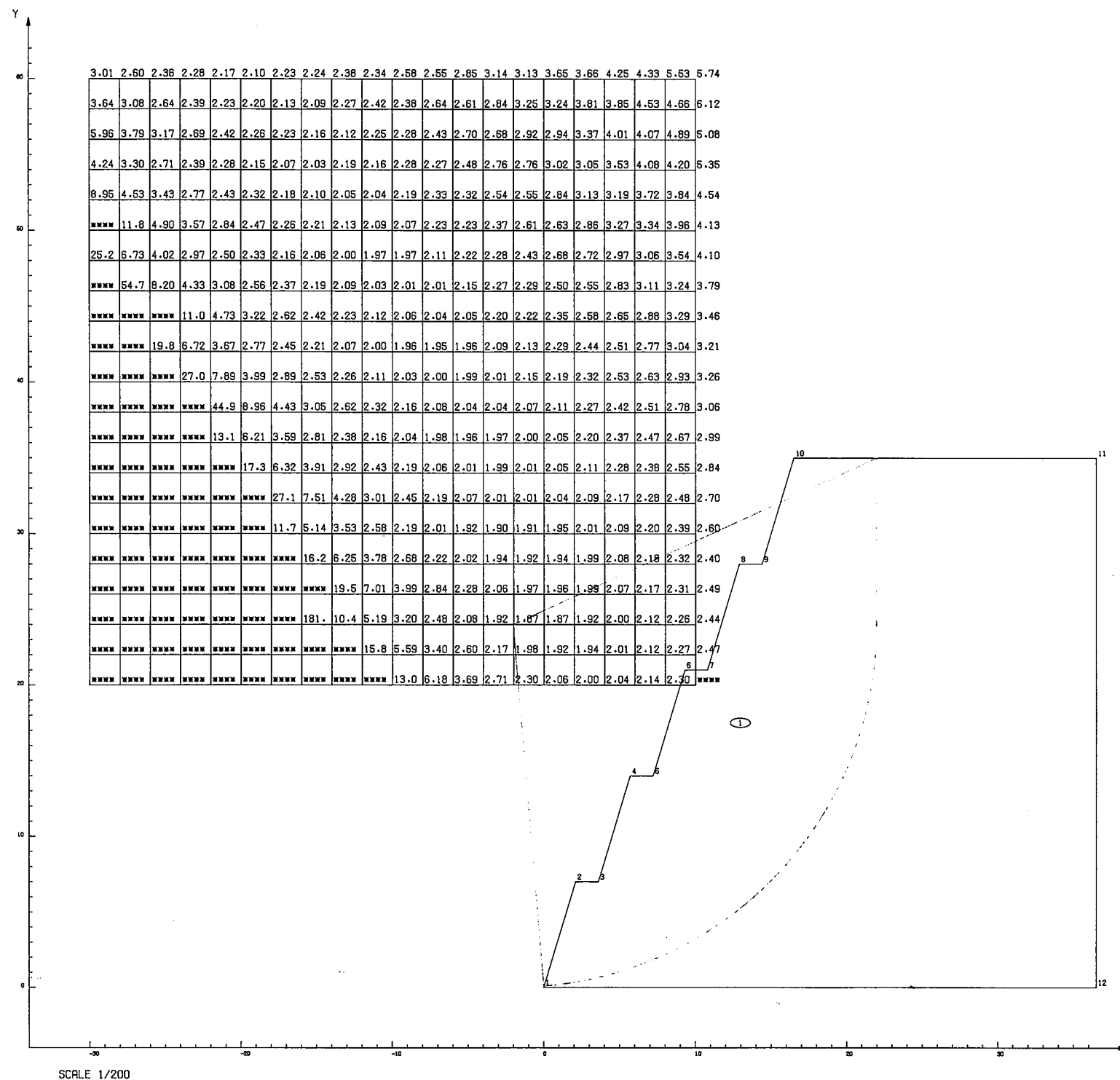
点安全率図

| |
|-------------|
| F E M |
| 3 分 |
| C = 1 4.9 2 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-8 C=14.92 (1-0.3)

MIN. SAFTY FACTOR = 1.868
 FAILURE CIRCLE X = -2.00
 Y = 24.00
 R = 24.00
 RESISTING MOMENT = 19442.53
 SLIDING MOMENT = 10406.71

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 30.00 |

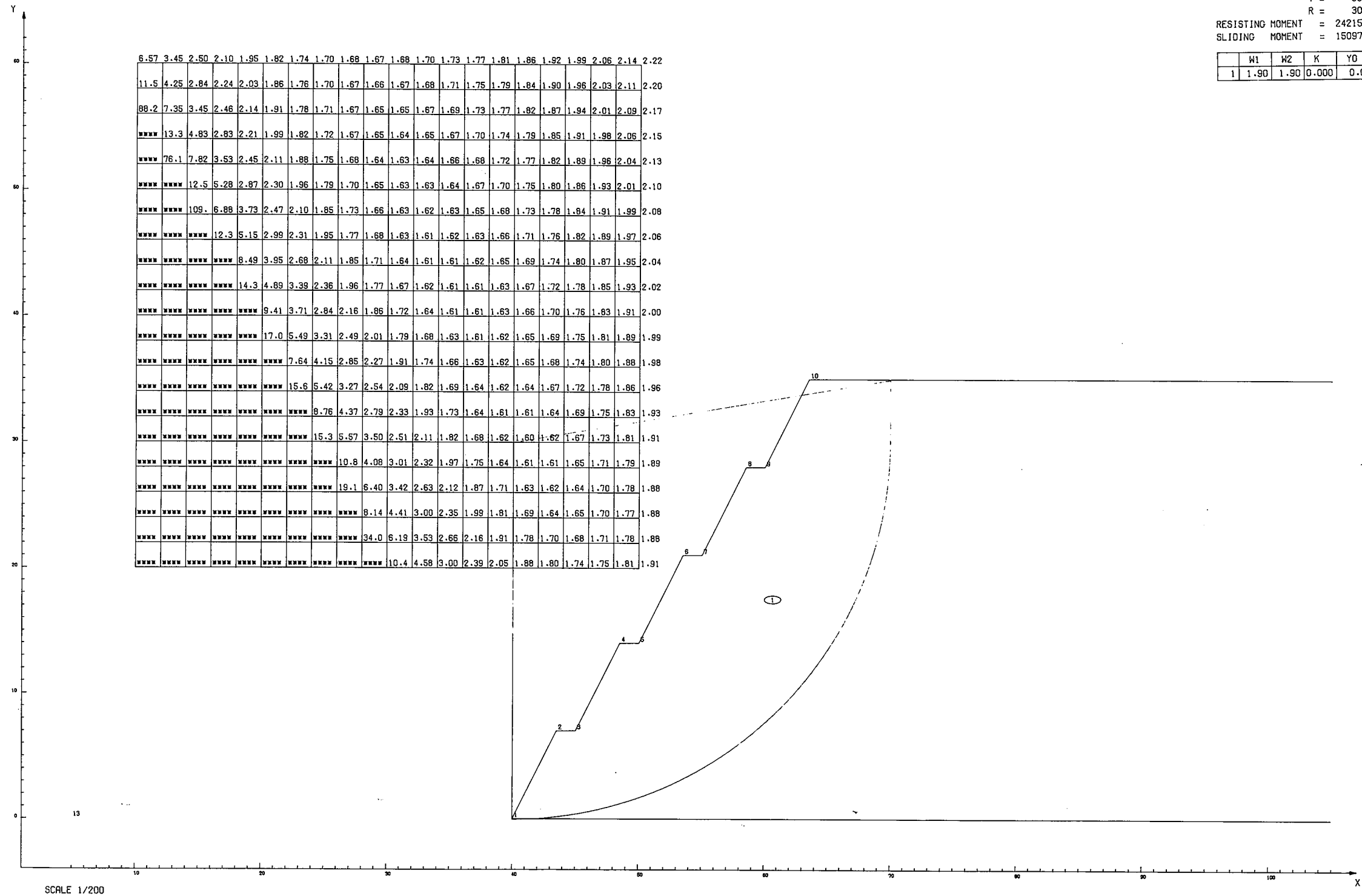


| |
|-------------|
| 円弧すべり |
| 5 分 |
| C = 1 4.9 2 |
| $\phi = 30$ |

MODEL NORIMEN NO ANTEIKEISAN(1-0.5)

MIN. SAFETY FACTOR = 1.604
 FAILURE CIRCLE X = 40.00
 Y = 30.00
 R = 30.00
 RESISTING MOMENT = 24215.56
 SLIDING MOMENT = 15097.02

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 9.43 | 30.00 |

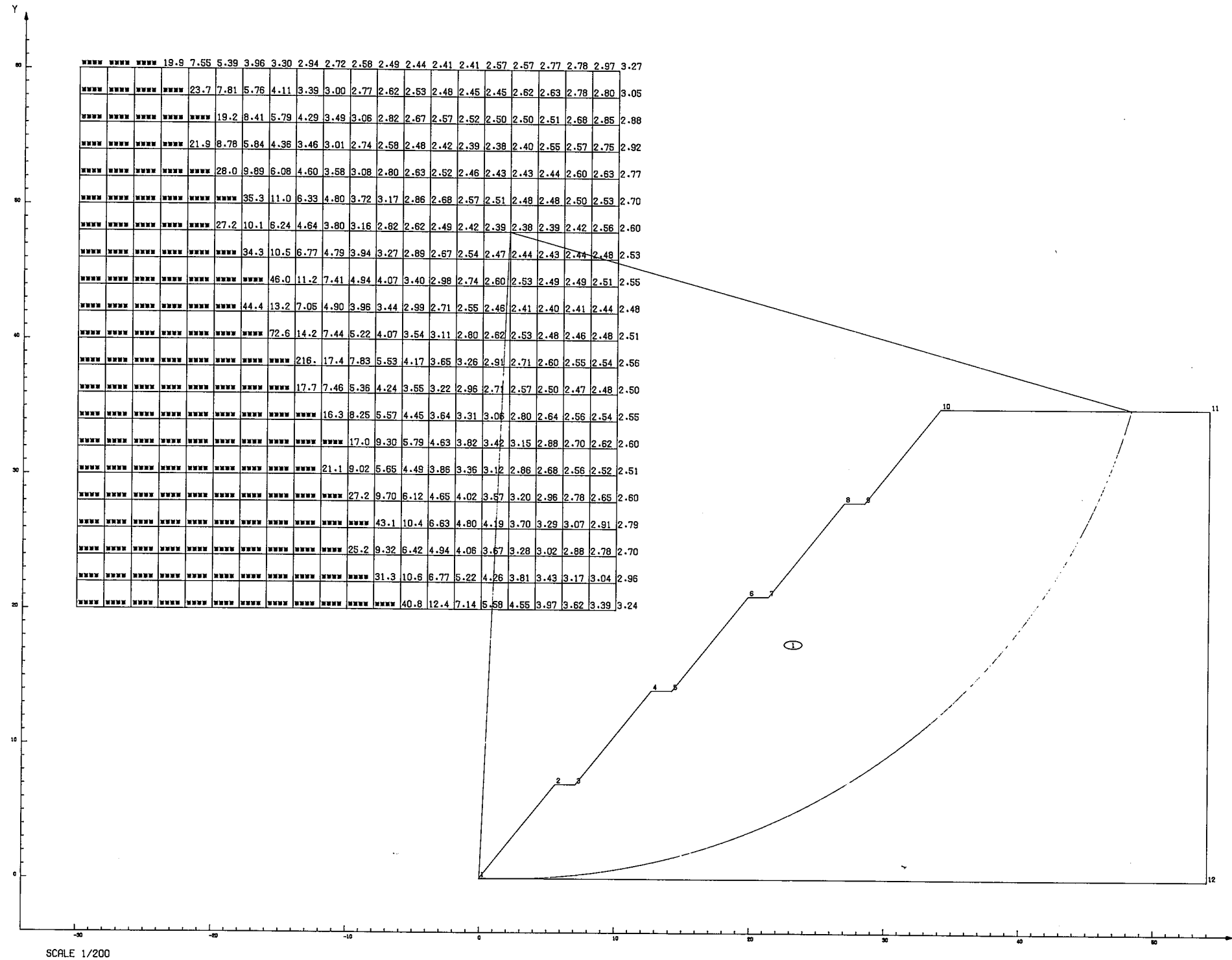


| |
|-------------|
| 円弧すべり |
| 8 分 |
| C = 1 4.9 2 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-9 C=14.92 (1-0.8)

MIN. SAFETY FACTOR = 2.379
 FAILURE CIRCLE X = 2.00
 Y = 48.00
 R = 48.00
 RESISTING MOMENT = 74602.39
 SLIDING MOMENT = 31360.14

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 30.00 |

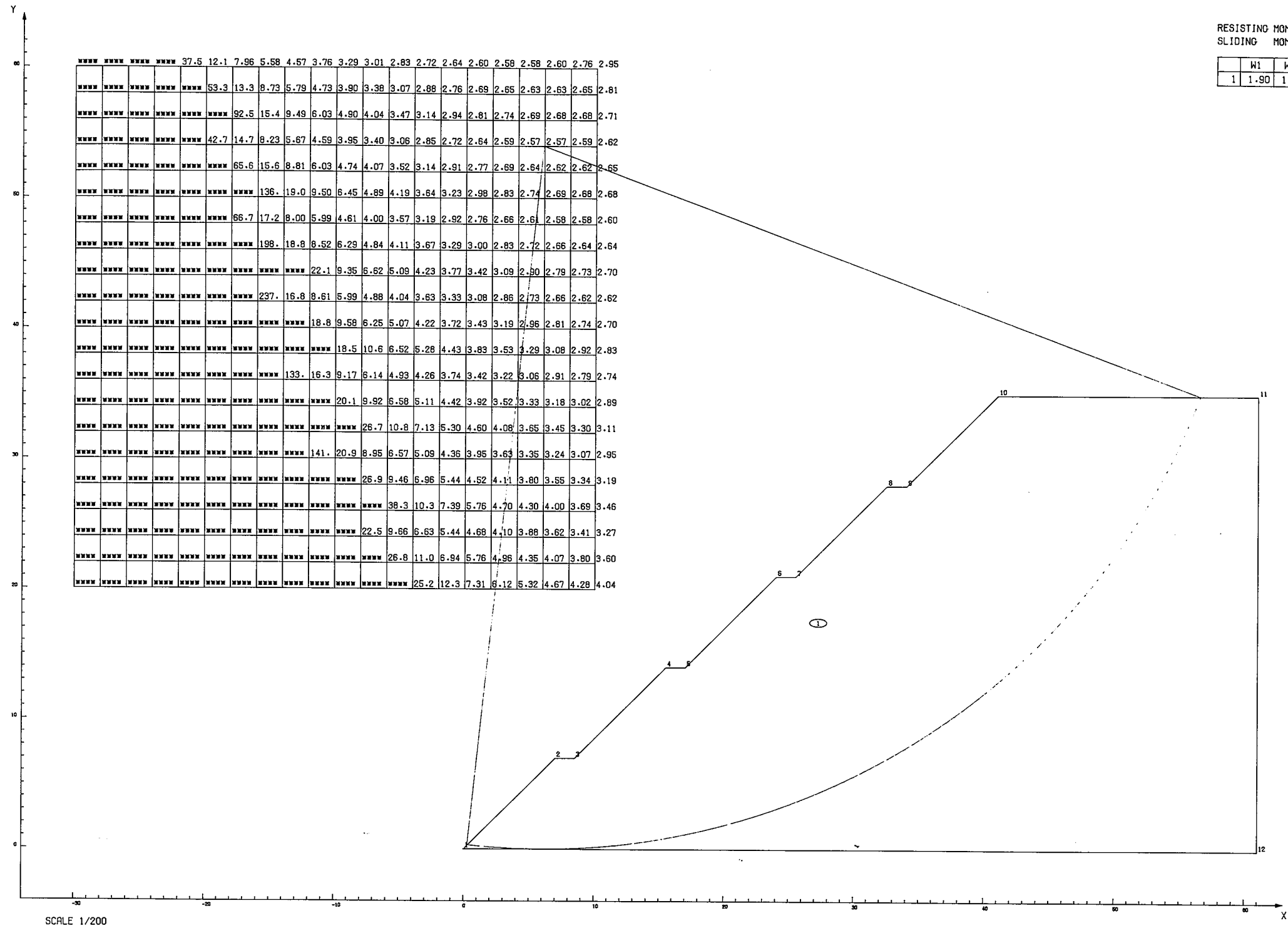


| |
|-------------|
| 円弧すべり |
| 1 割 |
| C = 14.92 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-10 C=14.92 (1-1.0)

MIN. SAFETY FACTOR = 2.572
 FAILURE CIRCLE X = 6.00
 Y = 54.00
 R = 54.00
 RESISTING MOMENT = 96036.92
 SLIDING MOMENT = 37336.22

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 30.00 |

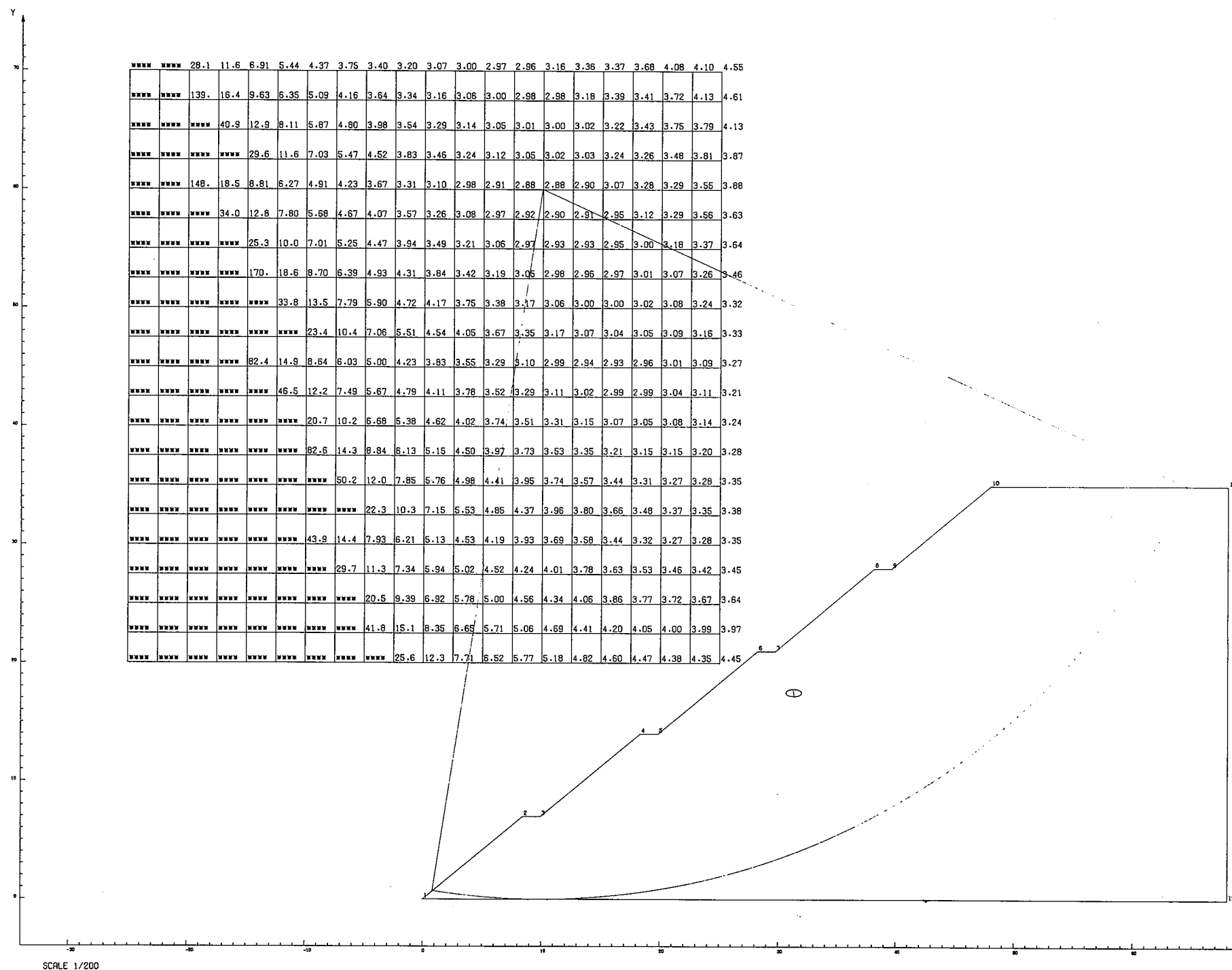


円弧すべり
1割2分
C = 14.92
 $\phi' = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-11 C=14.92 (1-1.2)

MIN. SAFETY FACTOR = 2.881
FAILURE CIRCLE X = 10.00
Y = 60.00
R = 60.00
RESISTING MOMENT = 123914.18
SLIDING MOMENT = 43012.97

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 15.82 | 30.00 |

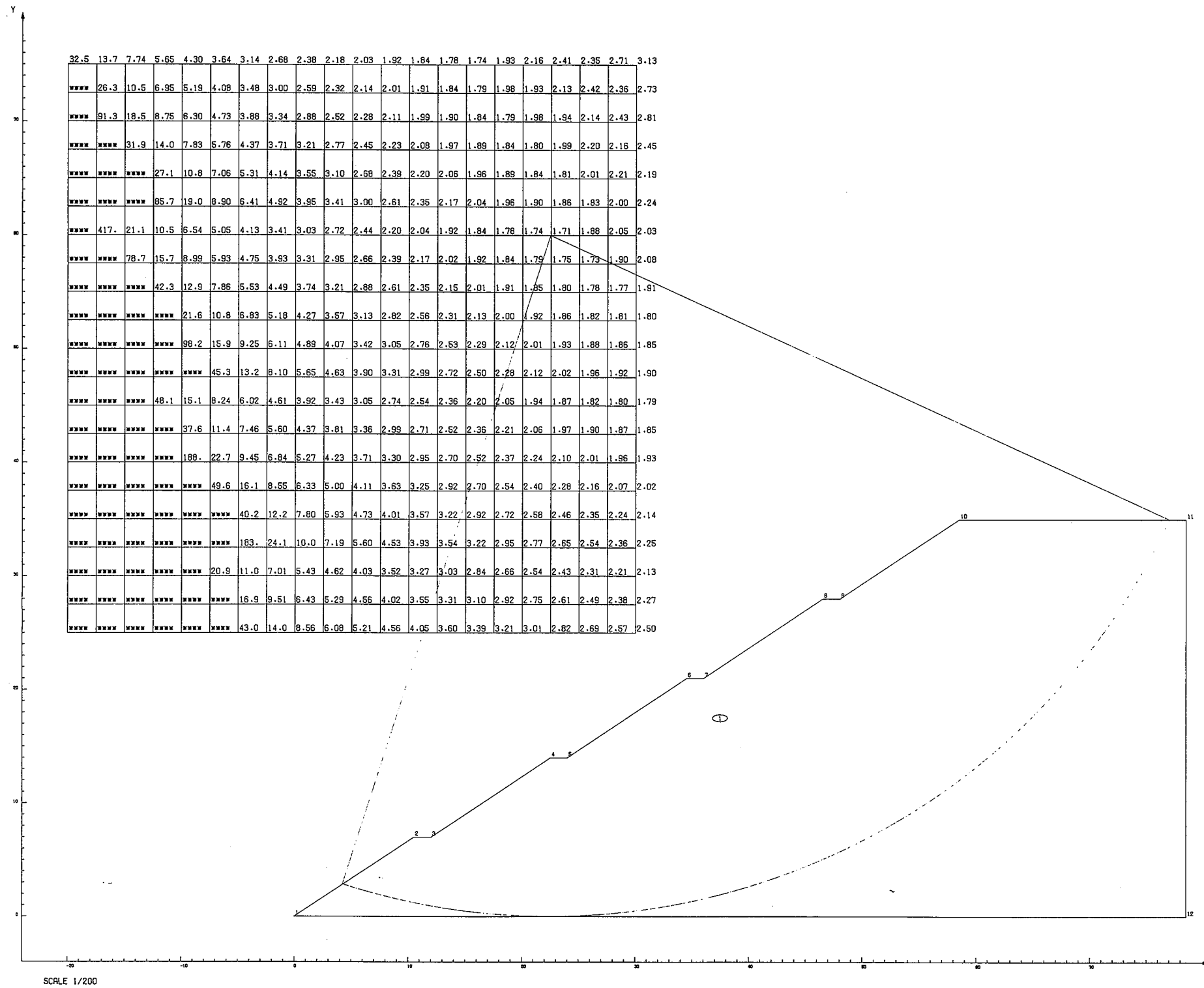


円弧すべり
1 割 5 分
C = 1 4.9 2
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-12 C=14.92 (1-1.5)

