****
* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM ORIGINAL SCHEME RAPID DRAWDOWN WL.155.5m 1:2.3 & 1:1.8 <MO-02>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
7	20.000	60.000	71.000	4.271	21822.	-5109.	3.229	21653.	-6706.
14	20.000	80.000	91.000	5.144	30305.	-5891.	3.715	30105.	-8103.
20	20.000	100.000	111.000	6.011	39095.	-6504.	4.158	38872.	-9349.
26	20.000	120.000	131.000	6.875	48099.	-6996.	4.563	47856.	-10489.
32	20.000	140.000	151.000	7.734	57257.	-7403.	4.934	56998.	-11552.
38	20.000	160.000	171.000	8.590	66535.	-7746.	5.277	66263.	-12558.
44	40.000	60.000	81.000	2.334	55101.	-23604.	1.973	54302.	-27521.
51	40.000	80.000	91.000	2.221	11939.	-5376.	1.888	11758.	-6227.
58	40.000	100.000	111.000	2.602	18505.	-7112.	2.163	18266.	-8446.
65	40.000	120.000	131.000	2.997	25675.	-8566.	2.435	25387.	-10424.
72	40.000	140.000	151.000	3.397	33301.	-9803.	2.699	32969.	-12213.
79	40.000	160.000	171.000	3.797	41272.	-10870.	2.953	40903.	-13853.
84	60.000	60.000	91.000	1.878	97452.	-51897.	1.638	95595.	-58369.
90	60.000	80.000	101.000	1.773	32666.	-18429.	1.554	31997.	-20591.
96	60.000	100.000	121.000	2.001	51376.	-25673.	1.730	50470.	-29175.
102	60.000	120.000	141.000	2.252	72005.	-31974.	1.919	70886.	-36948.
108	60.000	140.000	161.000	2.485	93369.	-37568.	2.086	92055.	-44120.
114	60.000	160.000	181.000	2.722	115722.	-42518.	2.252	114230.	-50732.
118	80.000	60.000	101.000	1.705	143968.	-84447.	1.506	140741.	-93436.
123	80.000	80.000	111.000	1.606	56126.	-34946.	1.425	54756.	-38436.
128	80.000	100.000	131.000	1.738	91304.	-52519.	1.529	89357.	-58446.
133	80.000	120.000	151.000	1.907	130249.	-68291.	1.660	127762.	-76948.
138	80.000	140.000	171.000	2.063	170341.	-82584.	1.776	167351.	-94206.
144	80.000	160.000	181.000	1.956	40653.	-20787.	1.694	39908.	-23562.
147	100.000	60.000	111.000	1.625	187656.	-115445.	1.443	182946.	-126759.
151	100.000	80.000	121.000	1.560	77056.	-49388.	1.389	74989.	-53985.
155	100.000	100.000	141.000	1.614	133041.	-82416.	1.431	129813.	-90684.
159	100.000	120.000	161.000	1.731	195440.	-112877.	1.525	191165.	-125342.

163	I	100.000	140.000	181.000	I	1.840	259133.	-140870.	I	1.607	253871.	-157950.
168	I	100.000	160.000	191.000	I	1.753	84715.	-48338.	I	1.539	82913.	-53885.
171	I	120.000	60.000	111.000	I	1.548	39613.	-25589.	I	1.379	38540.	-27950.
174	I	120.000	80.000	131.000	I	1.558	92179.	-59153.	I	1.388	89697.	-64645.
177	I	120.000	100.000	151.000	I	1.567	171639.	-109524.	I	1.395	167113.	-119834.
180	I	120.000	120.000	171.000	I	1.626	260155.	-160033.	I	1.441	253852.	-176131.
184	I	120.000	140.000	181.000	I	1.555	77767.	-50009.	I	1.384	75727.	-54735.
188	I	120.000	160.000	201.000	I	1.633	134295.	-82260.	I	1.445	131107.	-90746.
190	I	140.000	60.000	121.000	I	1.547	48939.	-31639.	I	1.378	47612.	-34555.
192	I	140.000	80.000	141.000	I	1.557	108835.	-69922.	I	1.386	105902.	-76407.
194	I	140.000	100.000	161.000	I	1.564	200367.	-128119.	I	1.392	194992.	-140058.
196	I	140.000	120.000	181.000	I	1.575	320162.	-203306.	I	1.401	311843.	-222641.
199	I	140.000	140.000	191.000	I	1.533	99232.	-64710.	I	1.367	96517.	-70623.
202	I	140.000	160.000	211.000	I	1.569	183725.	-117103.	I	1.395	179000.	-128342.
203	I	160.000	60.000	131.000	I	1.546	59587.	-38548.	I	1.377	57970.	-42099.
204	I	160.000	80.000	151.000	I	1.555	127276.	-81851.	I	1.385	123842.	-89435.
205	I	160.000	100.000	171.000	I	1.562	228533.	-146298.	I	1.391	222395.	-159916.
206	I	160.000	120.000	191.000	I	1.568	369436.	-235641.	I	1.395	359550.	-257654.
208	I	160.000	140.000	201.000	I	1.533	115650.	-75416.	I	1.367	112486.	-82307.
210	I	160.000	160.000	221.000	I	1.543	226773.	-147001.	I	1.374	220642.	-160561.