MIN. SAFETY FACTOR = 1.712
FAILURE CIRCLE X = 22.50
Y = 60.00
R = 60.00
RESISTING MOMENT = 77877.84
SLIDING MOMENT = 45482.10

| | M1 | M2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 0.50 |

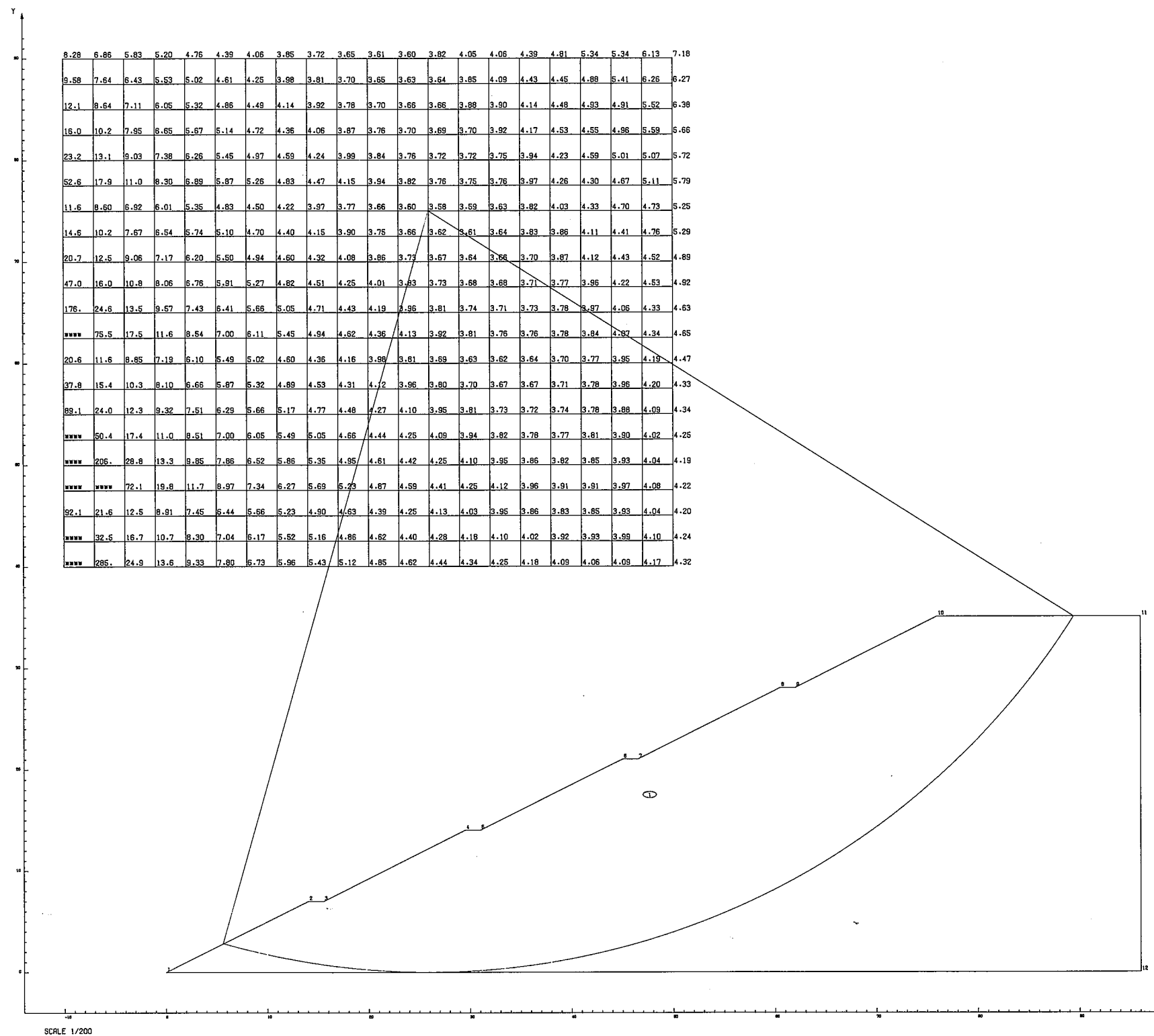


円弧すべり
2 割
C = 14.92
 $\phi = 30$

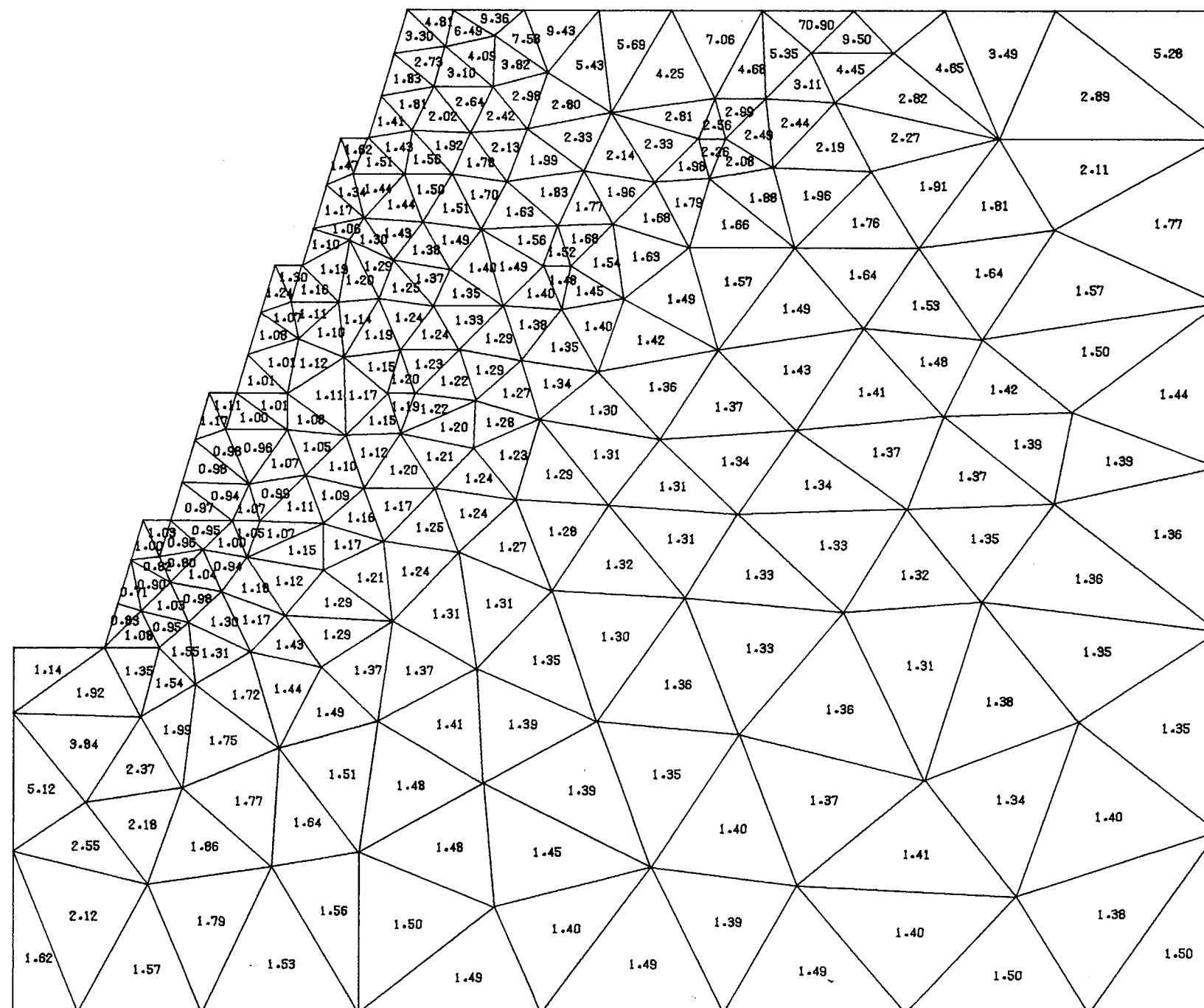
MODELNORIMEN NO ANTEIKEISAN CASE-13 C=14.92 (1-2.0)

MIN. SAFETY FACTOR = 3.579
FAILURE CIRCLE X = 26.00
Y = 75.00
R = 75.00
RESISTING MOMENT = 190755.25
SLIDING MOMENT = 53291.84