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* LIST OF INPUT DATA *
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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>

NUMBER OF NODAL POINTS..... 27
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 16
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 10
NUMBER OF PORE PRESSURE POINTS..... 26
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-200.000	0.000	20.000	60.000
2	-40.000	0.000	160.000	60.000
3	-40.000	160.000	160.000	160.000
4	-200.000	160.000	20.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-7.100E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-2	-190.7	-70.0	-105.0	-62.0
2	-2	-105.0	-62.0	-33.0	-62.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	0.000	0.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-1.000	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	145.000	-75.000
20	10.000	0.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	-32.000

24	-2.500	-32.000
25	-0.438	-7.000
26	10.000	-13.500
27	18.300	-38.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

WATER LINE DATA (NODAL NUMBER)

23 24 16 25 26 27 10 11 12 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	19

DATA OF PORE PRESSURE IN NON-PERMEATION ZONE

NODAL POINT	X-COORDINATE	Y-COORDINATE	POTENTIAL
1	-9.525	-79.500	-72.500
2	-8.389	-70.437	-72.500
3	-7.253	-61.375	-72.500
4	-6.117	-52.312	-72.500
5	-4.982	-43.250	-72.500
6	-3.846	-34.187	-72.500
7	-2.710	-25.125	-72.500
8	-1.574	-16.062	-72.500
9	-0.438	-7.000	-72.500
10	0.475	-79.500	-55.500
11	1.812	-70.250	-55.500
12	3.150	-61.000	-55.500
13	4.488	-51.750	-55.500
14	5.825	-42.500	-55.500
15	7.163	-33.250	-55.500
16	8.500	-24.000	-55.500
17	10.475	-79.500	-41.500
18	12.040	-71.200	-41.500
19	13.605	-62.900	-41.500
20	15.170	-54.600	-41.500
21	16.735	-46.300	-41.500
22	18.300	-38.000	-41.500
23	20.475	-79.500	-19.500
24	21.737	-69.750	-19.500
25	23.000	-60.000	-19.500
26	24.525	-79.500	0.000

TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.750	0	-	-	-	-	-	-	-
2	-190.750	-125.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-125.900	-122.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-122.900	-114.900	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-93.150	-73.600	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
10	-73.600	-62.914	2	1	2.370	0.050	0.839	0.435	1.930	1.693
11	-62.914	-41.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
12	-41.025	-33.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
13	-33.025	-20.747	2	1	2.370	0.050	0.839	0.435	1.930	1.693
14	-20.747	-15.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
15	-15.525	-9.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
16	-9.525	-8.400	2	1	2.370	0.050	0.839	0.435	1.930	1.693
17	-8.400	-6.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
18	-6.000	-3.148	2	1	2.370	0.050	0.839	0.435	1.930	1.693
19	-3.148	-2.500	2	1	2.370	0.050	0.839	0.435	1.930	1.693
20	-2.500	-1.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
21	-1.000	-0.438	2	1	2.370	0.050	0.839	0.435	1.930	1.693
22	-0.438	0.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
23	0.000	10.000	1	1	1.800	0.050	0.577	0.000	100.000	100.000
24	10.000	10.847	2	1	2.370	0.050	0.839	0.556	1.510	1.347
25	10.847	15.000	2	1	2.370	0.050	0.839	0.556	1.510	1.347
26	15.000	18.300	2	1	2.370	0.050	0.839	0.556	1.510	1.347
27	18.300	21.000	2	1	2.370	0.050	0.839	0.556	1.510	1.347
28	21.000	24.000	2	1	2.370	0.050	0.839	0.556	1.510	1.347
29	24.000	24.525	2	1	2.370	0.050	0.839	0.556	1.510	1.347
30	24.525	30.525	2	1	2.370	0.050	0.839	0.556	1.510	1.347
31	30.525	39.525	2	1	2.370	0.050	0.839	0.556	1.510	1.347
32	39.525	145.000	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>
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CALCULATION NUMBER.....................          81

SLIPPE CIRCLE(X-COORDINATE).............      -80.000 (M)
      -DO-    (Y-COORDINATE).............       20.000 (M)
      -DO-    (RADIUS)...................       61.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........        1.883
      -DO-    (SEISMIC CONDITION)........        1.607

RESISTANCE MOMENT(TOTAL:NORMAL )........       41036. (TON*M)
      -DO-        ( -DO-:SEISMIC).....       40031. (TON*M)
RESISTANCE FORCE (COHESION).............           0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...   915.26 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...    10.70 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...  -253.24 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...   -16.49 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........       21795. (TON*M)
      -DO-     ( -DO-:SEISMIC).....             24906. (TON*M)
SLIDING FORCE (BODY FORCE)..............         386.34 (TON)
      -DO-     (WATER PRESSURE).....            -29.05 (TON)
      -DO-     (EARTHQUAKE).........             51.00 (TON)
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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (SEISMIC)            *
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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>
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CALCULATION NUMBER.........................        78

SLIPPE CIRCLE(X-COORDINATE).................    -80.000 (M)
      -DO-    (Y-COORDINATE).................      0.000 (M)
      -DO-    (RADIUS).......................     41.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............      1.890
      -DO-    (SEISMIC CONDITION)............      1.594

RESISTANCE MOMENT(TOTAL:NORMAL )............     16307. (TON*M)
      -DO-          ( -DO-:SEISMIC).........     15887. (TON*M)
RESISTANCE FORCE (COHESION).................       0.00 (TON)
      -DO-          (FRICTION:BODY FORCE    )...  601.33 (TON)
      -DO-          (  -DO-  :WATER PRESSURE)...   13.51 (TON)
      -DO-          (  -DO-  :PORE  PRESSURE)...  -217.11 (TON)
      -DO-          (  -DO-  :EARTHQUAKE    )...  -10.24 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............      8627. (TON*M)
      -DO-     ( -DO-:SEISMIC)...............      9964. (TON*M)
SLIDING FORCE (BODY FORCE)..................     235.96 (TON)
      -DO-     (WATER PRESSURE)..............     -25.55 (TON)
      -DO-     (EARTHQUAKE)..................      32.62 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-200.000	160.000	221.000	2.533	44979.	17758.	1.917	43719.	22801.
2	-180.000	60.000	121.000	2.257	30126.	13345.	1.756	29174.	16610.
3	-180.000	80.000	141.000	2.473	45159.	18262.	1.886	43864.	23254.
4	-180.000	100.000	161.000	2.681	62702.	23384.	2.010	61048.	30373.
5	-180.000	120.000	181.000	2.884	82621.	28643.	2.128	80596.	37881.
6	-180.000	140.000	201.000	3.063	105558.	34459.	2.229	103120.	46261.
7	-160.000	0.000	61.000	2.338	22318.	9547.	1.813	21639.	11933.
8	-160.000	20.000	81.000	2.616	37274.	14250.	1.975	36273.	18370.
9	-160.000	40.000	101.000	2.866	55621.	19407.	2.117	54258.	25624.
10	-160.000	60.000	121.000	3.109	77063.	24785.	2.254	75320.	33422.
11	-160.000	80.000	141.000	3.183	104865.	32942.	2.296	102537.	44657.
12	-160.000	100.000	161.000	3.027	144606.	47773.	2.221	141316.	63614.
14	-160.000	120.000	181.000	2.777	201661.	72624.	2.100	196984.	93811.
15	-160.000	140.000	201.000	2.561	279719.	109211.	1.991	273162.	137169.
16	-160.000	160.000	221.000	2.401	382393.	159242.	1.909	373391.	195601.
18	-140.000	0.000	51.000	3.111	7672.	2466.	2.230	7502.	3365.
20	-140.000	20.000	71.000	3.532	13475.	3815.	2.445	13210.	5403.
21	-140.000	40.000	101.000	3.346	101562.	30354.	2.386	99440.	41681.
23	-140.000	60.000	121.000	2.964	150391.	50744.	2.197	147067.	66925.
25	-140.000	80.000	141.000	2.664	217513.	81652.	2.044	212544.	103994.
26	-140.000	100.000	161.000	2.454	306177.	124789.	1.932	299061.	154800.
27	-140.000	120.000	181.000	2.305	419080.	181852.	1.850	409263.	221242.
29	-140.000	140.000	201.000	2.214	557610.	251842.	1.801	544598.	302389.
31	-140.000	160.000	221.000	2.198	703179.	319972.	1.796	687299.	382723.
33	-120.000	0.000	61.000	3.816	63755.	16708.	2.610	62605.	23983.
35	-120.000	20.000	81.000	3.014	109924.	36471.	2.216	107663.	48591.
37	-120.000	40.000	101.000	2.593	174878.	67440.	1.993	171026.	85830.
39	-120.000	60.000	121.000	2.358	262383.	111272.	1.864	256398.	137543.
41	-120.000	80.000	141.000	2.217	376140.	169646.	1.787	367411.	205608.
43	-120.000	100.000	161.000	2.148	514087.	239364.	1.751	502264.	286817.
45	-120.000	120.000	181.000	2.153	656000.	304733.	1.759	641529.	364760.