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 30.00 |

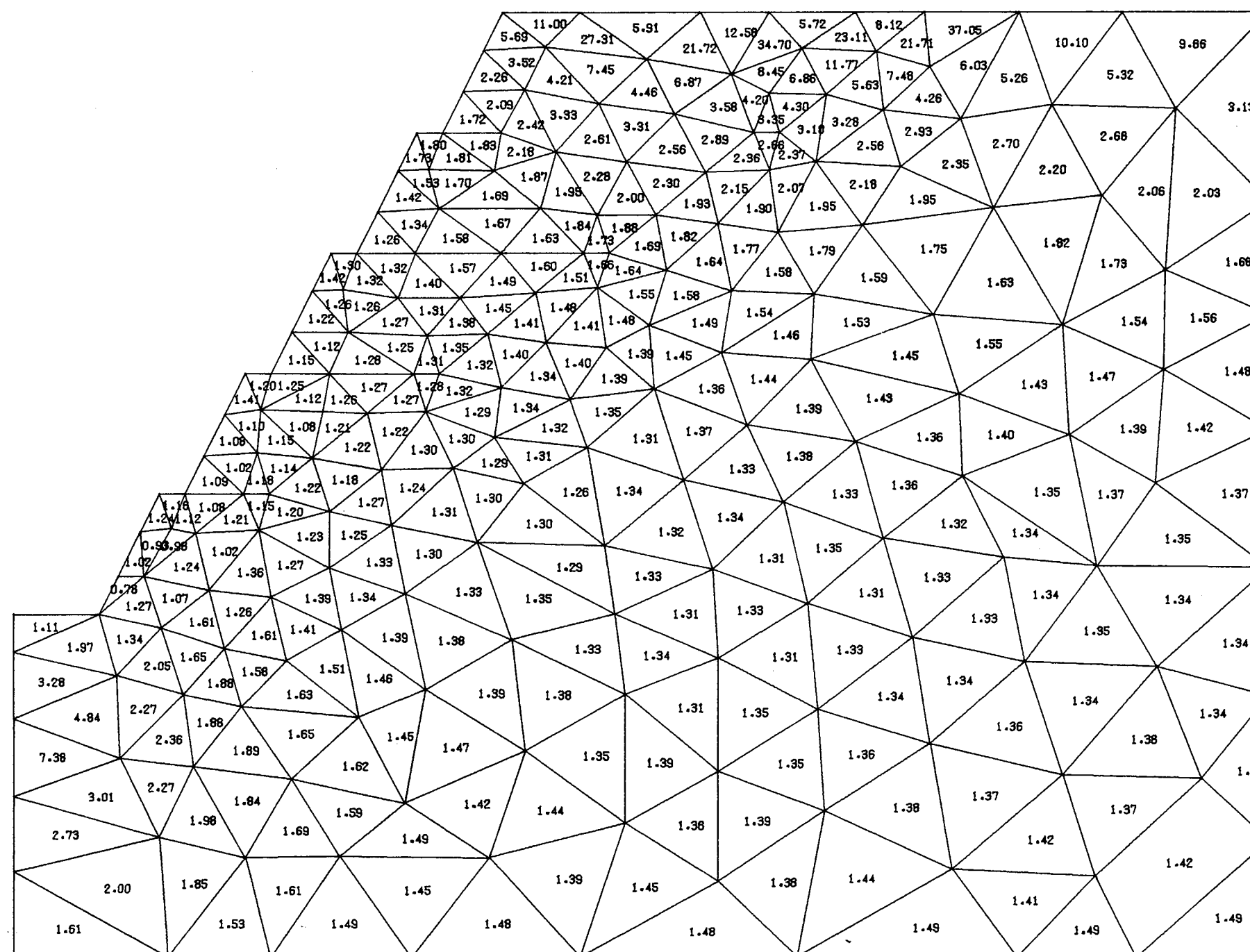


| |
|-------------|
| FEM |
| 3 分 |
| $C = 7.921$ |
| $\phi = 30$ |



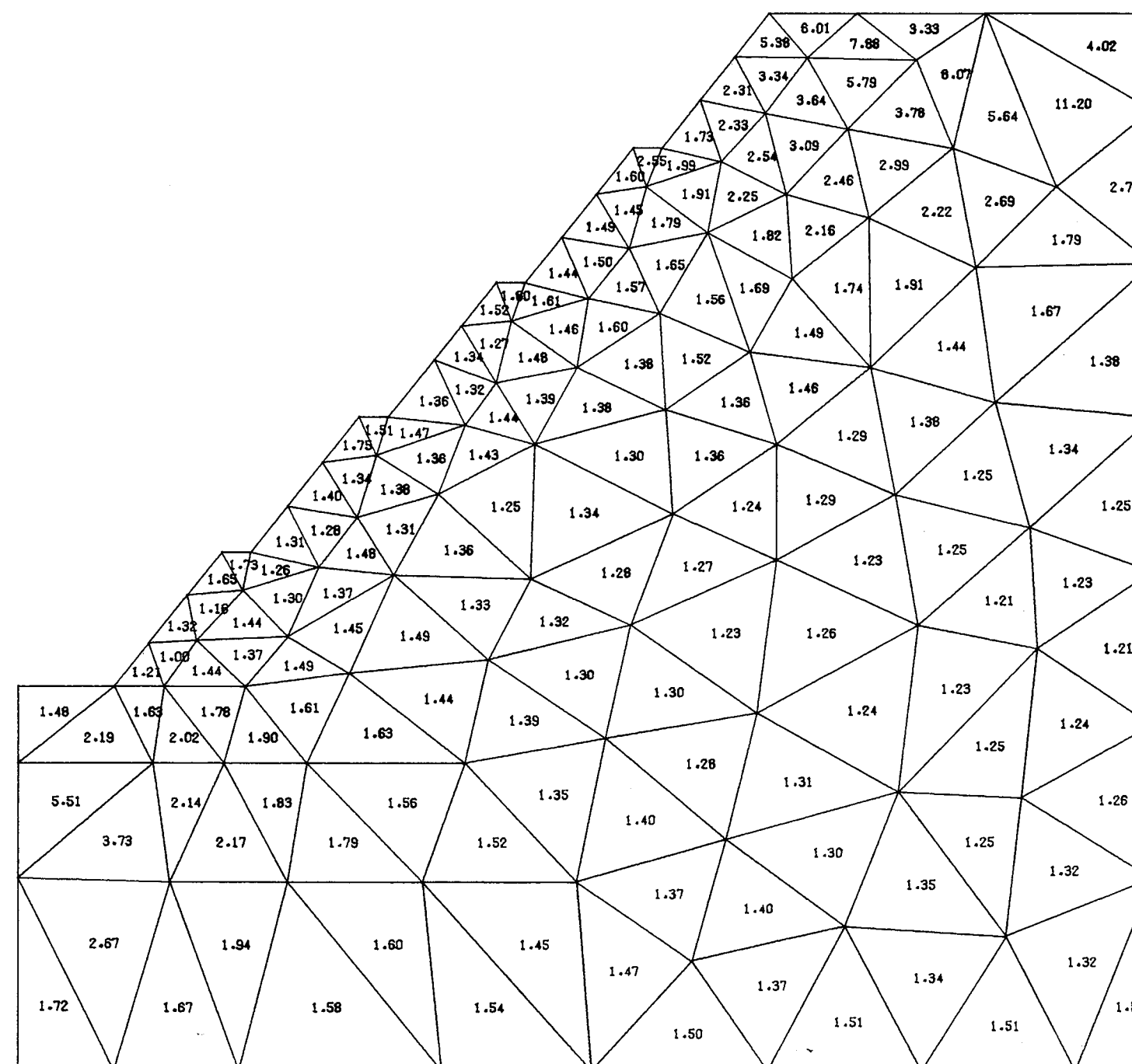
点安全率图

| |
|-------------|
| FEM |
| 5 分 |
| $C = 7.921$ |
| $\phi = 30$ |



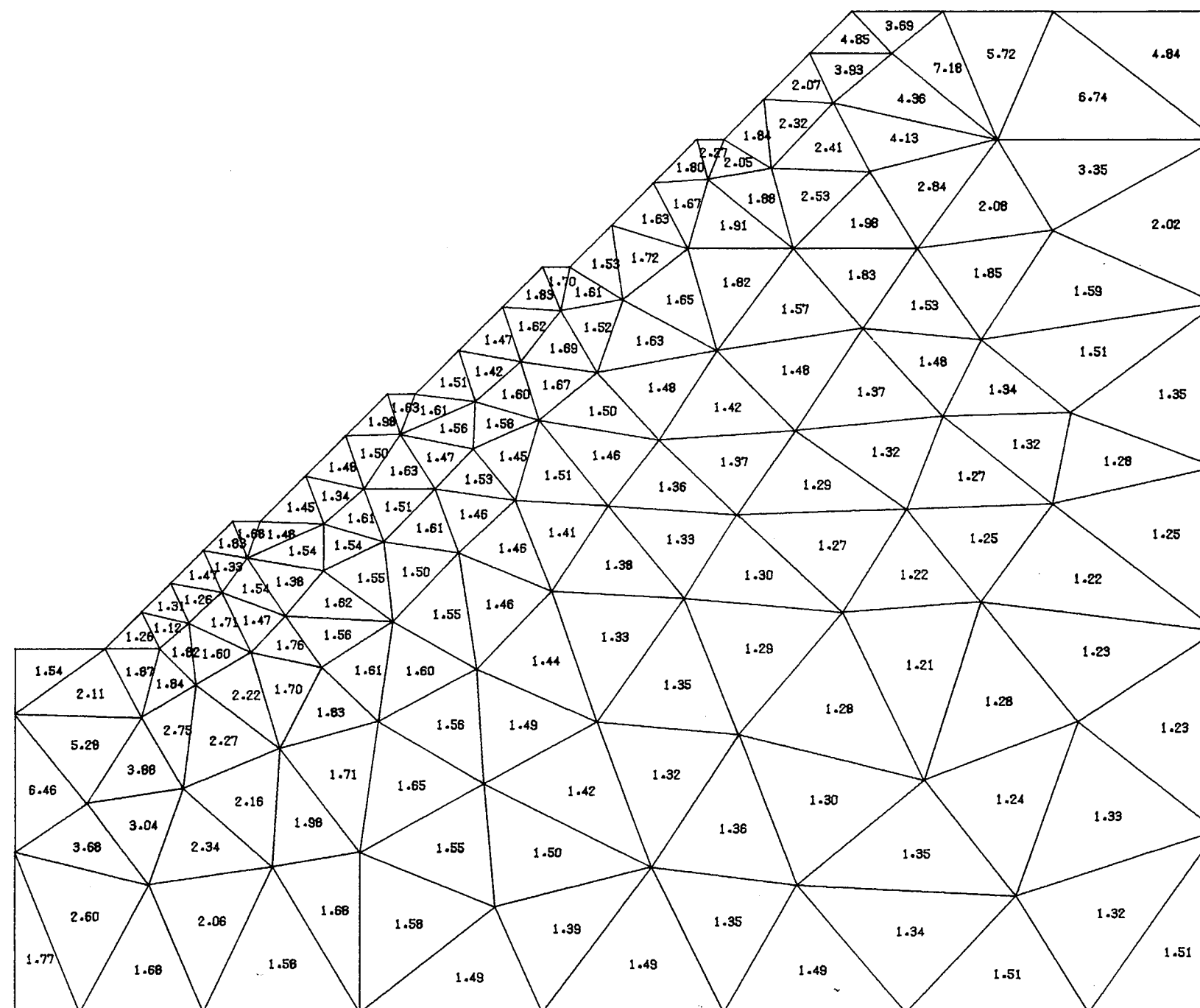
点 安 全 率 图

| |
|-------------|
| FEM |
| 8 分 |
| C = 7.9 2 1 |
| $\phi = 30$ |



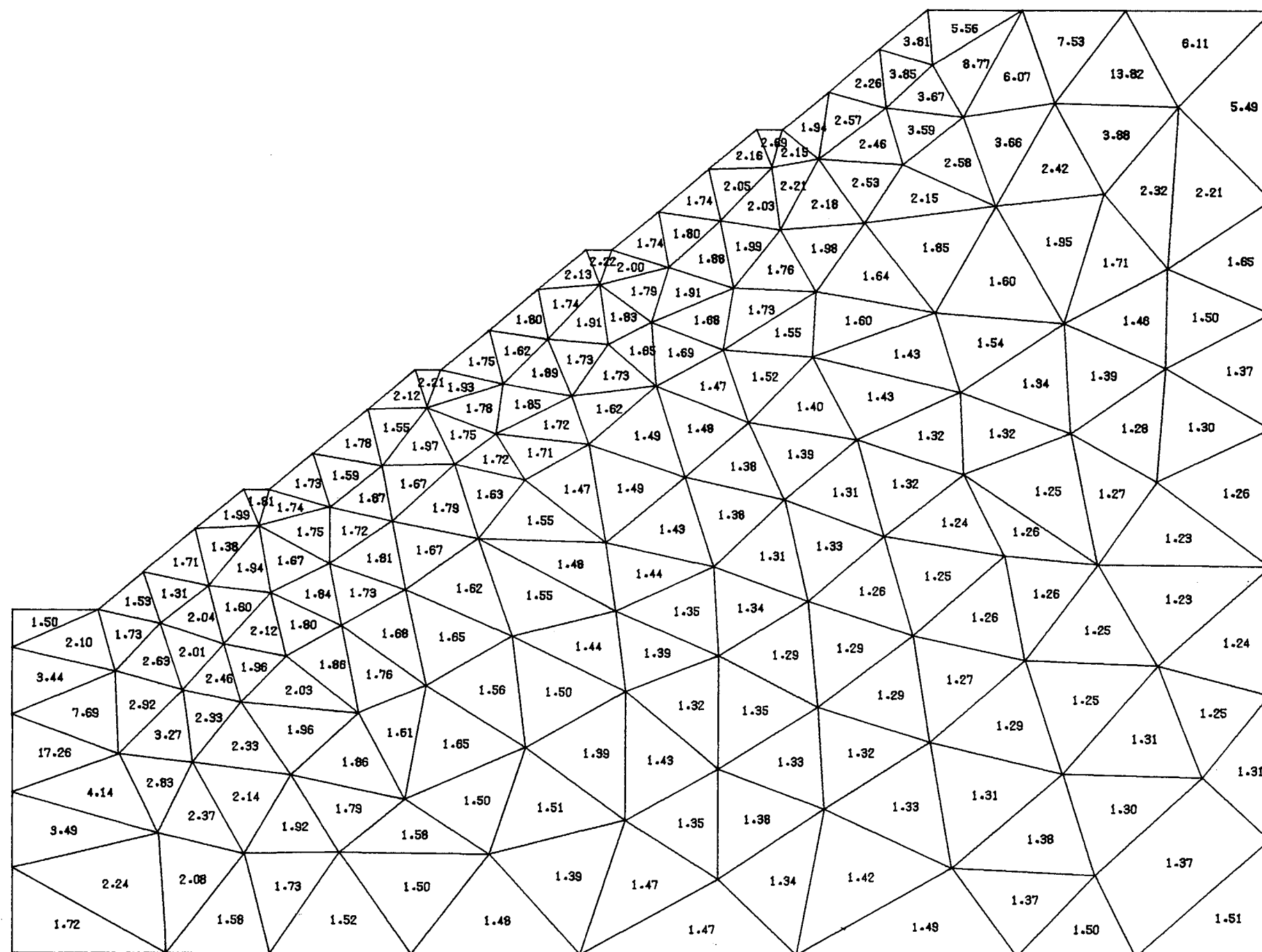
点 安 全 率 图

| |
|-------------|
| F E M |
| 1 割 |
| $C = 7.921$ |
| $\phi = 30$ |



点 安 全 率 図

| |
|-------------|
| F E M |
| 1 割 2 分 |
| $C = 7.921$ |
| $\phi = 30$ |



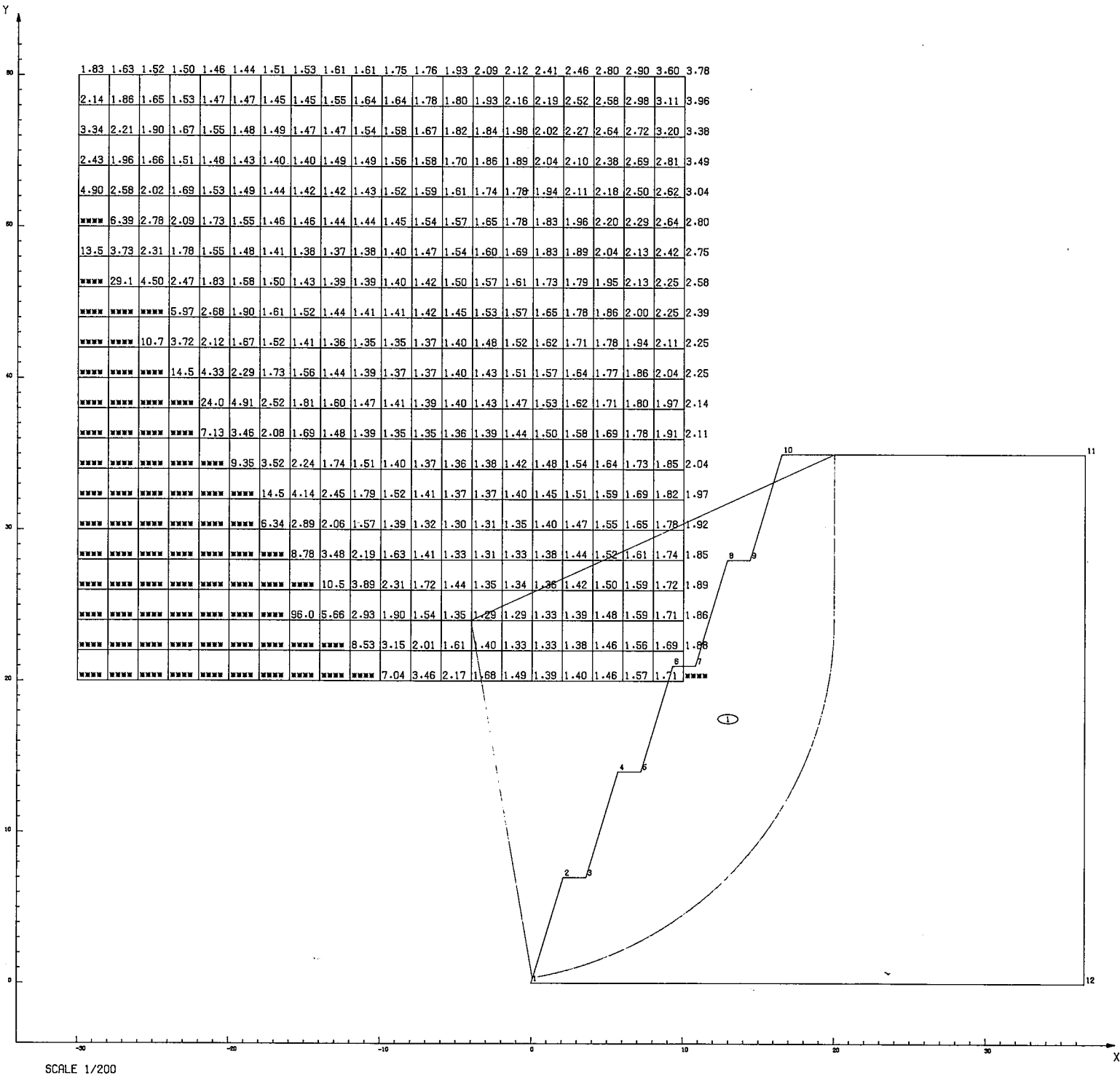
点 安 全 率 図

| |
|-------------|
| 円弧すべり |
| 3 分 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-14 C=7.921 (1-0.3)

MIN. SAFETY FACTOR = 1.290
 FAILURE CIRCLE X = -4.00
 Y = 24.00
 R = 24.00
 RESISTING MOMENT = 11499.44
 SLIDING MOMENT = 8913.11

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

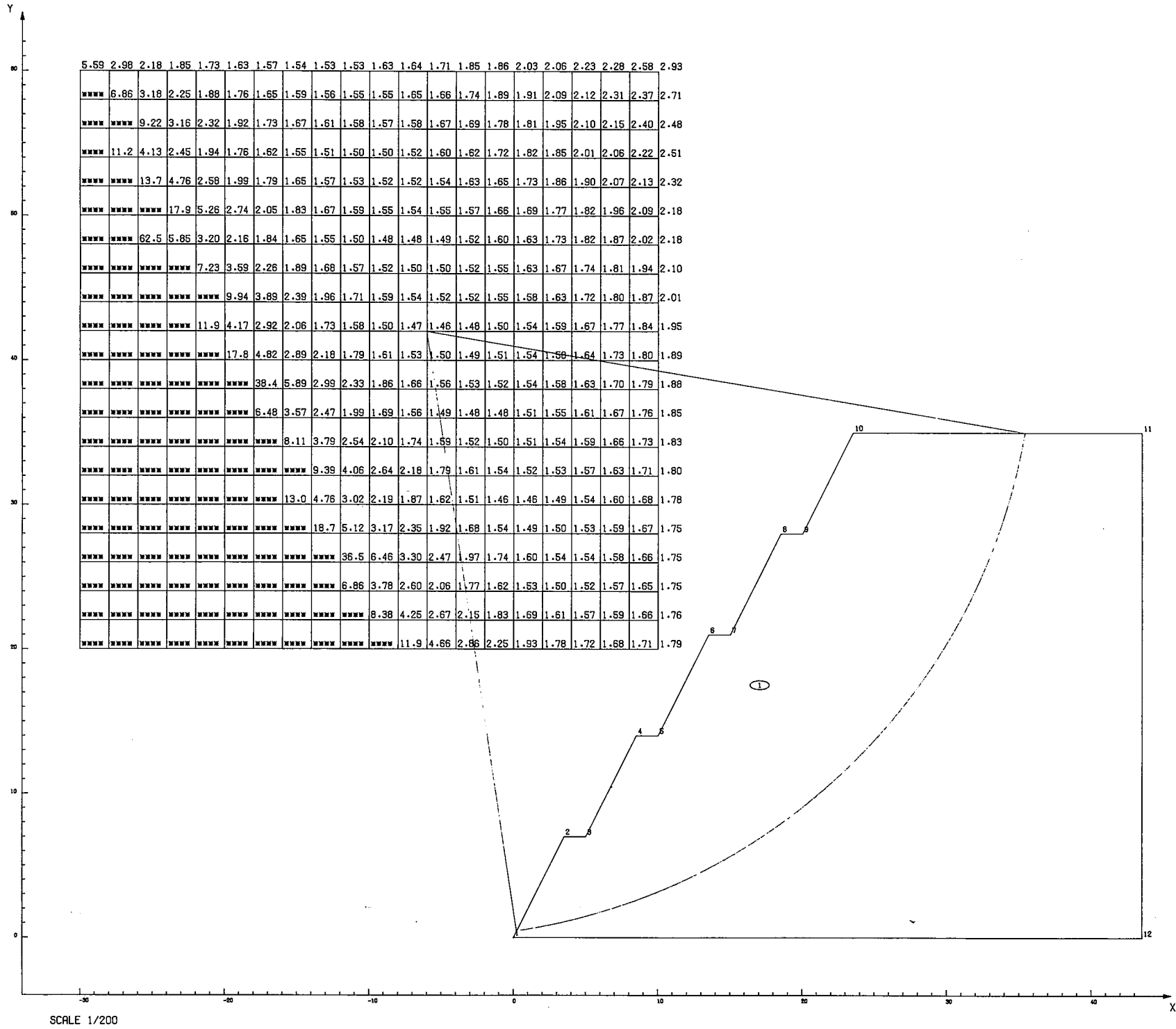


| |
|-------------|
| 円弧すべり |
| 5 分 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-15 C=7.921 (1-0.5)

MIN. SAFTY FACTOR = 1.462
FAILURE CIRCLE X = -6.00
Y = 42.00
R = 42.00
RESISTING MOMENT = 33838.98
SLIDING MOMENT = 23143.72

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

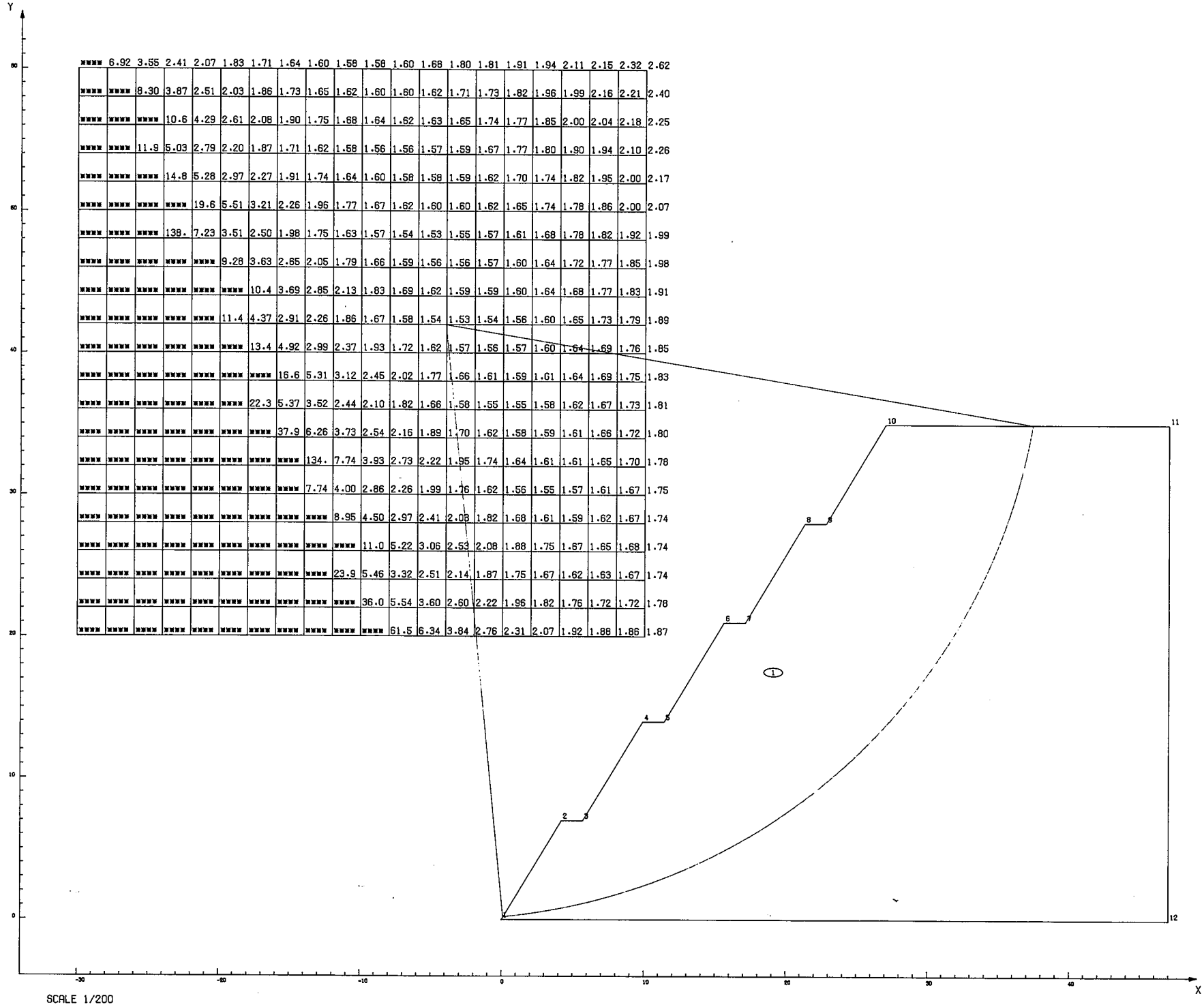


| |
|-------------|
| 円弧すべり |
| 6 分 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-16 C=7.921 (1-0.6)

MIN. SAFTY FACTOR = 1.528
FAILURE CIRCLE X = -4.00
Y = 42.00
R = 42.00
RESISTING MOMENT = 35019.41
SLIDING MOMENT = 22910.98

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

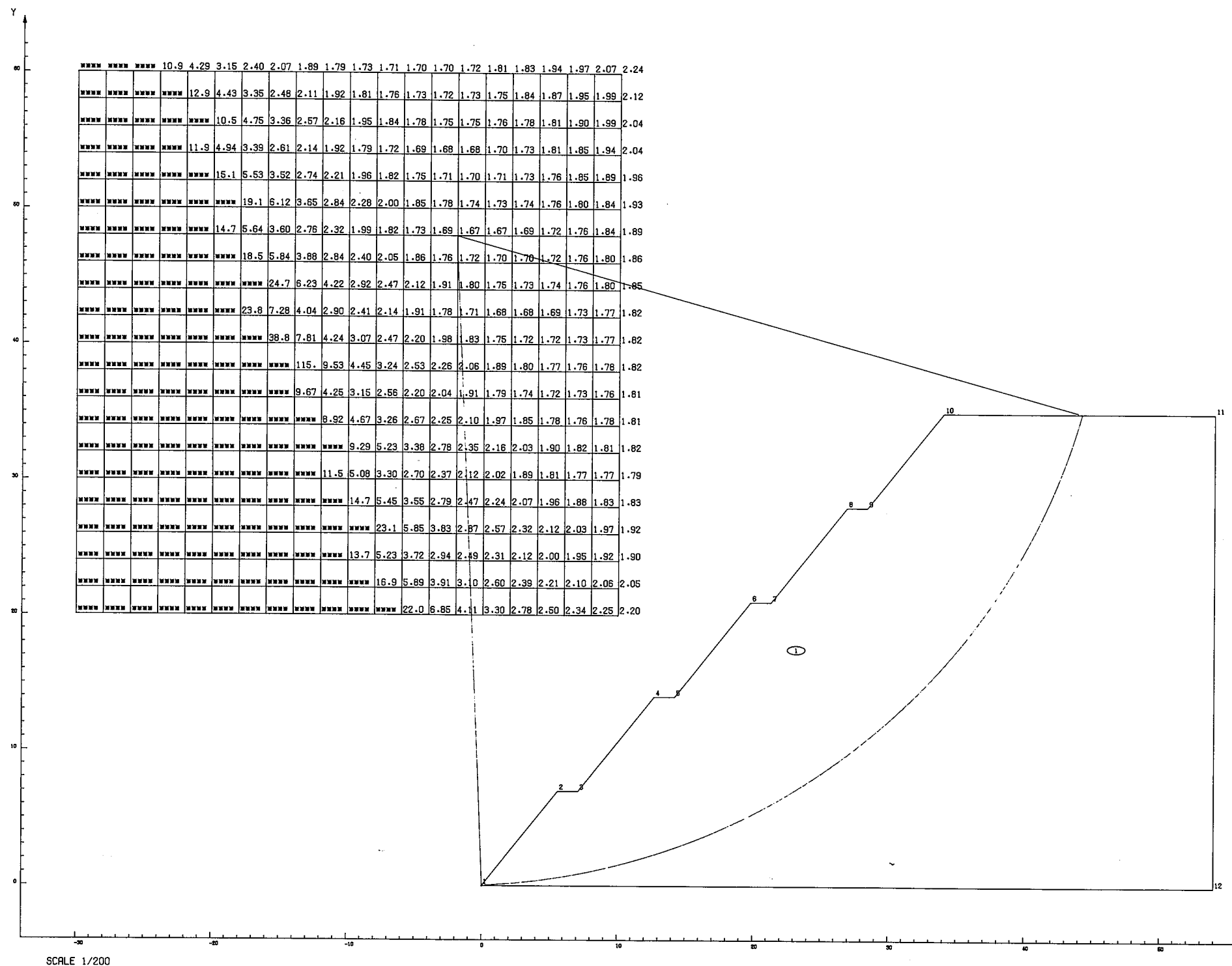


| |
|-------------|
| 円弧すべり |
| 8 分 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-17 C=7.921 (1-0.8)

MIN. SAFETY FACTOR = 1.670
 FAILURE CIRCLE X = -2.00
 Y = 48.00
 R = 48.00
 RESISTING MOMENT = 44833.79
 SLIDING MOMENT = 26840.51

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

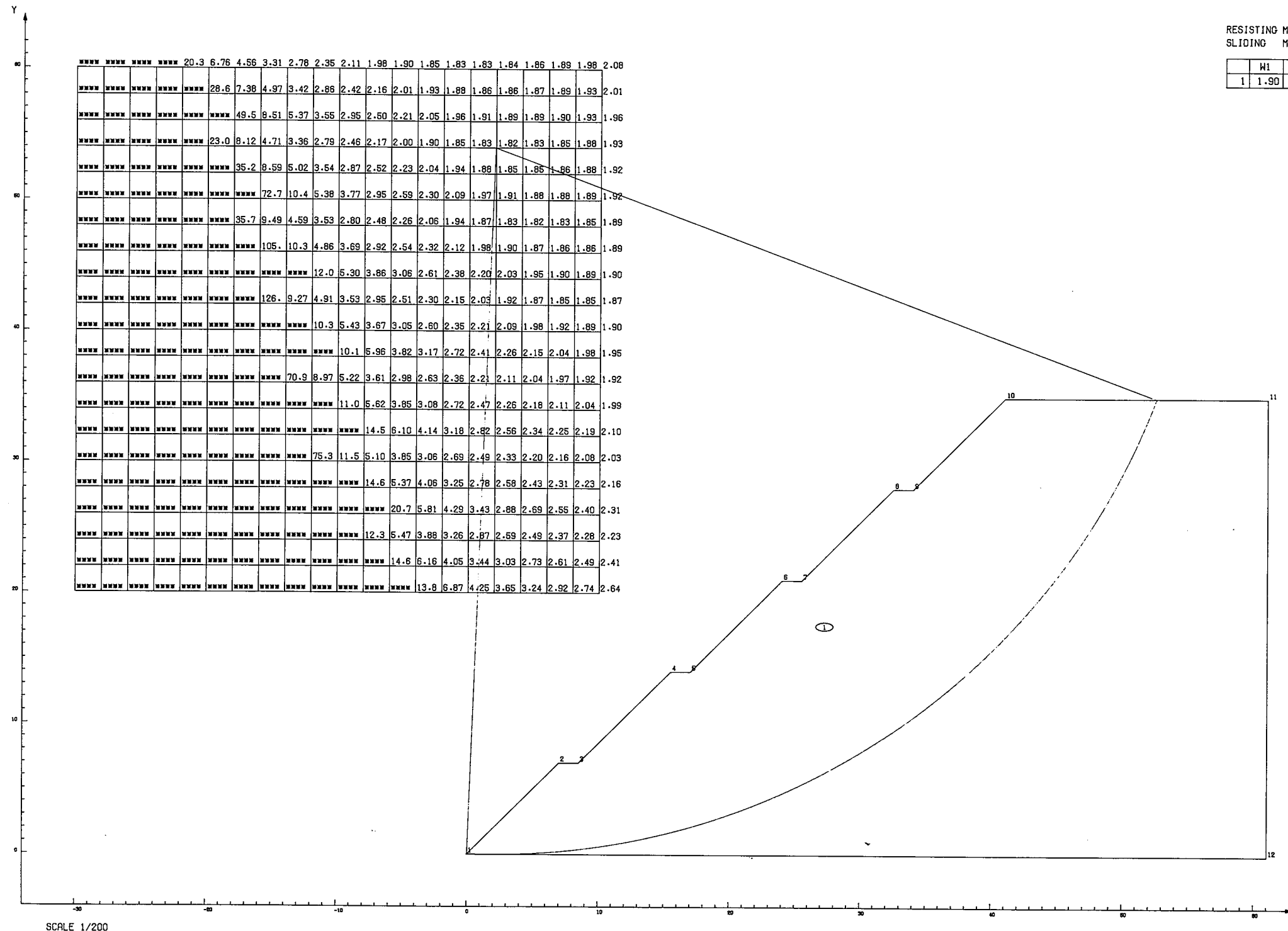


| |
|-------------|
| 円弧すべり |
| 1 割 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-18 C=7.921 (1-1.0)