48	I	-120.000	140.000	191.000	I	2.162	417338.	193014.	I	1.800	408326.	226808.
50	I	-120.000	160.000	211.000	I	2.205	527181.	239134.	I	1.833	516346.	281625.
52	I	-100.000	0.000	61.000	I	2.673	94586.	35382.	I	2.025	92634.	45752.
54	I	-100.000	20.000	81.000	I	2.335	170228.	72890.	I	1.840	166462.	90470.
56	I	-100.000	40.000	101.000	I	2.170	273382.	125966.	I	1.749	267140.	152733.
60	I	-100.000	60.000	101.000	I	1.893	40493.	21386.	I	1.621	39484.	24359.
63	I	-100.000	80.000	121.000	I	1.899	78340.	41254.	I	1.636	76465.	46743.
66	I	-100.000	100.000	141.000	I	1.908	134363.	70415.	I	1.650	131230.	79540.
69	I	-100.000	120.000	161.000	I	1.955	204077.	104375.	I	1.690	199567.	118104.
72	I	-100.000	140.000	181.000	I	2.040	277473.	136042.	I	1.755	271782.	154896.
75	I	-100.000	160.000	201.000	I	2.148	353016.	164318.	I	1.836	346282.	188633.
78	I	-80.000	0.000	41.000	I	1.890	16307.	8627.	I	1.594	15887.	9964.
81	I	-80.000	20.000	61.000	I	1.883	41036.	21795.	I	1.607	40031.	24906.
84	I	-80.000	40.000	81.000	I	1.894	81589.	43072.	I	1.627	79657.	48951.
87	I	-80.000	60.000	101.000	I	1.909	141346.	74034.	I	1.646	138086.	83872.
91	I	-80.000	80.000	111.000	I	1.979	48959.	24739.	I	1.733	47921.	27657.
95	I	-80.000	100.000	131.000	I	2.015	89099.	44229.	I	1.760	87268.	49575.
99	I	-80.000	120.000	151.000	I	2.123	133836.	63038.	I	1.843	131316.	71246.
103	I	-80.000	140.000	171.000	I	2.261	180733.	79918.	I	1.946	177618.	91255.
107	I	-80.000	160.000	191.000	I	2.417	229213.	94818.	I	2.061	225577.	109466.
110	I	-60.000	0.000	41.000	I	2.122	43715.	20599.	I	1.801	42834.	23787.
114	I	-60.000	20.000	61.000	I	2.035	96607.	47470.	I	1.743	94576.	54264.
118	I	-60.000	40.000	81.000	I	2.072	164731.	79500.	I	1.772	161533.	91158.
123	I	-60.000	60.000	91.000	I	2.145	102585.	47830.	I	1.862	100663.	54060.
127	I	-60.000	80.000	111.000	I	2.293	148826.	64916.	I	1.970	146330.	74263.
132	I	-60.000	100.000	121.000	I	2.122	42166.	19875.	I	1.841	41372.	22467.
137	I	-60.000	120.000	141.000	I	2.307	64562.	27984.	I	1.980	63485.	32063.
142	I	-60.000	140.000	161.000	I	2.519	88113.	34976.	I	2.135	86794.	40657.
147	I	-60.000	160.000	181.000	I	2.741	112535.	41060.	I	2.292	111006.	48430.
152	I	-40.000	0.000	21.000	I	2.190	3162.	1444.	I	1.900	3101.	1632.
157	I	-40.000	20.000	41.000	I	2.098	13485.	6429.	I	1.827	13215.	7232.
162	I	-40.000	40.000	61.000	I	2.161	32397.	14993.	I	1.875	31797.	16962.
167	I	-40.000	60.000	81.000	I	2.386	54543.	22860.	I	2.039	53686.	26327.
172	I	-40.000	80.000	101.000	I	2.681	78399.	29244.	I	2.249	77334.	34383.
177	I	-40.000	100.000	121.000	I	3.004	103521.	34466.	I	2.471	102282.	41388.
182	I	-40.000	120.000	141.000	I	3.339	129657.	38836.	I	2.694	128269.	47616.
188	I	-40.000	140.000	151.000	I	2.990	24846.	8309.	I	2.458	24547.	9987.
194	I	-40.000	160.000	171.000	I	3.319	32750.	9867.	I	2.678	32399.	12098.