MIN. SAFTY FACTOR = 1.820
 FAILURE CIRCLE X = 2.00
 Y = 54.00
 R = 54.00
 RESISTING MOMENT = 59965.66
 SLIDING MOMENT = 32953.39

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

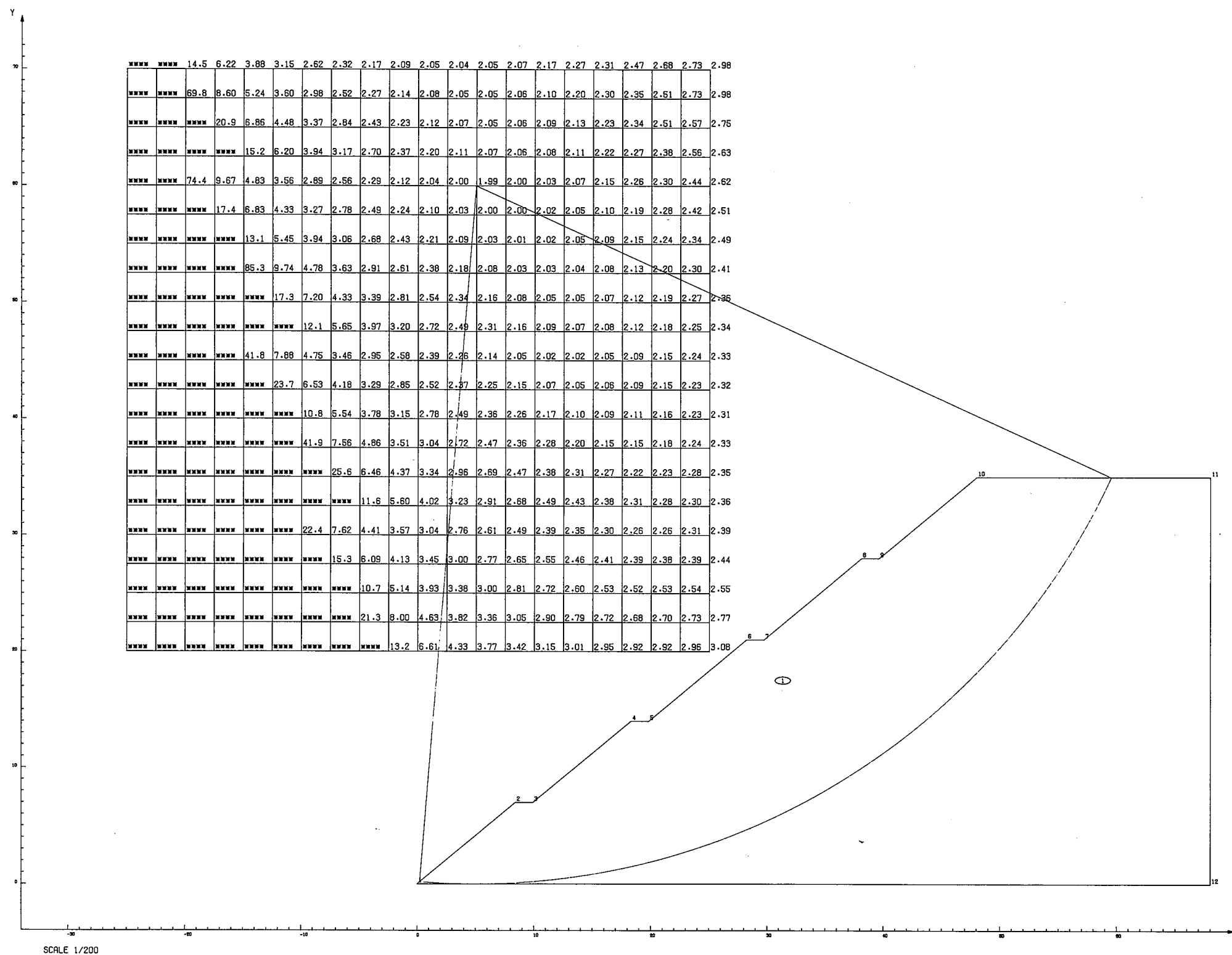


円弧すべり
1 割 2 分
C = 7.9 2 1
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-19 C=7.921 (1-1.2)

MIN. SAFETY FACTOR = 1.986
FAILURE CIRCLE X = 5.00
Y = 60.00
R = 60.00
RESISTING MOMENT = 74555.08
SLIDING MOMENT = 37537.43

| | H1 | H2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

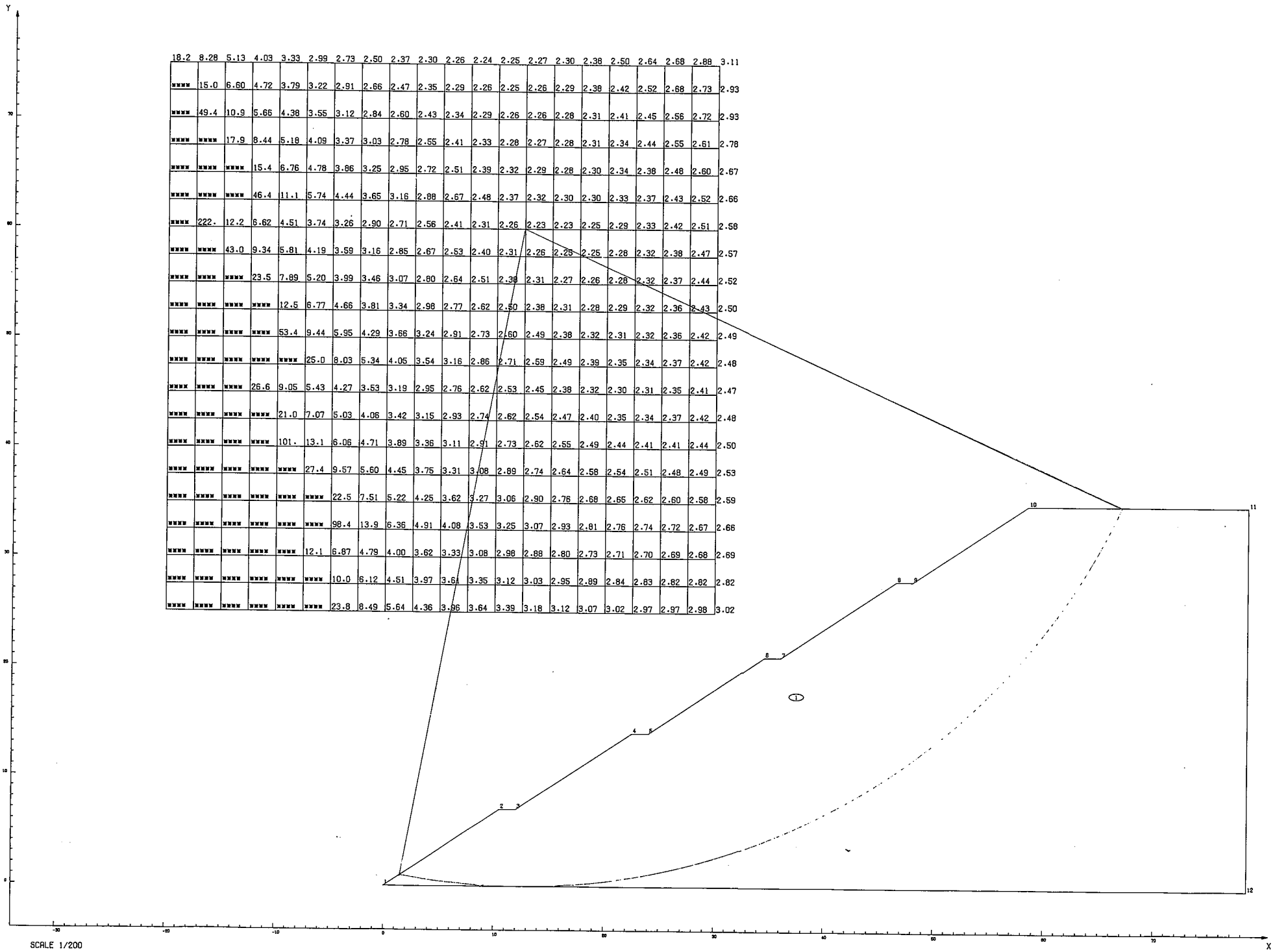


円弧すべり
1 割 5 分
C = 7.9 2 1
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-20 C=7.921 (1-1.5)

MIN. SAFETY FACTOR = 2.234
FAILURE CIRCLE X = 12.50
Y = 60.00
R = 60.00
RESISTING MOMENT = 82740.07
SLIDING MOMENT = 37035.41

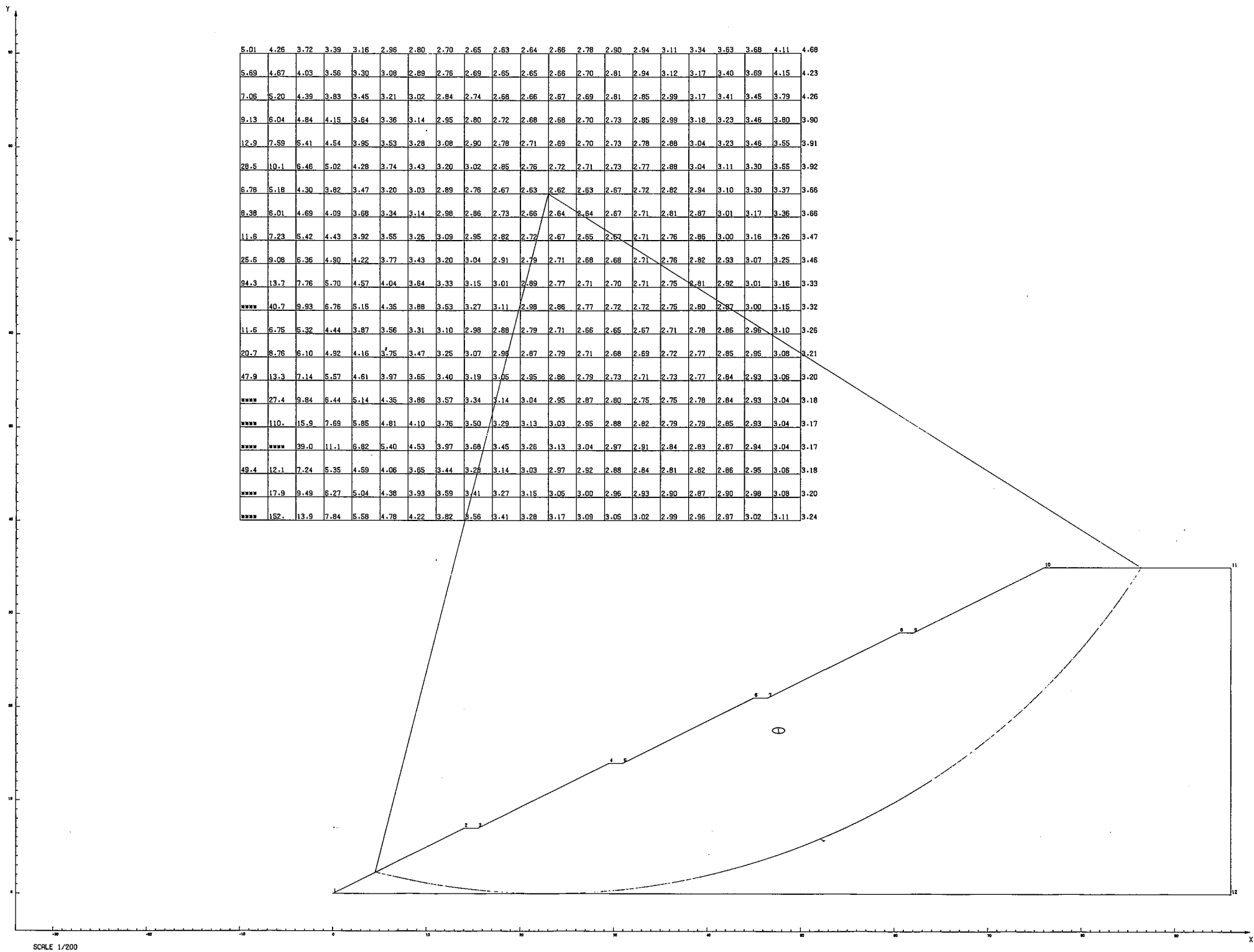
| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |



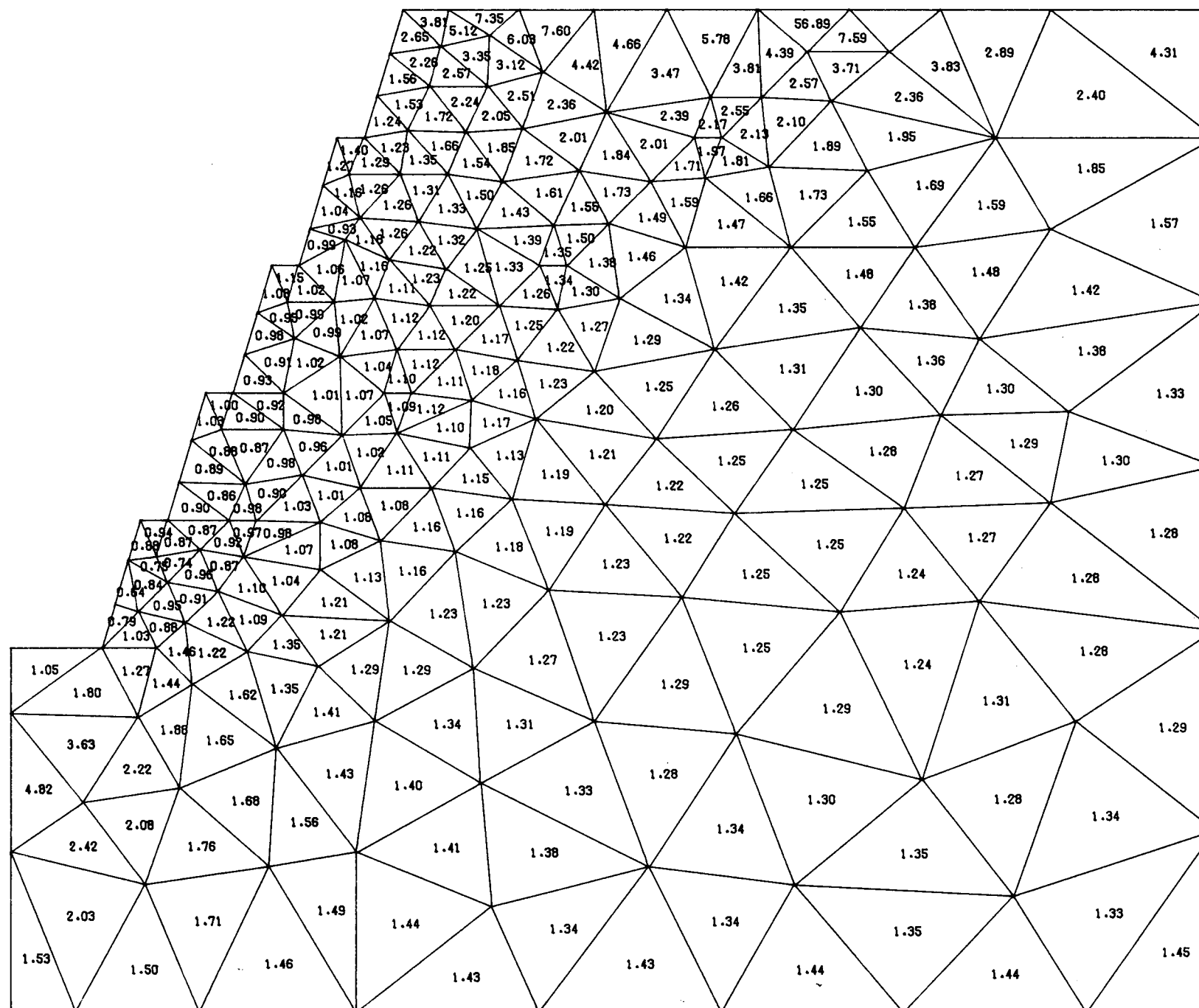
| |
|-------------|
| 円弧すべり |
| 2 割 |
| C = 7.9 2 1 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-21 C=7.921 (1-2.0)

| | | | | | | |
|--------------------|------|-----------|-------|-----|------|-------|
| MIN. SAFETY FACTOR | = | 2.617 | | | | |
| FAILURE CIRCLE | X = | 23.00 | | | | |
| | Y = | 75.00 | | | | |
| | R = | 75.00 | | | | |
| RESISTING MOMENT | = | 131560.23 | | | | |
| SLIDING MOMENT | = | 50269.44 | | | | |
| | | | | | | |
| | W1 | W2 | K | YD | C | PHI |
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 7.92 | 30.00 |

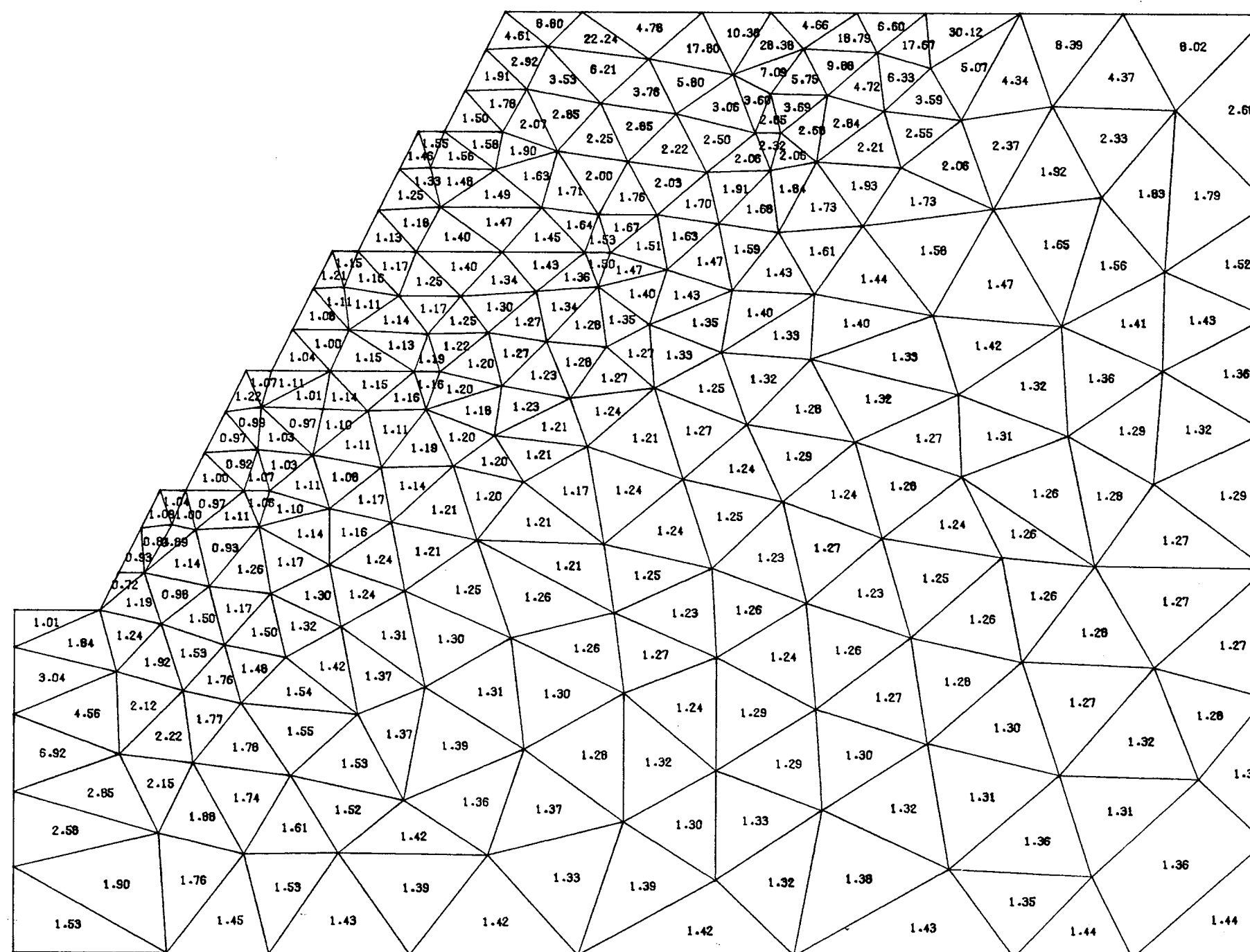


| |
|-------------|
| F E M |
| 3 分 |
| C = 6.138 |
| $\phi = 30$ |



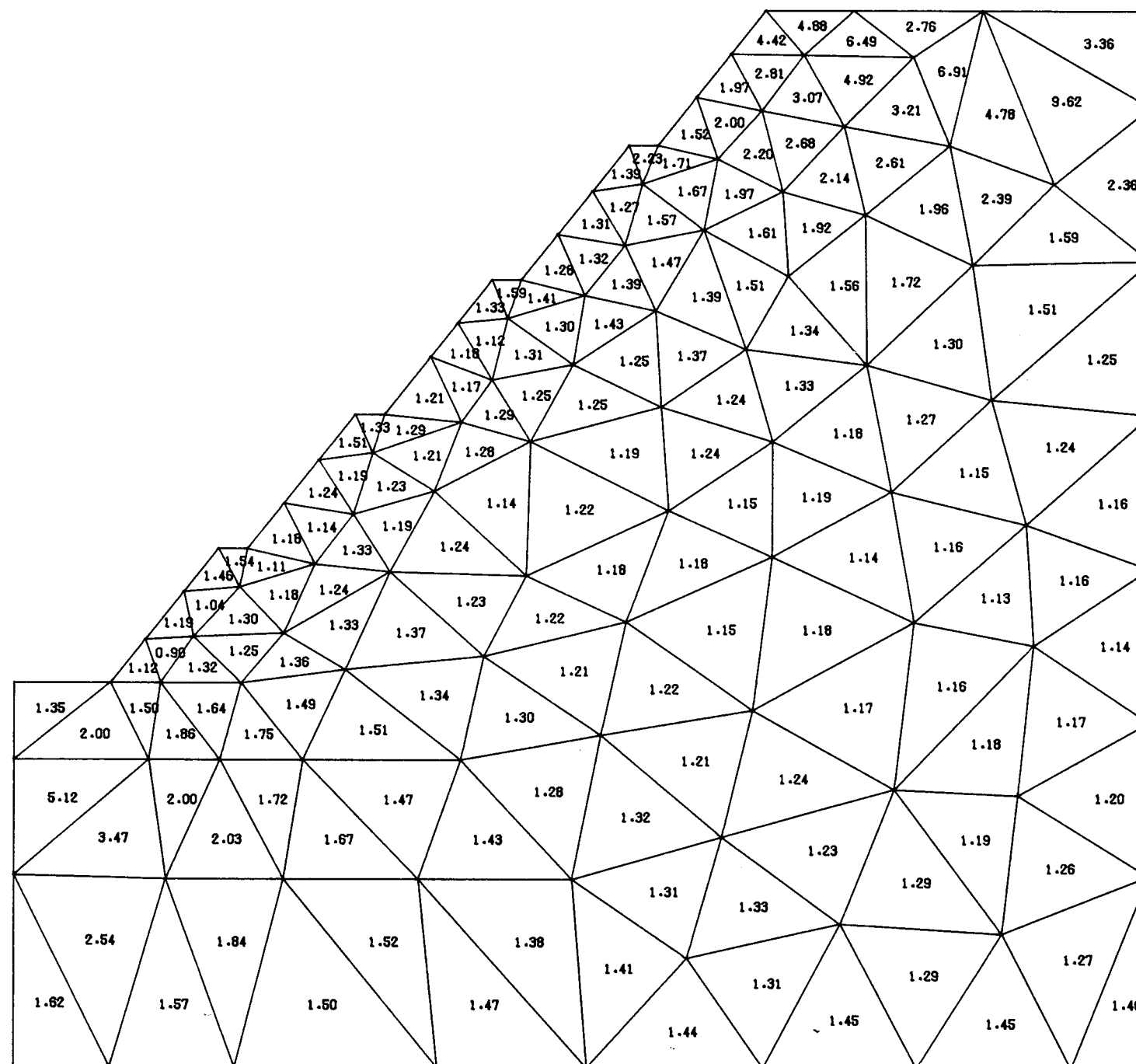
点 安 全 率 图

| |
|-------------|
| FEM |
| 5 分 |
| $C = 6.138$ |
| $\phi = 30$ |



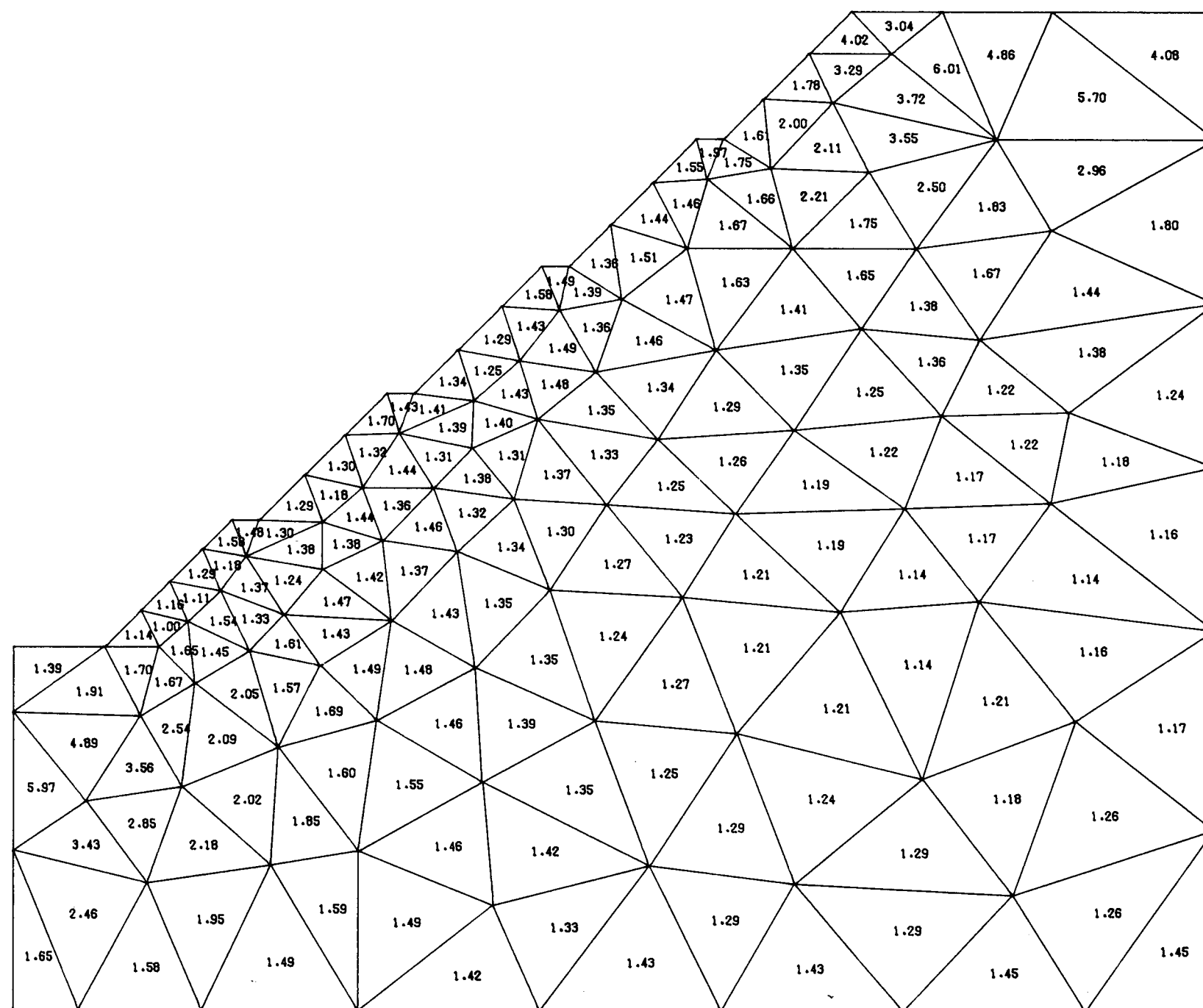
点安全率图

| |
|-------------|
| FEM |
| 8 分 |
| $C = 6.138$ |
| $\phi = 30$ |



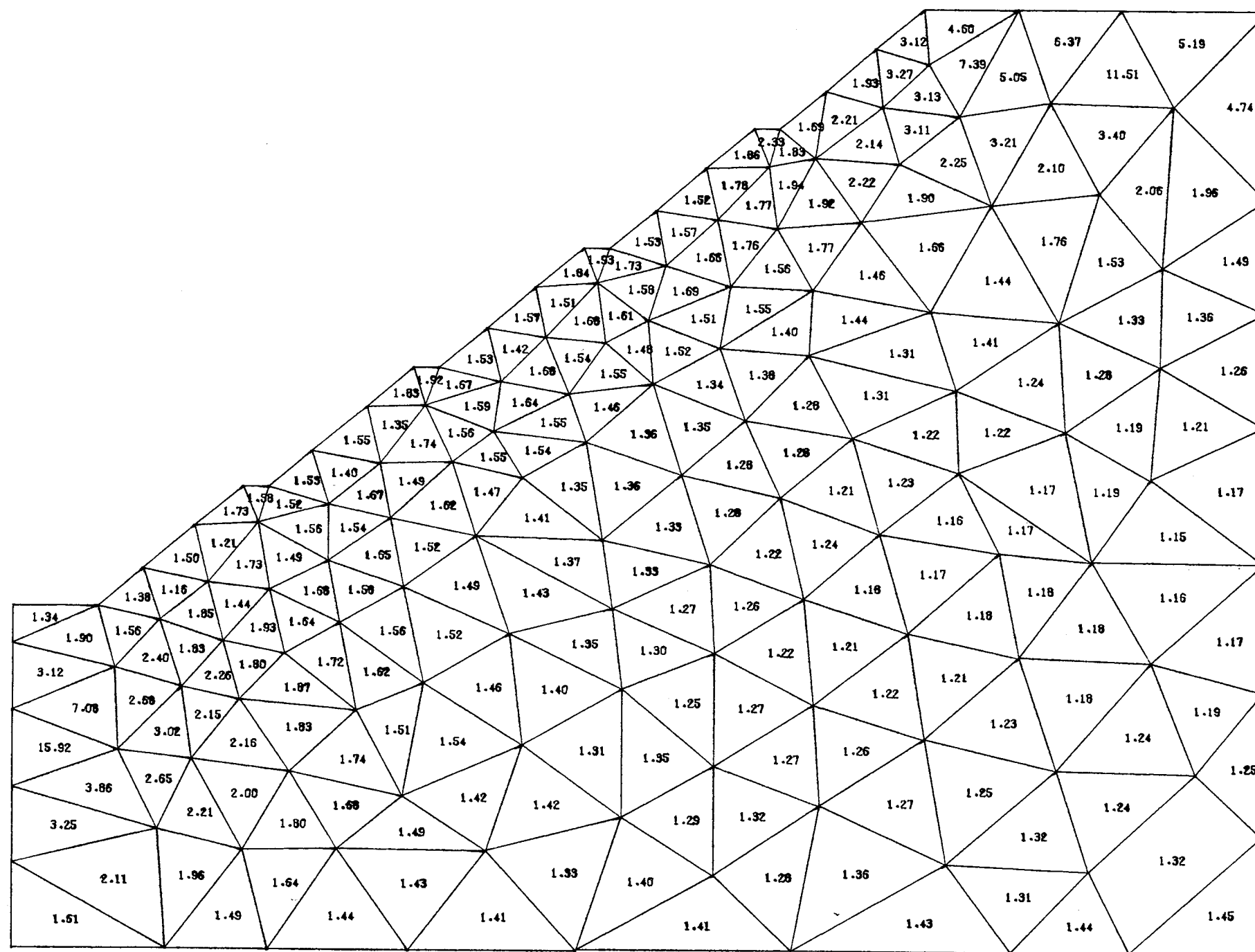
点 安 全 率 图

| |
|-------------|
| F E M |
| 1 割 |
| $C = 6.138$ |
| $\phi = 30$ |



点 安 全 率 図

| |
|-------------|
| FEM |
| 1割2分 |
| C = 6.138 |
| $\phi = 30$ |



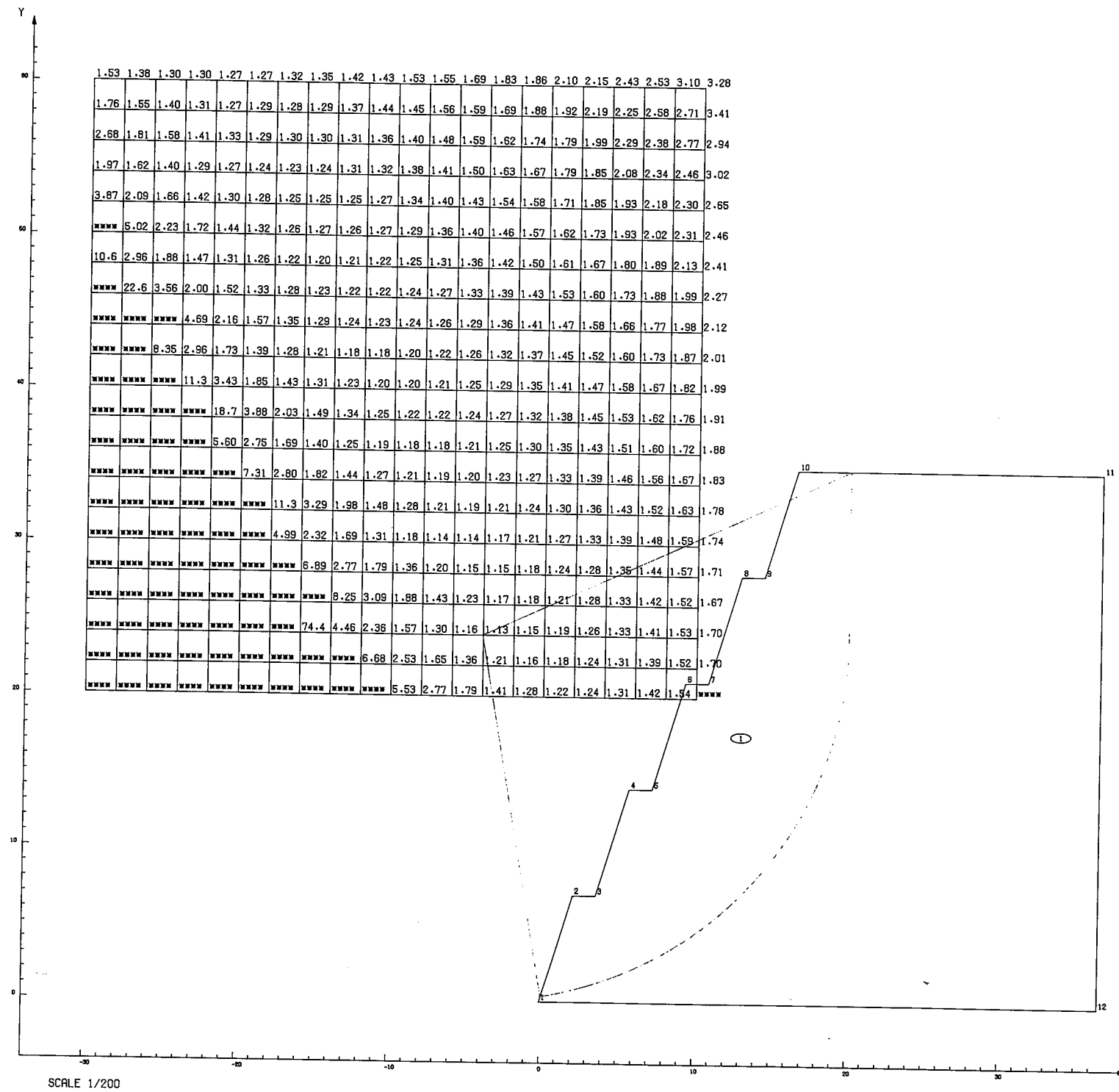
点安全率図

| |
|-------------|
| 円弧すべり |
| 3 分 |
| C = 6.138 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-22 C=6.138 (1-0.3)

MIN. SAFTY FACTOR = 1.129
 FAILURE CIRCLE X = -4.00
 Y = 24.00
 R = 24.00
 RESISTING MOMENT = 10062.80
 SLIDING MOMENT = 8913.11

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

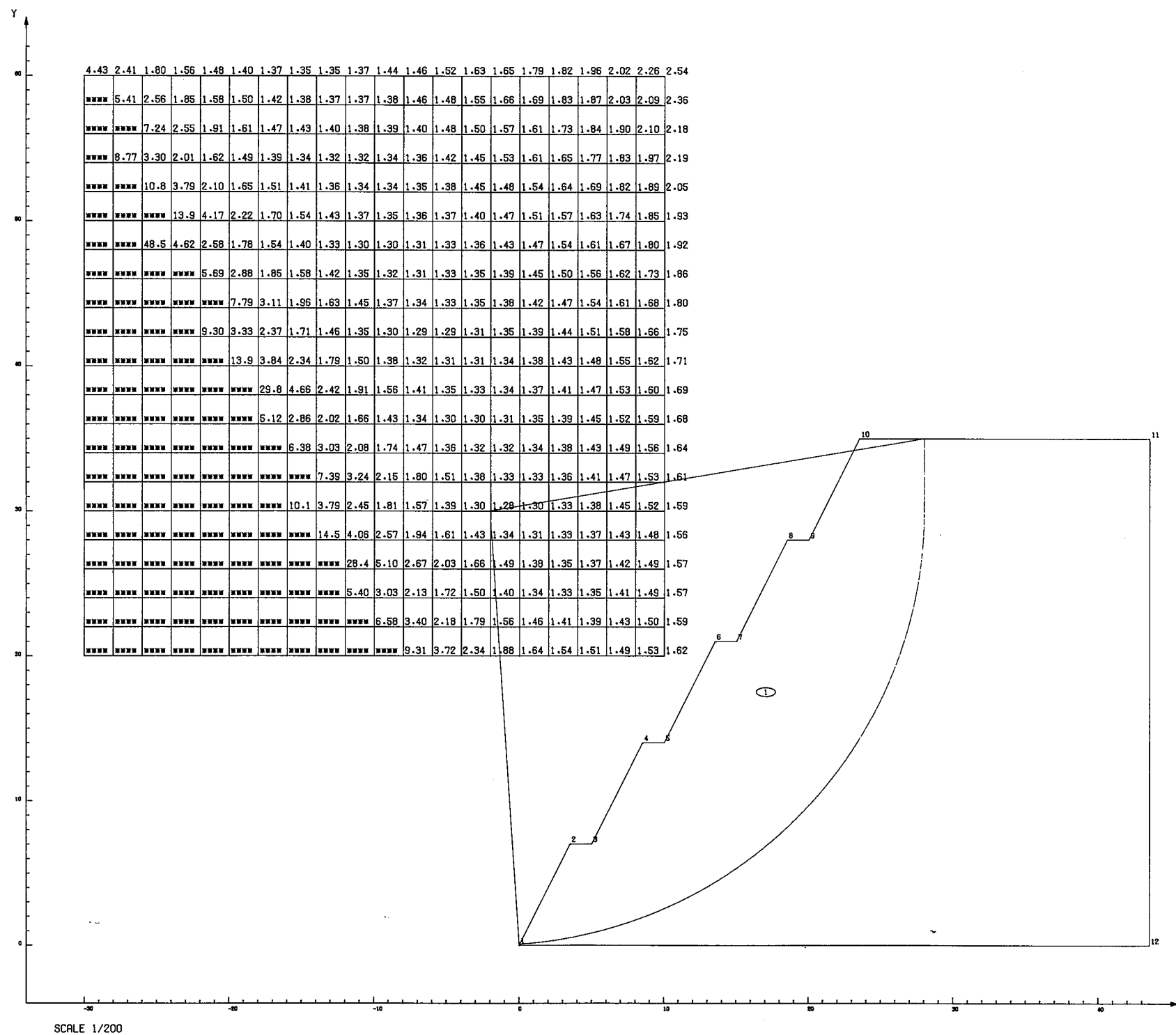


| |
|-------------|
| 円弧すべり |
| 5 分 |
| C = 6.1 3 8 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-23 C=6.138 (1-0.5)

MIN. SAFETY FACTOR = 1.283
 FAILURE CIRCLE X = -2.00
 Y = 30.00
 R = 30.00
 RESISTING MOMENT = 17196.23
 SLIDING MOMENT = 13400.12

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

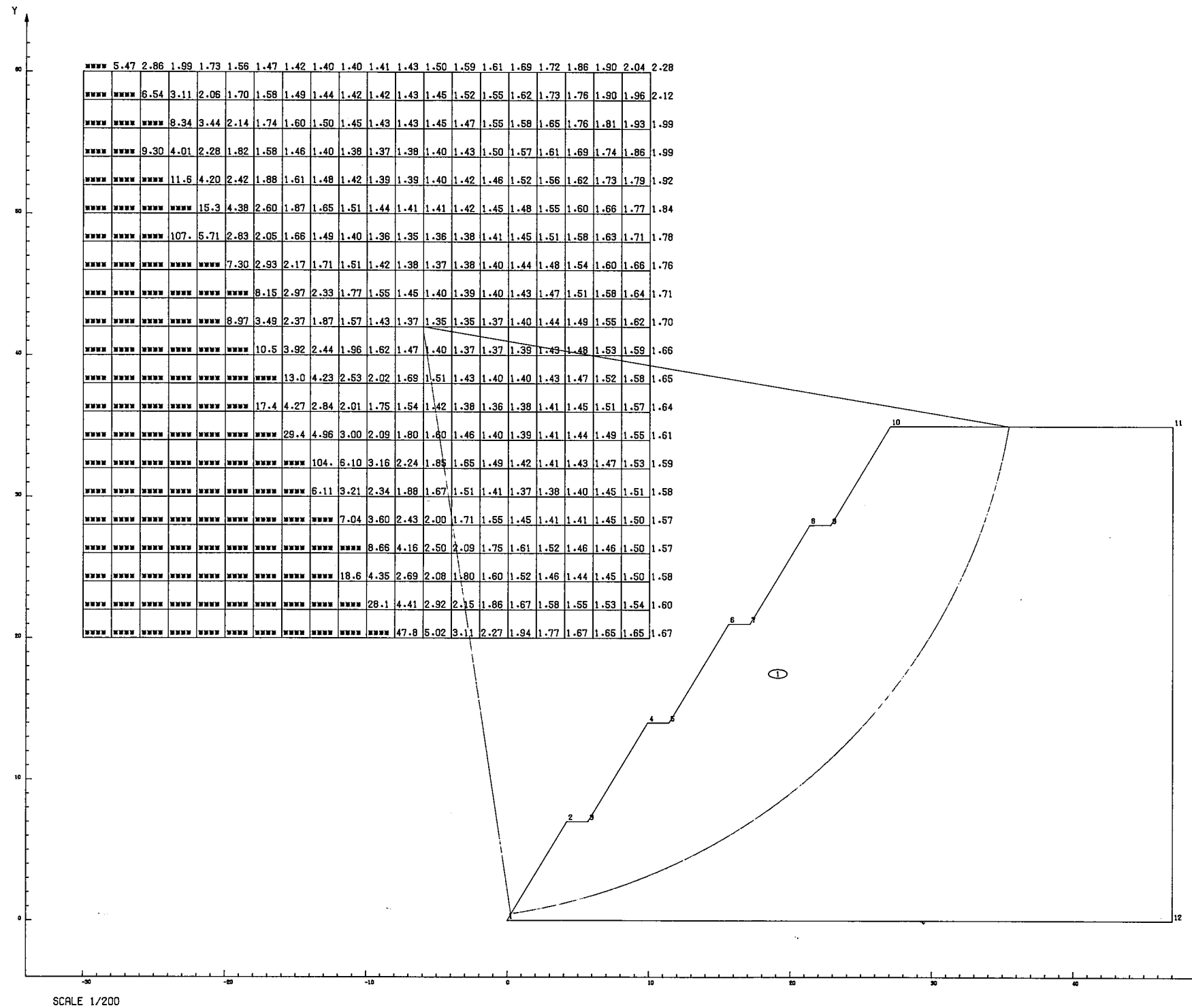


| |
|-------------|
| 円弧すべり |
| 6 分 |
| C = 6.138 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-24 C=6.138 (1-0.6)

MIN. SAFETY FACTOR = 1.347
 FAILURE CIRCLE X = -6.00
 Y = 42.00
 R = 42.00
 RESISTING MOMENT = 27574.15
 SLIDING MOMENT = 20463.53