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* MINMIM SAFETY FACTOR AT EACH GRID POINT (SEISMIC) *

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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-200.000	160.000	221.000	2.533	44979.	17758.	1.917	43719.	22801.
2	-180.000	60.000	121.000	2.257	30126.	13345.	1.756	29174.	16610.
3	-180.000	80.000	141.000	2.473	45159.	18262.	1.886	43864.	23254.
4	-180.000	100.000	161.000	2.681	62702.	23384.	2.010	61048.	30373.
5	-180.000	120.000	181.000	2.884	82621.	28643.	2.128	80596.	37881.
6	-180.000	140.000	201.000	3.063	105558.	34459.	2.229	103120.	46261.
7	-160.000	0.000	61.000	2.338	22318.	9547.	1.813	21639.	11933.
8	-160.000	20.000	81.000	2.616	37274.	14250.	1.975	36273.	18370.
9	-160.000	40.000	101.000	2.866	55621.	19407.	2.117	54258.	25624.
10	-160.000	60.000	121.000	3.109	77063.	24785.	2.254	75320.	33422.
11	-160.000	80.000	141.000	3.183	104865.	32942.	2.296	102537.	44657.
12	-160.000	100.000	161.000	3.027	144606.	47773.	2.221	141316.	63614.
14	-160.000	120.000	181.000	2.777	201661.	72624.	2.100	196984.	93811.
15	-160.000	140.000	201.000	2.561	279719.	109211.	1.991	273162.	137169.
16	-160.000	160.000	221.000	2.401	382393.	159242.	1.909	373391.	195601.
18	-140.000	0.000	51.000	3.111	7672.	2466.	2.230	7502.	3365.
20	-140.000	20.000	71.000	3.532	13475.	3815.	2.445	13210.	5403.
21	-140.000	40.000	101.000	3.346	101562.	30354.	2.386	99440.	41681.
23	-140.000	60.000	121.000	2.964	150391.	50744.	2.197	147067.	66925.
25	-140.000	80.000	141.000	2.664	217513.	81652.	2.044	212544.	103994.
26	-140.000	100.000	161.000	2.454	306177.	124789.	1.932	299061.	154800.
27	-140.000	120.000	181.000	2.305	419080.	181852.	1.850	409263.	221242.
29	-140.000	140.000	201.000	2.214	557610.	251842.	1.801	544598.	302389.
31	-140.000	160.000	221.000	2.198	703179.	319972.	1.796	687299.	382723.
33	-120.000	0.000	61.000	3.816	63755.	16708.	2.610	62605.	23983.
35	-120.000	20.000	81.000	3.014	109924.	36471.	2.216	107663.	48591.
37	-120.000	40.000	101.000	2.593	174878.	67440.	1.993	171026.	85830.
39	-120.000	60.000	121.000	2.358	262383.	111272.	1.864	256398.	137543.
41	-120.000	80.000	141.000	2.217	376140.	169646.	1.787	367411.	205608.
43	-120.000	100.000	161.000	2.148	514087.	239364.	1.751	502264.	286817.
45	-120.000	120.000	181.000	2.153	656000.	304733.	1.759	641529.	364760.