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

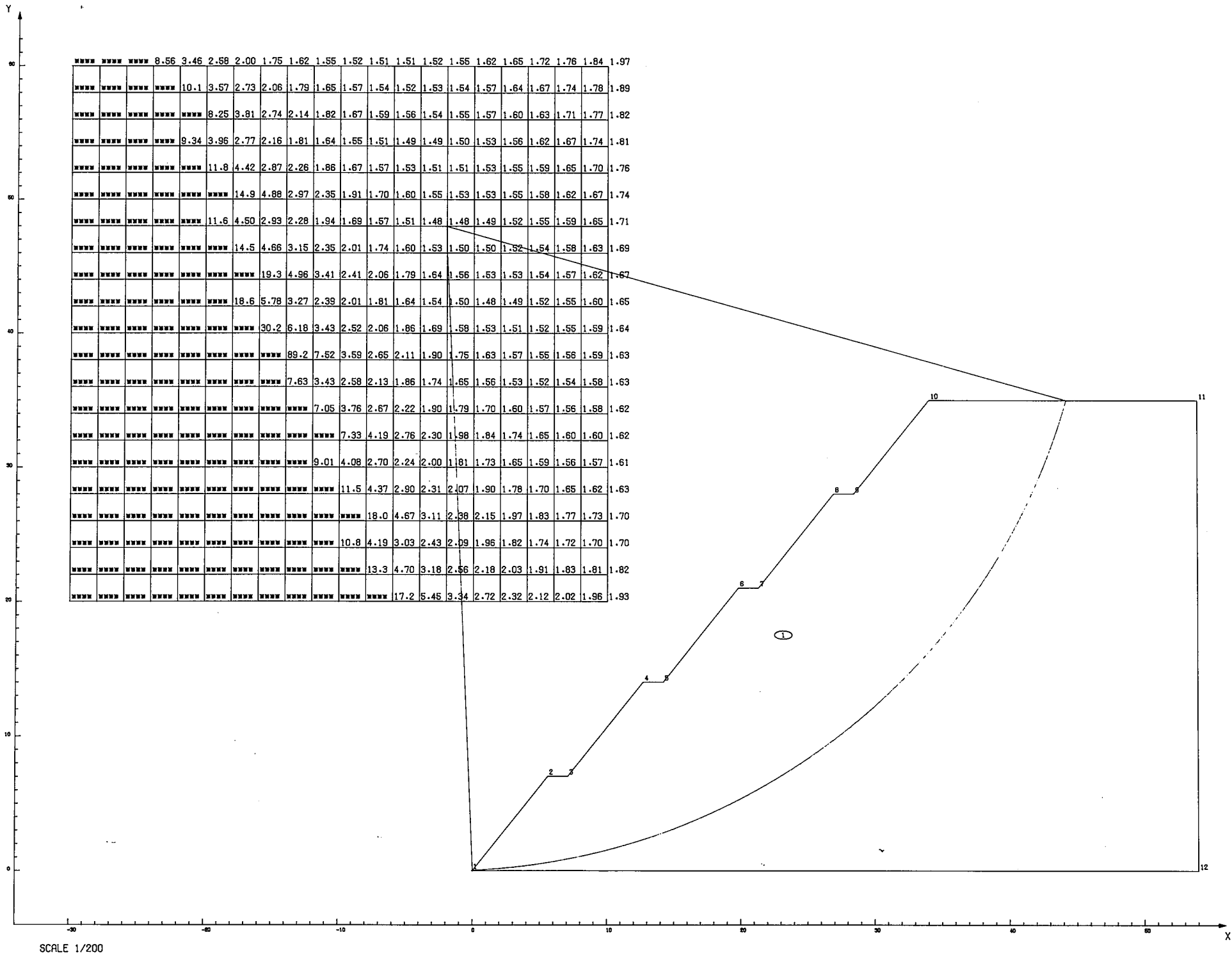


| |
|-------------|
| 円弧すべり |
| 8 分 |
| C = 6.138 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-25 C=6.138 (1-0.8)

MIN. SAFTY FACTOR = 1.478
FAILURE CIRCLE X = -2.00
Y = 48.00
R = 48.00
RESISTING MOMENT = 39681.75
SLIDING MOMENT = 26840.51

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

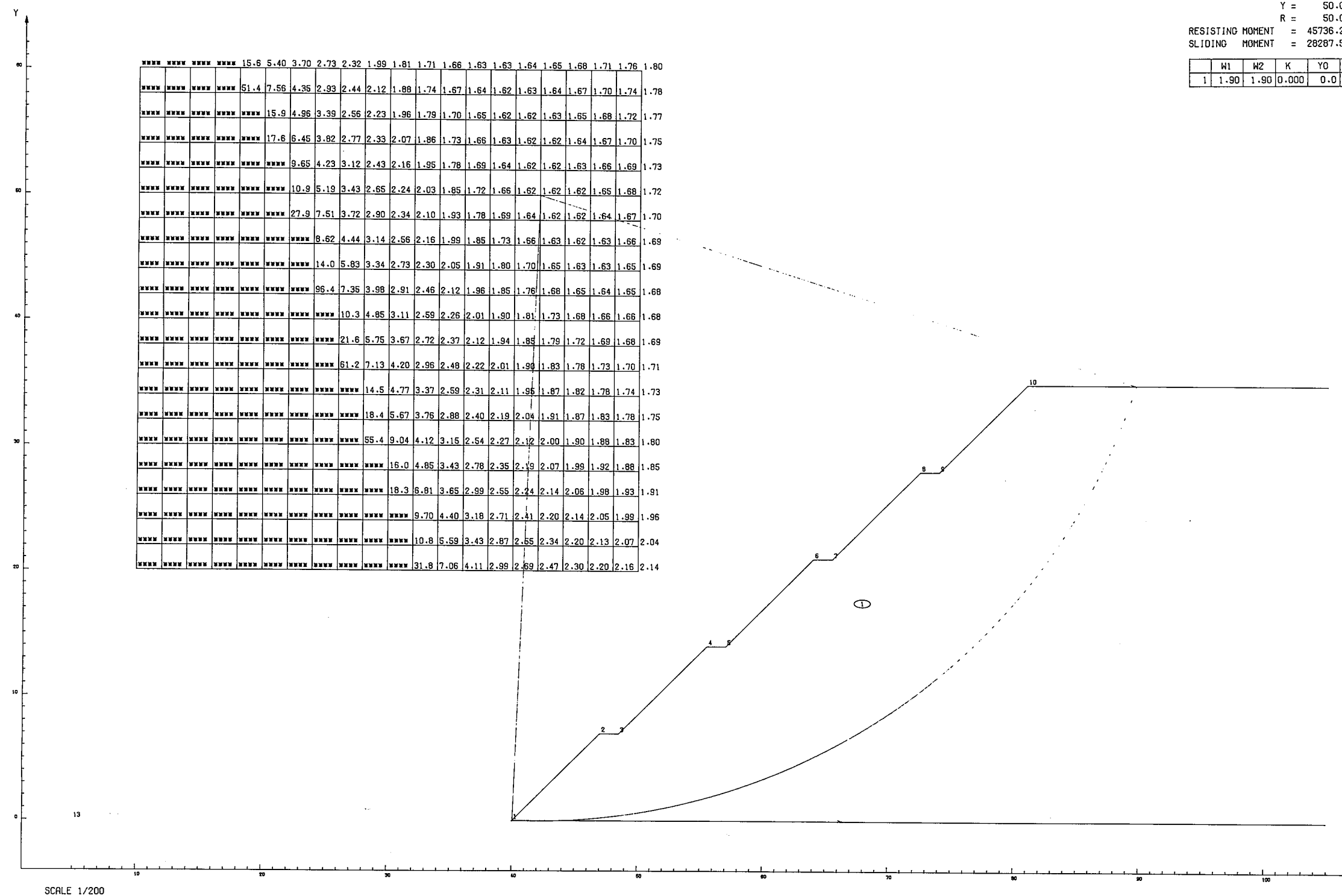


| |
|-------------|
| 円弧すべり |
| 1 割 |
| C = 6.1 3 8 |
| $\phi = 30$ |

MODEL NORIMEN NO ANTEIKEISAN(1-1.0)

MIN. SAFTY FACTOR = 1.617
 FAILURE CIRCLE X = 42.00
 Y = 50.00
 R = 50.00
 RESISTING MOMENT = 45736.22
 SLIDING MOMENT = 28287.56

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

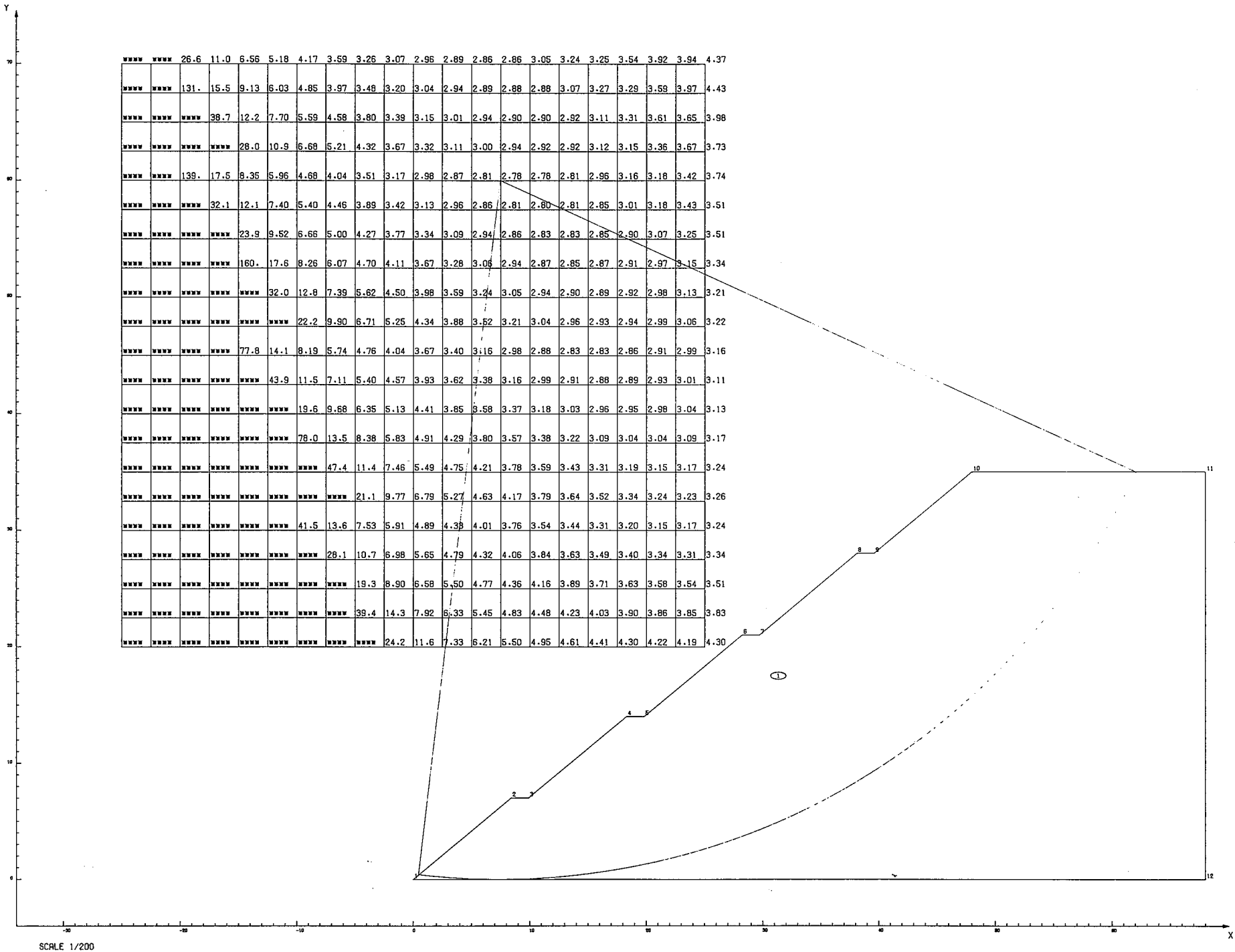


円弧すべり
1割2分
C = 6.1 3 8
 $\phi = 30$

MODELNORIMEN NO ANTEIKEISAN CASE-26 C=6.138 (1-1.2)

MIN. SAFETY FACTOR = 2.781
FAILURE CIRCLE X = 7.50
Y = 60.00
R = 60.00
RESISTING MOMENT = 112540.77
SLIDING MOMENT = 40466.95

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|-------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 14.92 | 30.00 |

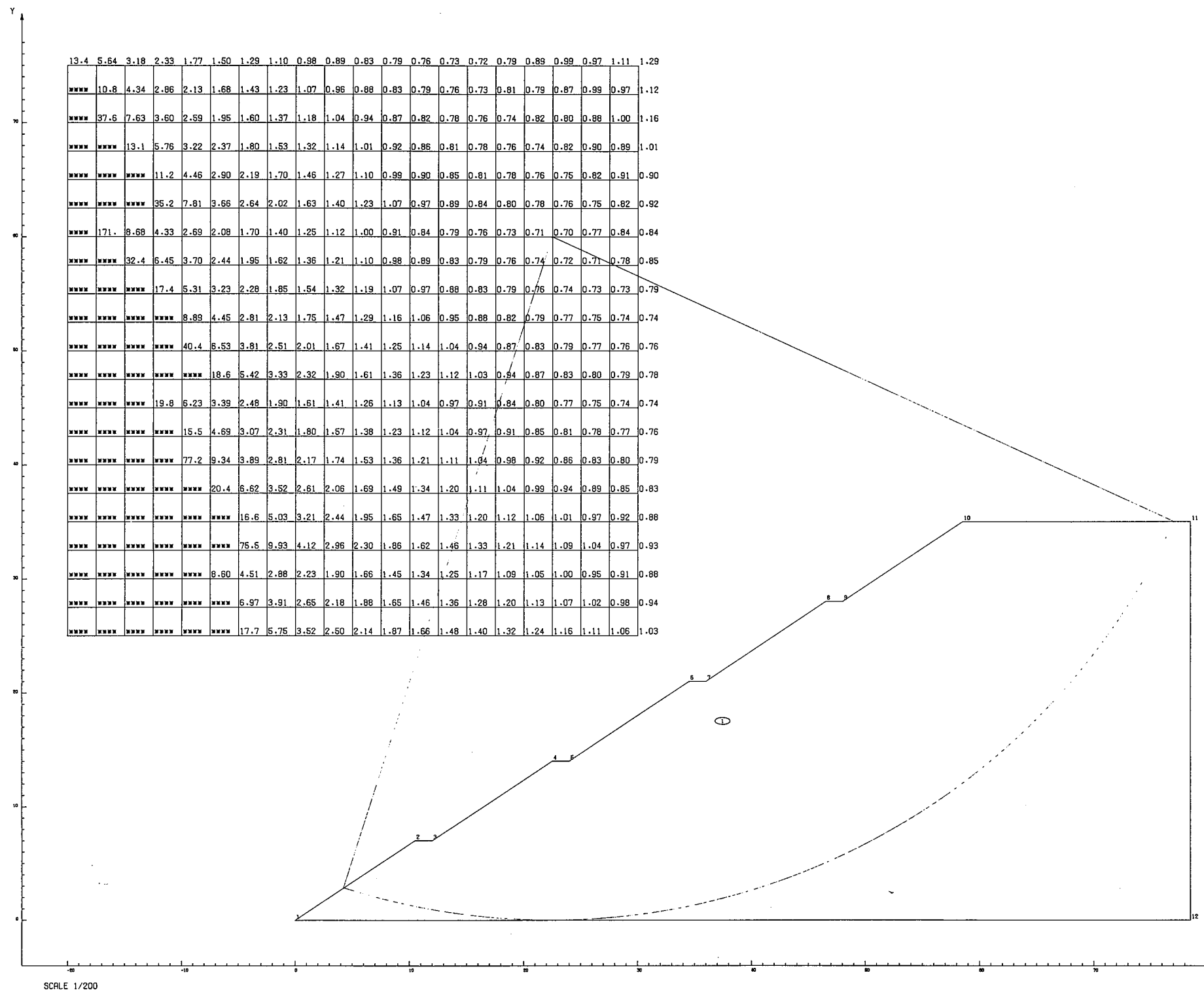


| |
|-------------|
| 円弧すべり |
| 1 割 5 分 |
| C = 6.1 3 8 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-27 C=6.138 (1-1.5)

MIN. SAFETY FACTOR = 0.704
FAILURE CIRCLE X = 22.50
Y = 60.00
R = 60.00
RESISTING MOMENT = 32038.49
SLIDING MOMENT = 45482.10

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|------|------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 0.00 |

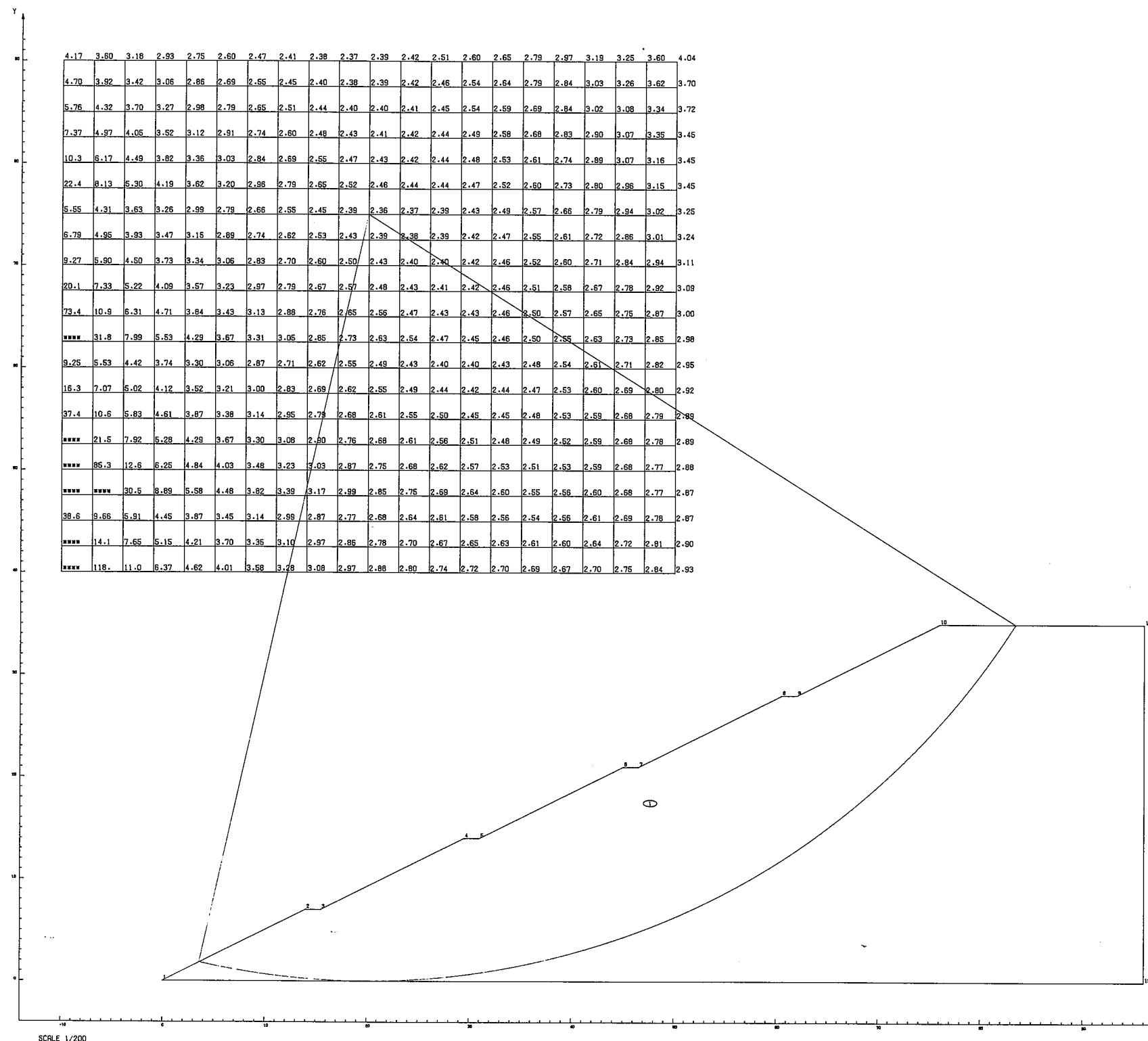


円弧すべり
2 割
C = 6.138
 $\phi = 30$

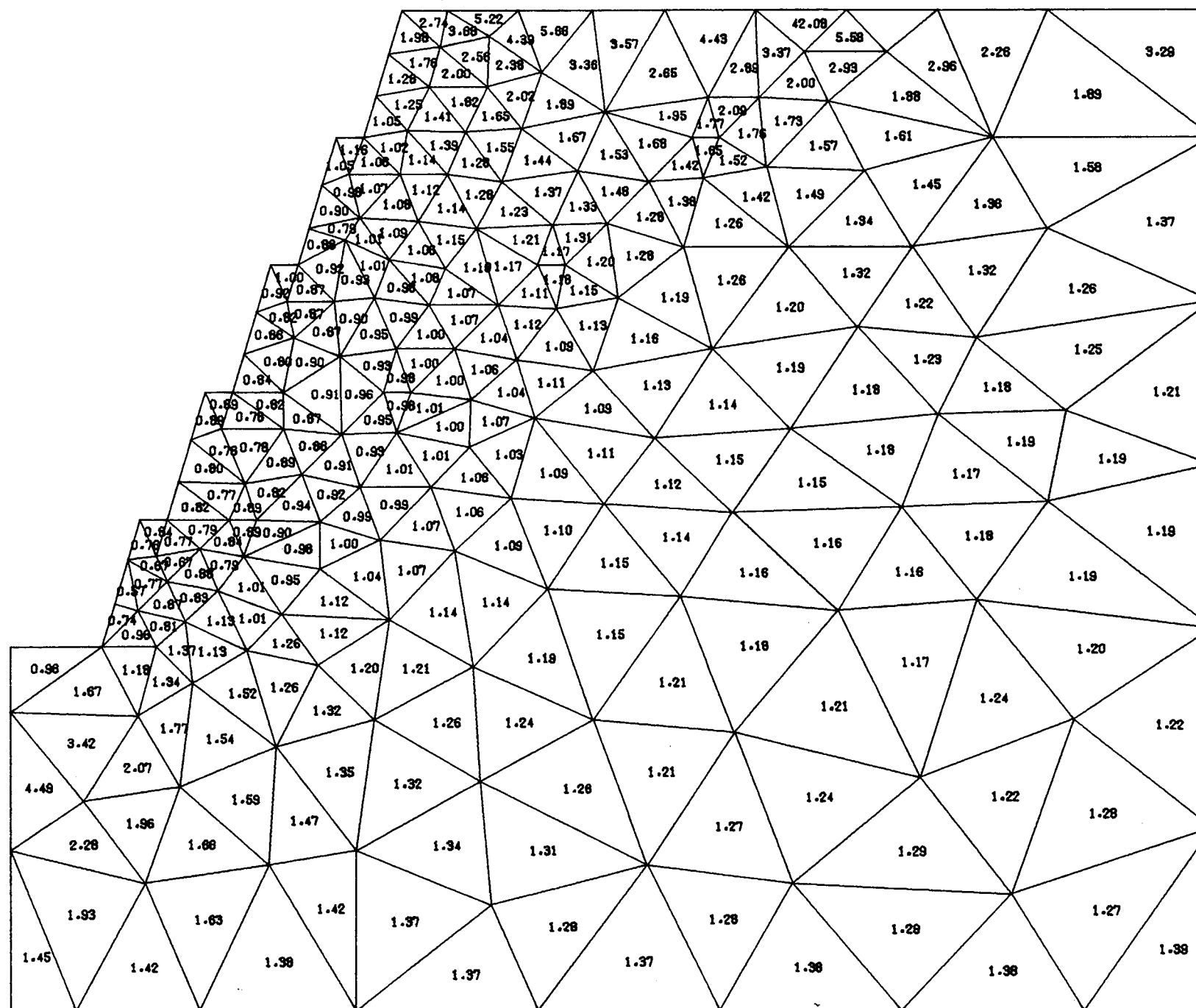
MODELNORIM NO ANTEIKEISAN CASE-28 C=6.138 (1-2.0)