47	I	-120.000	140.000	201.000	I	2.200	799069.	363257.	I	1.792	782272.	436594.
50	I	-120.000	160.000	211.000	I	2.205	527181.	239134.	I	1.833	516346.	281625.
52	I	-100.000	0.000	61.000	I	2.673	94586.	35382.	I	2.025	92634.	45752.
54	I	-100.000	20.000	81.000	I	2.335	170228.	72890.	I	1.840	166462.	90470.
56	I	-100.000	40.000	101.000	I	2.170	273382.	125966.	I	1.749	267140.	152733.
60	I	-100.000	60.000	101.000	I	1.893	40493.	21386.	I	1.621	39484.	24359.
63	I	-100.000	80.000	121.000	I	1.899	78340.	41254.	I	1.636	76465.	46743.
66	I	-100.000	100.000	141.000	I	1.908	134363.	70415.	I	1.650	131230.	79540.
69	I	-100.000	120.000	161.000	I	1.955	204077.	104375.	I	1.690	199567.	118104.
72	I	-100.000	140.000	181.000	I	2.040	277473.	136042.	I	1.755	271782.	154896.
75	I	-100.000	160.000	201.000	I	2.148	353016.	164318.	I	1.836	346282.	188633.
78	I	-80.000	0.000	41.000	I	1.890	16307.	8627.	I	1.594	15887.	9964.
81	I	-80.000	20.000	61.000	I	1.883	41036.	21795.	I	1.607	40031.	24906.
84	I	-80.000	40.000	81.000	I	1.894	81589.	43072.	I	1.627	79657.	48951.
87	I	-80.000	60.000	101.000	I	1.909	141346.	74034.	I	1.646	138086.	83872.
90	I	-80.000	80.000	121.000	I	1.983	211491.	106677.	I	1.705	207008.	121402.
95	I	-80.000	100.000	131.000	I	2.015	89099.	44229.	I	1.760	87268.	49575.
99	I	-80.000	120.000	151.000	I	2.123	133836.	63038.	I	1.843	131316.	71246.
103	I	-80.000	140.000	171.000	I	2.261	180733.	79918.	I	1.946	177618.	91255.
107	I	-80.000	160.000	191.000	I	2.417	229213.	94818.	I	2.061	225577.	109466.
108	I	-60.000	0.000	61.000	I	2.154	195700.	90871.	I	1.759	191701.	108996.
112	I	-60.000	20.000	81.000	I	2.089	309134.	147994.	I	1.705	303408.	177962.
118	I	-60.000	40.000	81.000	I	2.072	164731.	79500.	I	1.772	161533.	91158.
123	I	-60.000	60.000	91.000	I	2.145	102585.	47830.	I	1.862	100663.	54060.
127	I	-60.000	80.000	111.000	I	2.293	148826.	64916.	I	1.970	146330.	74263.
132	I	-60.000	100.000	121.000	I	2.122	42166.	19875.	I	1.841	41372.	22467.
137	I	-60.000	120.000	141.000	I	2.307	64562.	27984.	I	1.980	63485.	32063.
142	I	-60.000	140.000	161.000	I	2.519	88113.	34976.	I	2.135	86794.	40657.
147	I	-60.000	160.000	181.000	I	2.741	112535.	41060.	I	2.292	111006.	48430.
152	I	-40.000	0.000	21.000	I	2.190	3162.	1444.	I	1.900	3101.	1632.
157	I	-40.000	20.000	41.000	I	2.098	13485.	6429.	I	1.827	13215.	7232.
162	I	-40.000	40.000	61.000	I	2.161	32397.	14993.	I	1.875	31797.	16962.
167	I	-40.000	60.000	81.000	I	2.386	54543.	22860.	I	2.039	53686.	26327.
172	I	-40.000	80.000	101.000	I	2.681	78399.	29244.	I	2.249	77334.	34383.
177	I	-40.000	100.000	121.000	I	3.004	103521.	34466.	I	2.471	102282.	41388.
182	I	-40.000	120.000	141.000	I	3.339	129657.	38836.	I	2.694	128269.	47616.
188	I	-40.000	140.000	151.000	I	2.990	24846.	8309.	I	2.458	24547.	9987.
194	I	-40.000	160.000	171.000	I	3.319	32750.	9867.	I	2.678	32399.	12098.