MIN. SAFETY FACTOR = 2.364
FAILURE CIRCLE X = 20.00
Y = 75.00
R = 75.00
RESISTING MOMENT = 110495.21
SLIDING MOMENT = 46745.72

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 6.14 | 30.00 |

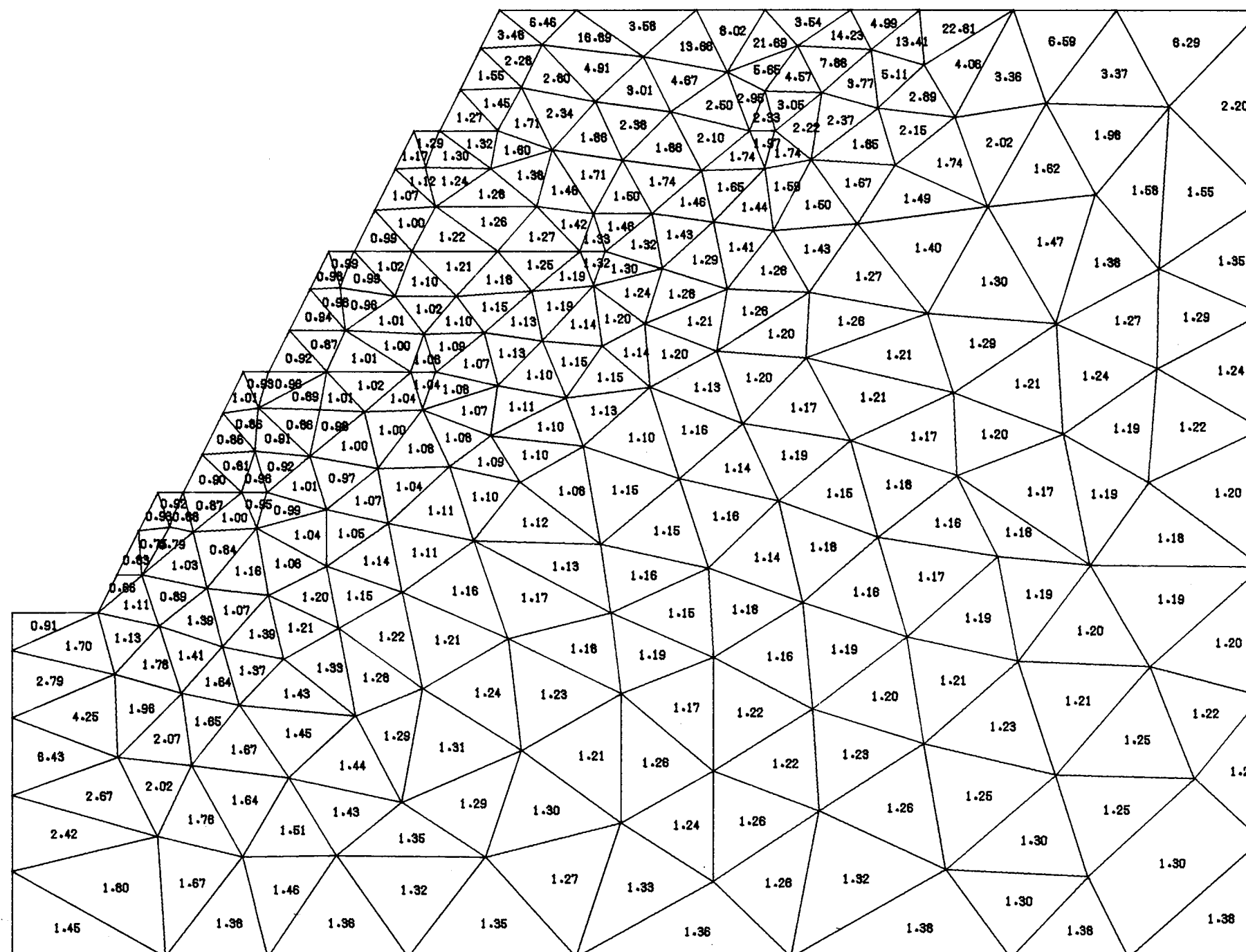


| |
|-------------|
| F E M |
| 3 分 |
| $C = 4.254$ |
| $\phi = 30$ |



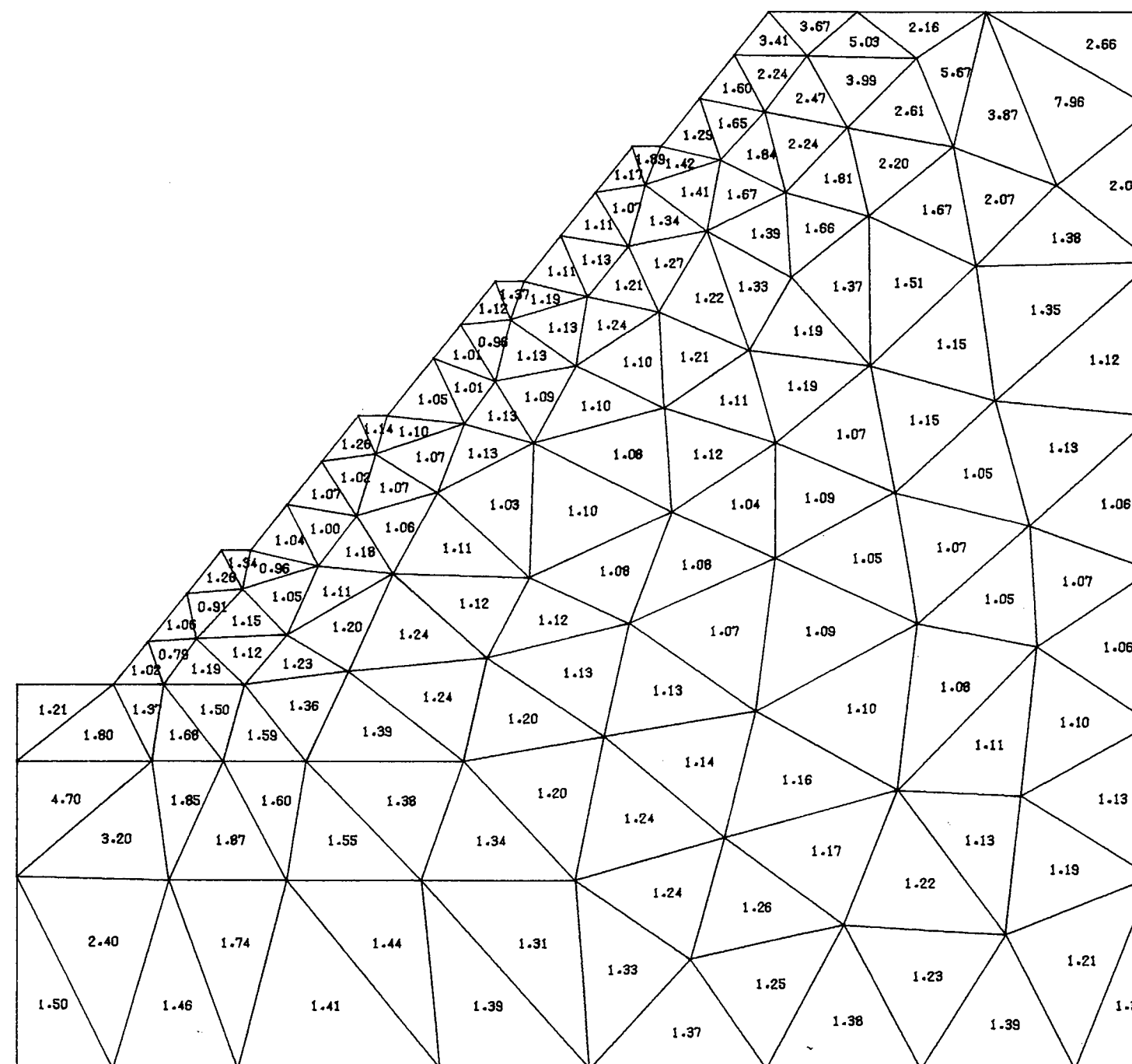
点 安 全 率 图

| |
|-------------|
| FEM |
| 5 分 |
| $C = 4.254$ |
| $\phi = 30$ |



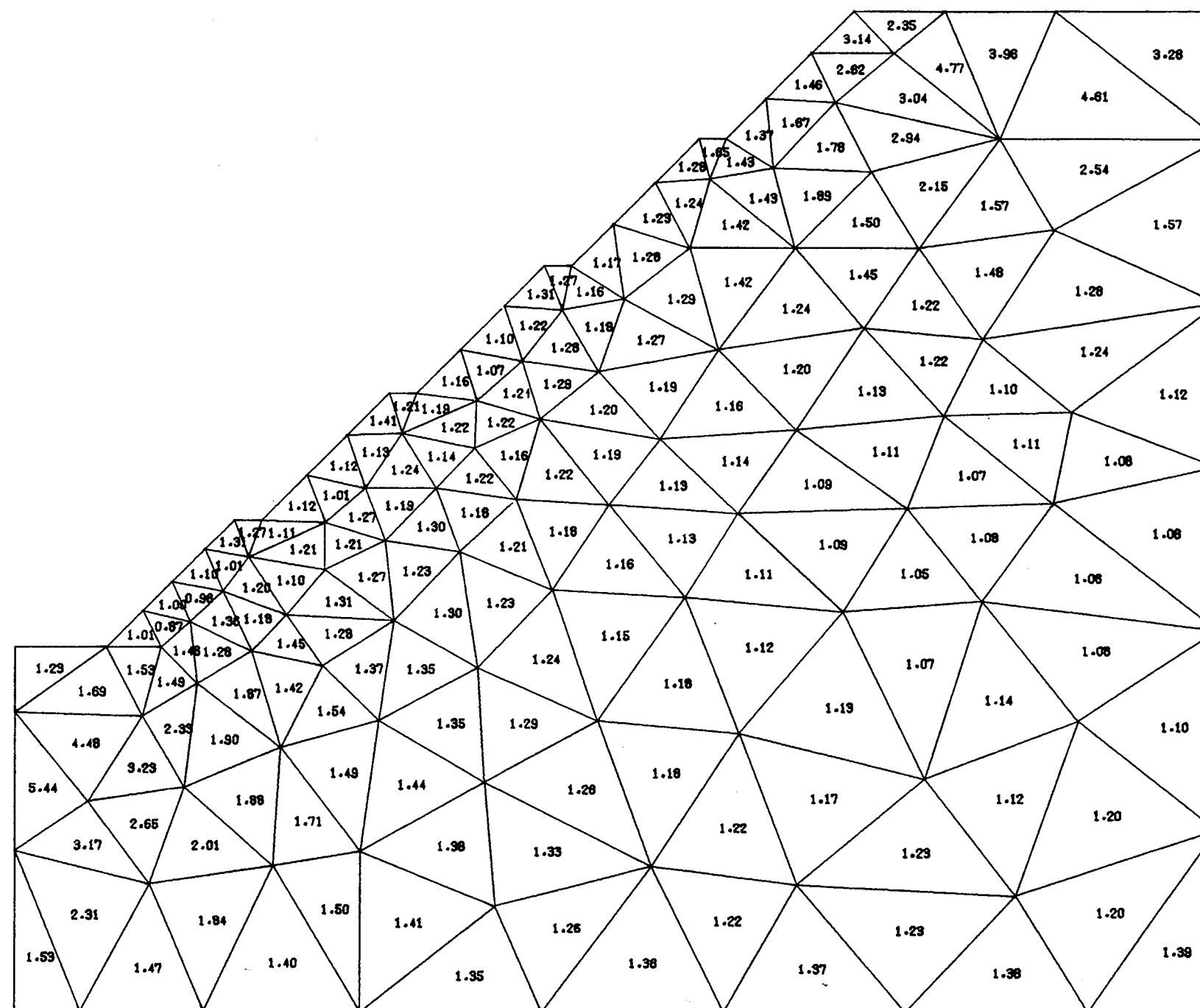
点 安 全 率 图

| |
|-------------|
| F E M |
| 8 分 |
| C = 4.2 5 4 |
| $\phi = 30$ |



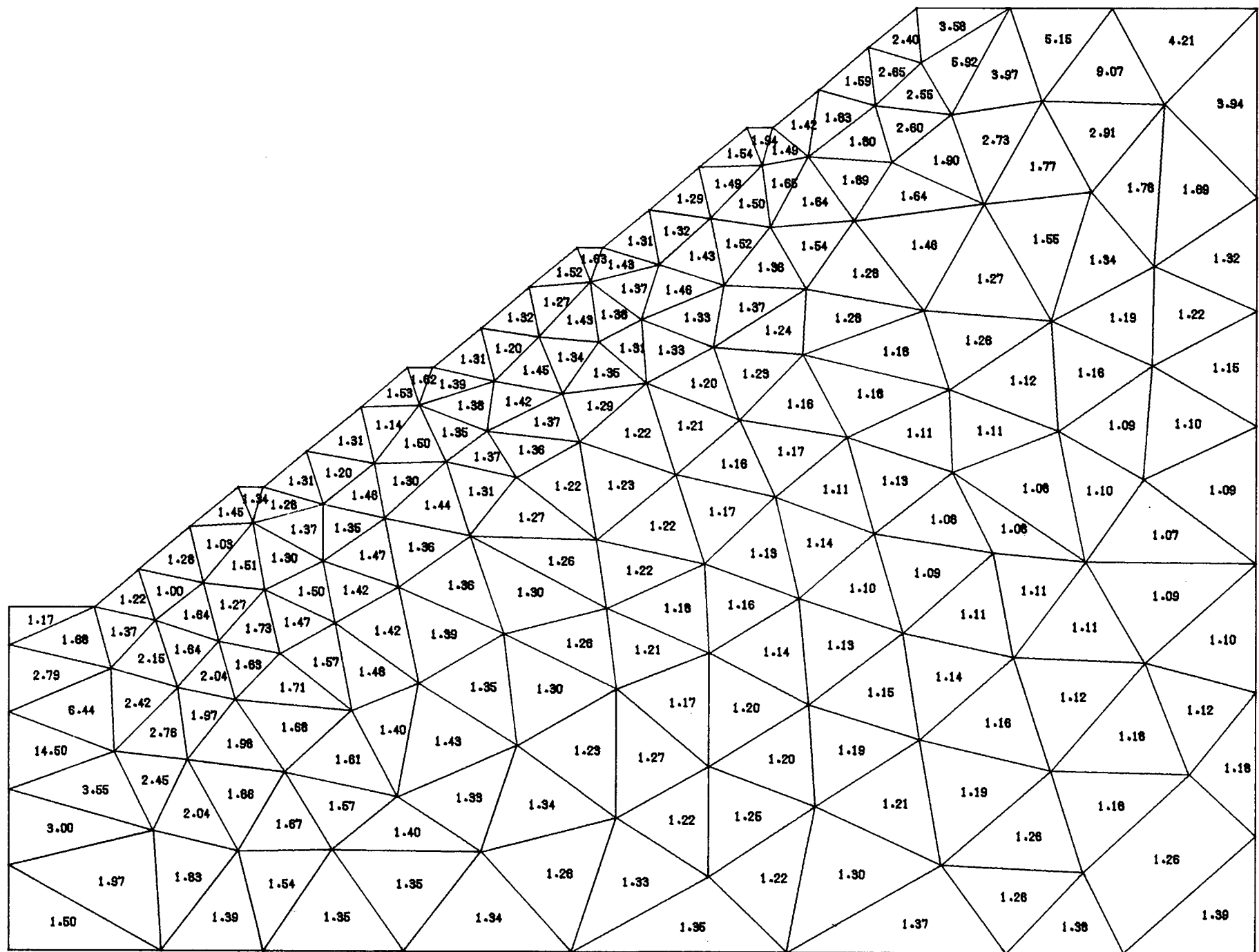
点 安 全 率 图

| |
|-------------|
| FEM |
| 1 割 |
| $C = 4.254$ |
| $\phi = 30$ |



点 安 全 率 図

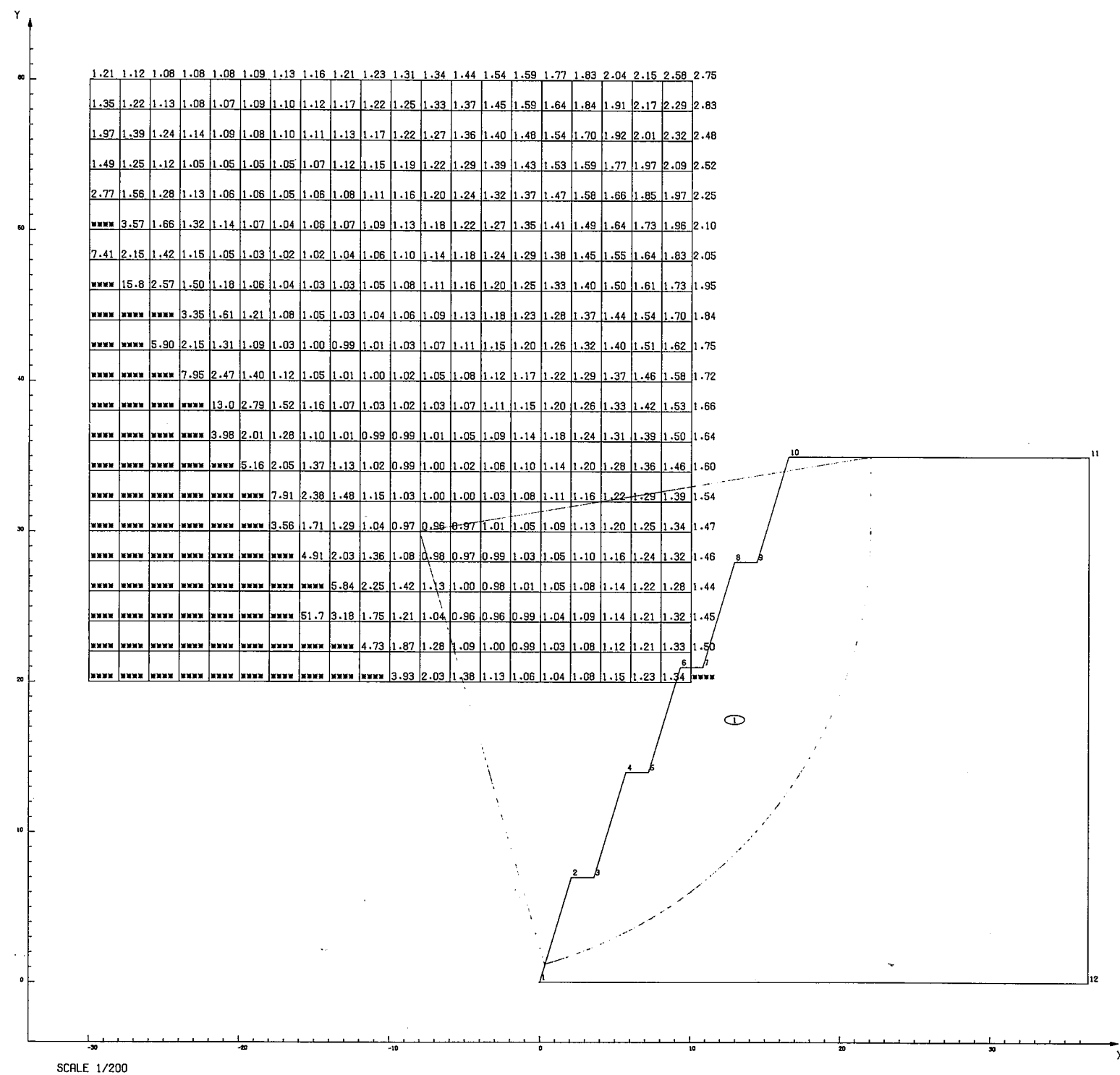
| |
|-------------|
| F E M |
| 1 割 2 分 |
| C = 4.2 5 4 |
| $\phi = 30$ |



点 安 全 率 图

| |
|-------------|
| 円弧すべり |
| 3 分 |
| C = 4.2 5 4 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-29 C=4.254 (1-0.3)



MIN. SAFTY FACTOR = 0.955
 FAILURE CIRCLE X = -8.00
 Y = 30.00
 R = 30.00
 RESISTING MOMENT = 11231.91
 SLIDING MOMENT = 11755.30

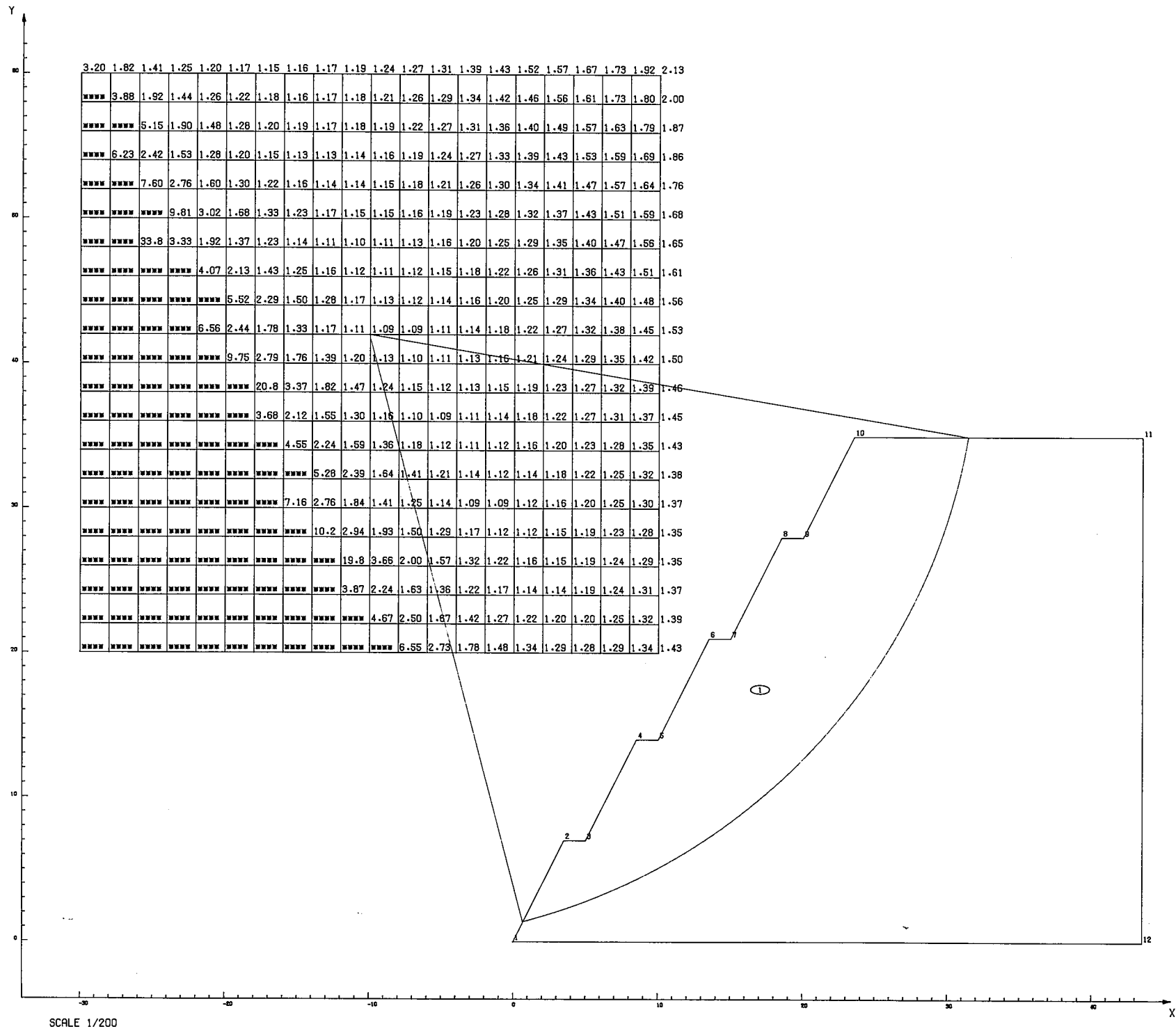
| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |

| |
|-------------|
| 円弧すべり |
| 5 分 |
| C = 4.254 |
| $\phi = 30$ |

MODELNOGRIMEN NO ANTEIKEISAN CASE-30 C=4.254 (1-0.5)

MIN. SAFETY FACTOR = 1.088
FAILURE CIRCLE X = -10.00
Y = 42.00
R = 42.00
RESISTING MOMENT = 19520.08
SLIDING MOMENT = 17940.43

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |

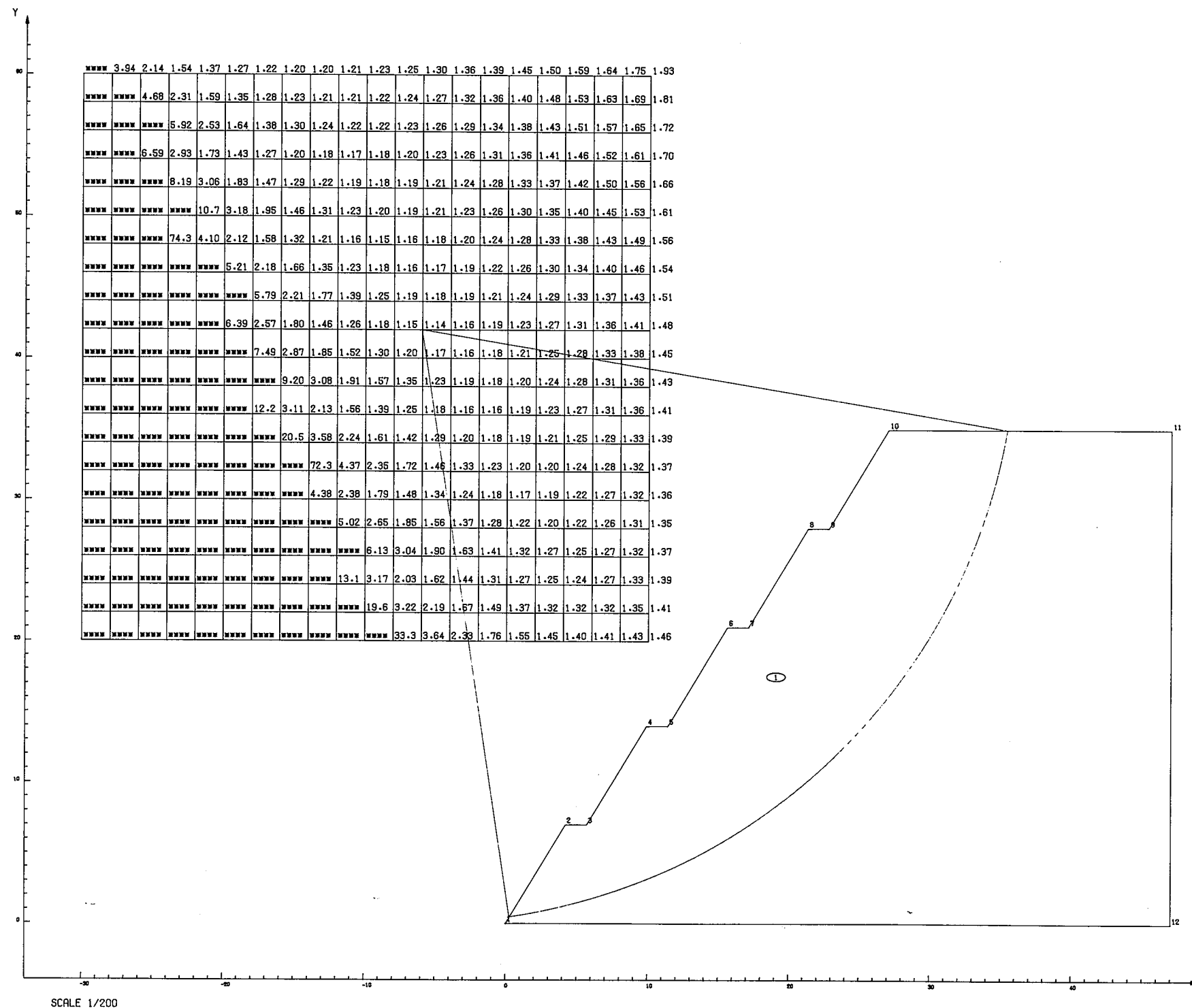


| |
|-------------|
| 円弧すべり |
| 6 分 |
| C = 4.2 5 4 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-31 C=4.254 (1-0.6)

MIN. SAFTY FACTOR = 1.144
 FAILURE CIRCLE X = -6.00
 Y = 42.00
 R = 42.00
 RESISTING MOMENT = 23409.38
 SLIDING MOMENT = 20463.53

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |



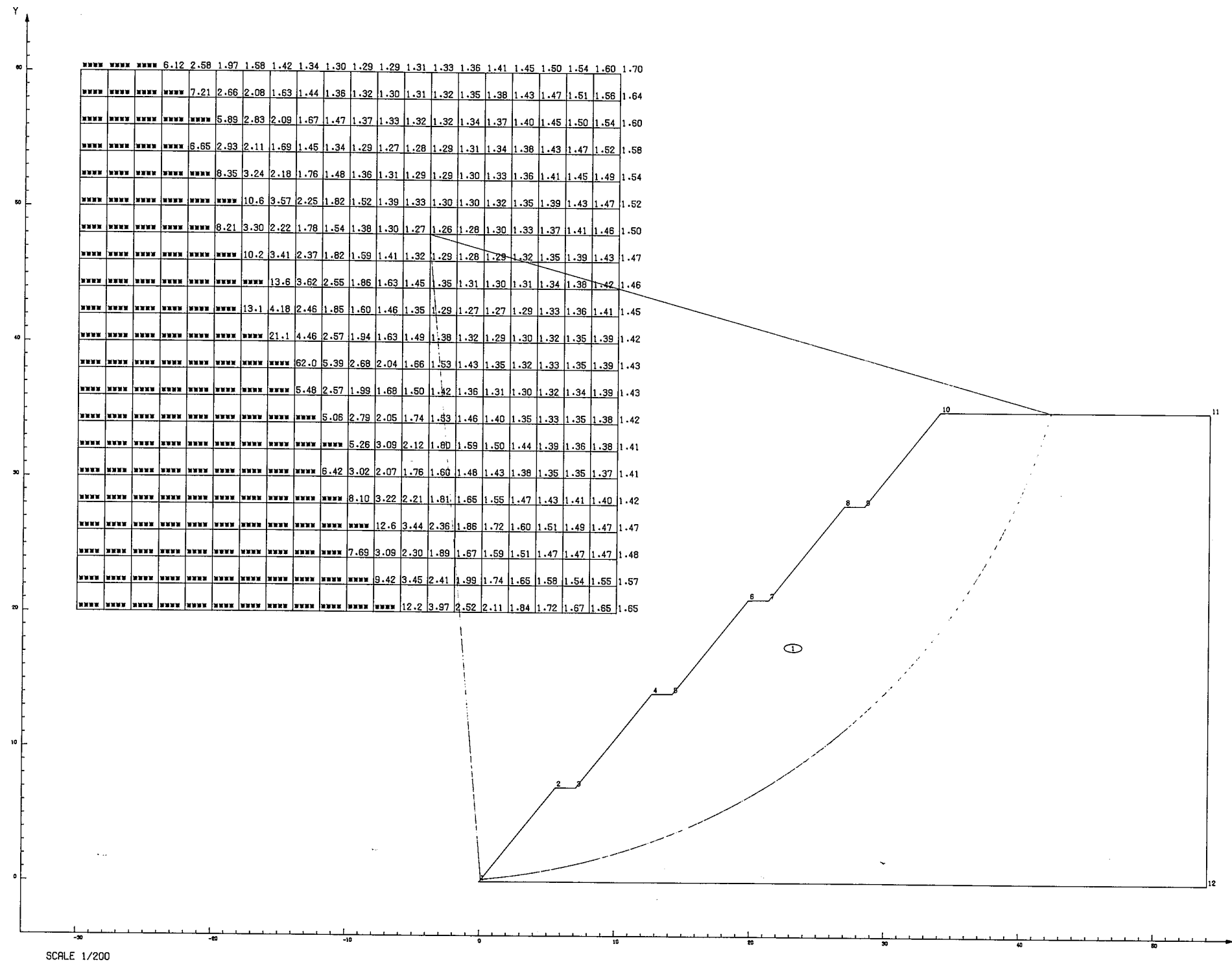
$$\phi = 30$$

```

MIN. SAFETY FACTOR = 1.264
FAILURE CIRCLE X = -4.00
                  Y = 48.00
                  R = 48.00
RESISTING MOMENT = 30579.86
SLIDING MOMENT = 24187.81

```

| | W1 | W2 | K | YO | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |

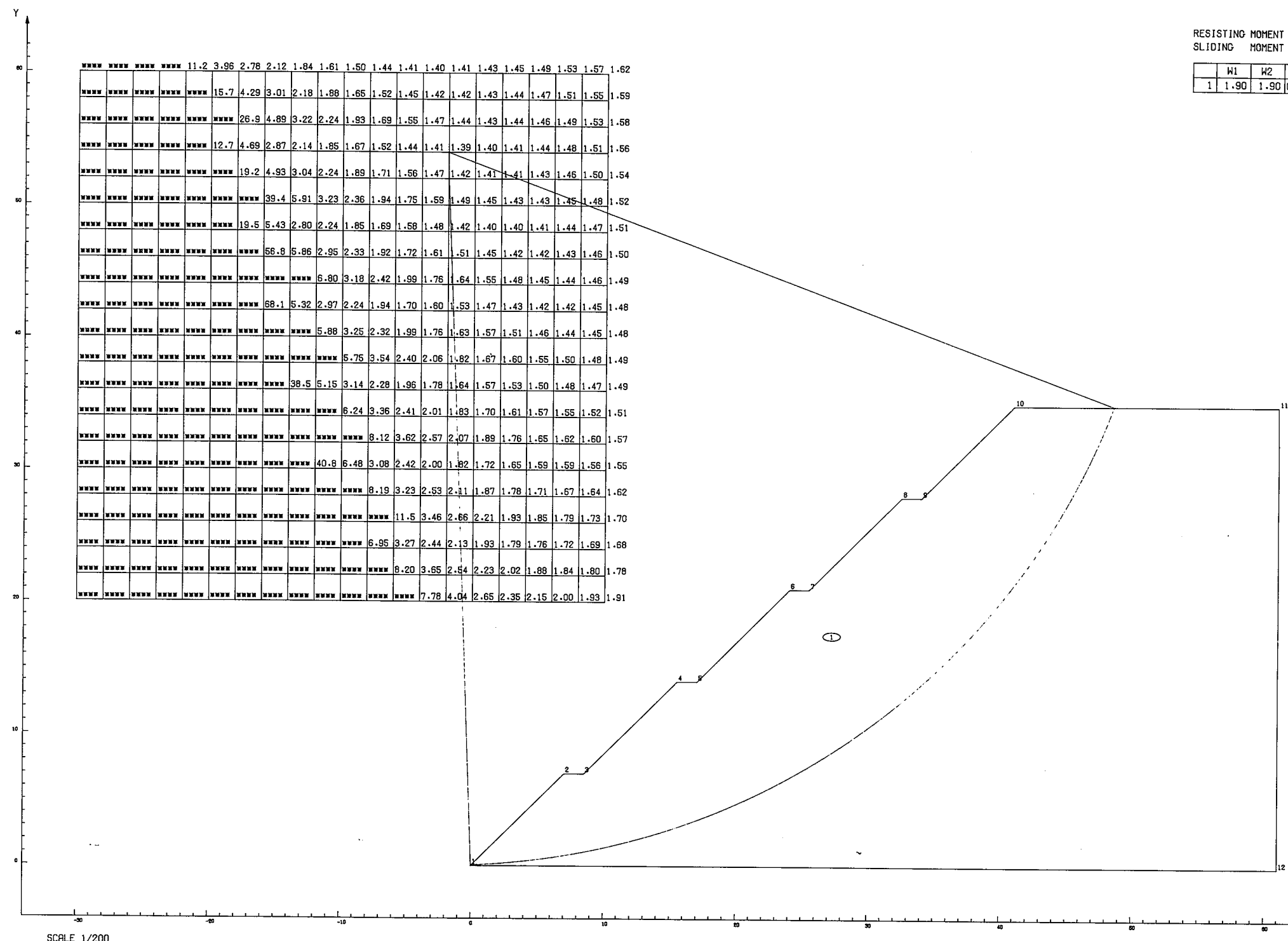


| |
|-------------|
| 円弧すべり |
| 1 割 |
| C = 4.254 |
| $\phi = 30$ |

MODELNORIMEN NO ANTEIKEISAN CASE-33 C=4.254 (1-1.0)

MIN. SAFETY FACTOR = 1.393
 FAILURE CIRCLE X = -2.00
 Y = 54.00
 R = 54.00
 RESISTING MOMENT = 38318.24
 SLIDING MOMENT = 27498.56

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |

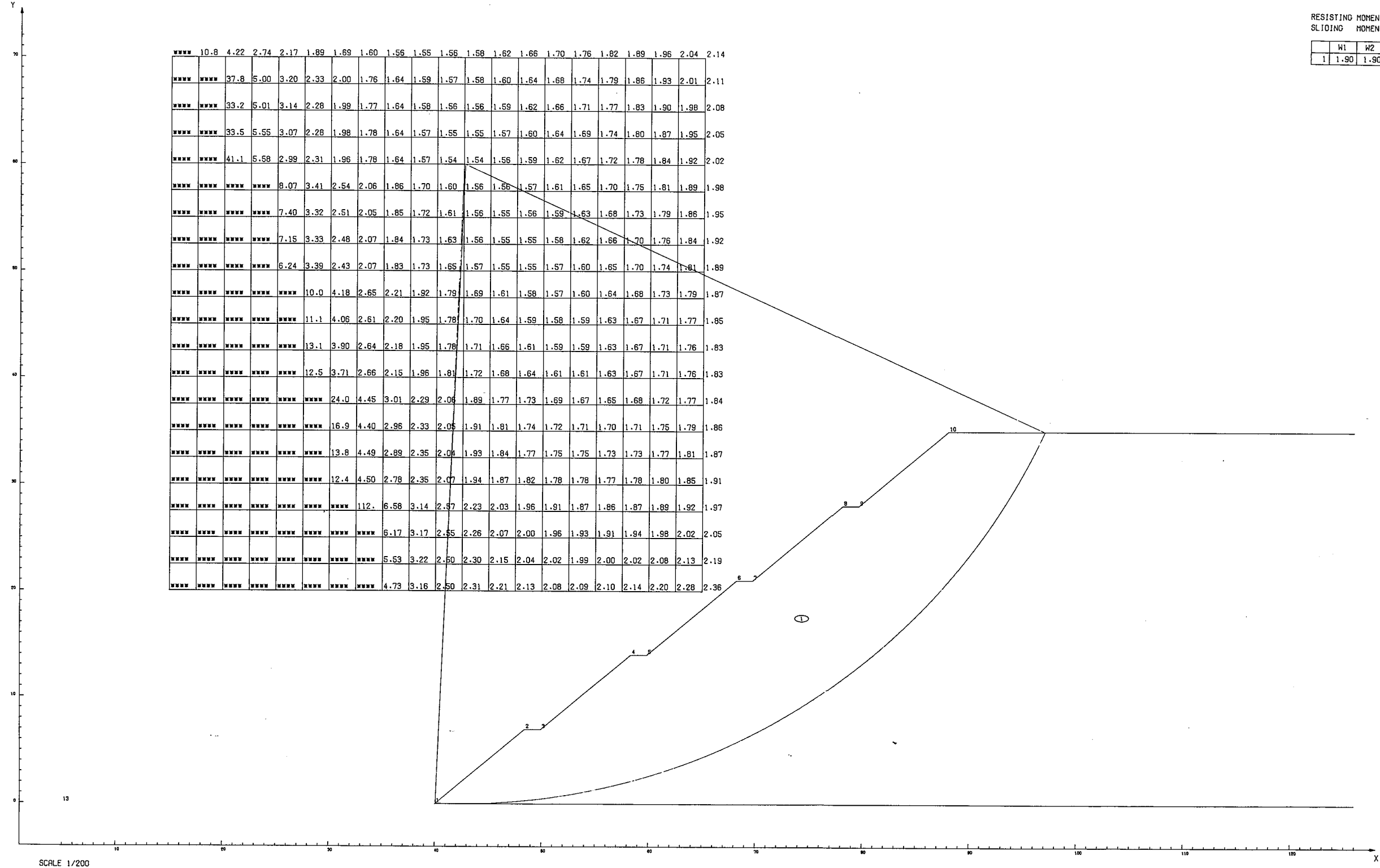


円弧すべり
1割2分
C = 4.2 5 4
 $\phi = 30$

MODEL NORIMEN NO ANTEIKEISAN(1-1.2)

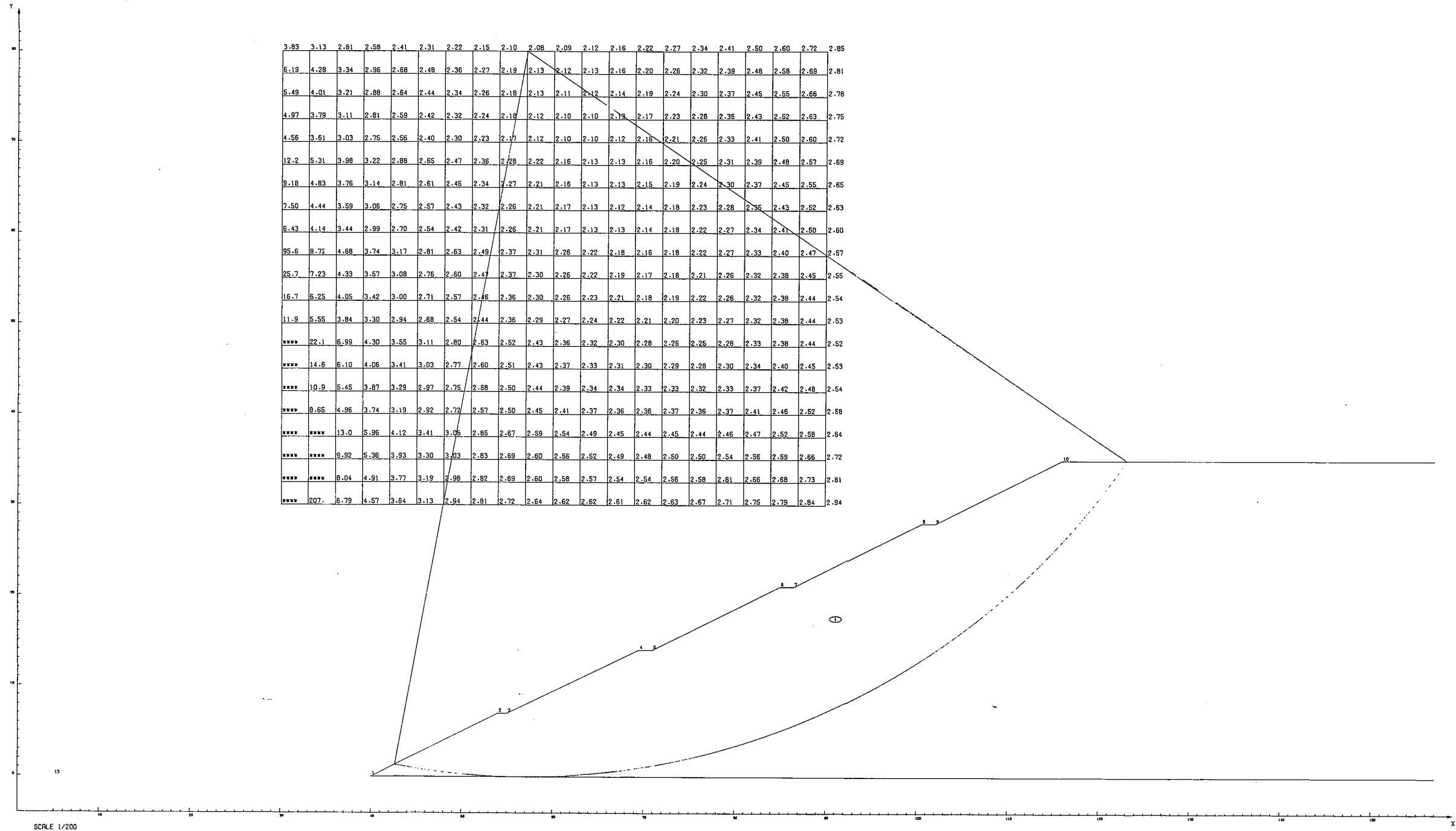
MIN. SAFTY FACTOR = 1.539
FAILURE CIRCLE X = 42.50
Y = 60.00
R = 60.00
RESISTING MOMENT = 52640.17
SLIDING MOMENT = 34206.58

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |



| |
|-------------|
| 円弧すべり |
| 2 割 |
| C = 4.254 |
| $\phi = 30$ |

MODEL NORIMEN NO ANTEIJEISAN(1-2.0)



MIN. SAFETY FACTOR = 2.085
FAILURE CIRCLE X = 57.00
Y = 80.00
R = 80.00
RESISTING MOMENT = 101181.24
SLIDING MOMENT = 48535.58

| | W1 | W2 | K | Y0 | C | PHI |
|---|------|------|-------|-----|------|-------|
| 1 | 1.90 | 1.90 | 0.000 | 0.0 | 4.25 | 30.00 |

キーワード：岩盤斜面，安定解析，有限要素法

要旨

岩盤斜面・のり面の安定計算を有限要素法及び円弧すべりによって行なった計算資料集

郵便はがき

四十円切手
をはって
さい

305-□□

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