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*                          STABILITY ANALYSIS                               *
*                  (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)                *
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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>
-----------------------------------------------------------------------------

CALCULATION NUMBER..........................        199

SLIPPE CIRCLE(X-COORDINATE)..................     140.000 (M)
      -DO-    (Y-COORDINATE)..................     140.000 (M)
      -DO-    (RADIUS)........................     191.000 (M)

SAFETY FACTOR(NORMAL  CONDITION).............       1.533
      -DO-    (SEISMIC CONDITION).............       1.367

RESISTANCE MOMENT(TOTAL:NORMAL )..............     99232. (TON*M)
      -DO-         ( -DO-:SEISMIC)............     96517. (TON*M)
RESISTANCE FORCE  (COHESION)..................       0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...     519.54 (TON)
      -DO-        (   -DO-   :WATER PRESSURE)...      0.00 (TON)
      -DO-        (   -DO-   :PORE  PRESSURE)...      0.00 (TON)
      -DO-        (   -DO-   :EARTHQUAKE    )...    -14.21 (TON)

SLIDING MOMENT(TOTAL:NORMAL )................     -64710. (TON*M)
      -DO-     ( -DO-:SEISMIC)................     -70623. (TON*M)
SLIDING FORCE (BODY FORCE)....................    -338.80 (TON)
      -DO-     (WATER PRESSURE)...............       0.00 (TON)
      -DO-     (EARTHQUAKE)...................     -30.96 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM ORIGINAL SCHEME MEDIUM WL.164m 1:2.3 & 1:1.8 <MO-03>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
7	20.000	60.000	71.000	4.271	21822.	-5109.	3.229	21653.	-6706.
14	20.000	80.000	91.000	5.144	30305.	-5891.	3.715	30105.	-8103.
20	20.000	100.000	111.000	6.011	39095.	-6504.	4.158	38872.	-9349.
26	20.000	120.000	131.000	6.875	48099.	-6996.	4.563	47857.	-10489.
32	20.000	140.000	151.000	7.734	57257.	-7403.	4.934	56998.	-11552.
38	20.000	160.000	171.000	8.590	66536.	-7746.	5.277	66263.	-12558.
44	40.000	60.000	81.000	2.334	55101.	-23604.	1.973	54302.	-27521.
51	40.000	80.000	91.000	2.221	11939.	-5376.	1.888	11758.	-6227.
58	40.000	100.000	111.000	2.602	18505.	-7112.	2.163	18266.	-8446.
65	40.000	120.000	131.000	2.997	25675.	-8566.	2.435	25387.	-10424.
72	40.000	140.000	151.000	3.397	33301.	-9803.	2.699	32969.	-12213.
79	40.000	160.000	171.000	3.797	41272.	-10870.	2.953	40903.	-13853.
84	60.000	60.000	91.000	1.878	97452.	-51897.	1.638	95595.	-58369.
90	60.000	80.000	101.000	1.773	32666.	-18429.	1.554	31997.	-20591.
96	60.000	100.000	121.000	2.001	51376.	-25673.	1.730	50470.	-29175.
102	60.000	120.000	141.000	2.252	72005.	-31974.	1.919	70886.	-36948.
108	60.000	140.000	161.000	2.485	93369.	-37568.	2.086	92055.	-44120.
114	60.000	160.000	181.000	2.722	115722.	-42518.	2.252	114231.	-50732.
118	80.000	60.000	101.000	1.705	143968.	-84447.	1.506	140741.	-93436.
123	80.000	80.000	111.000	1.606	56126.	-34946.	1.425	54756.	-38436.
128	80.000	100.000	131.000	1.738	91304.	-52519.	1.529	89357.	-58446.
133	80.000	120.000	151.000	1.907	130249.	-68291.	1.660	127762.	-76948.
138	80.000	140.000	171.000	2.063	170342.	-82584.	1.776	167351.	-94206.
144	80.000	160.000	181.000	1.956	40653.	-20787.	1.694	39908.	-23562.
147	100.000	60.000	111.000	1.625	187656.	-115445.	1.443	182946.	-126759.
151	100.000	80.000	121.000	1.560	77056.	-49388.	1.389	74989.	-53985.
155	100.000	100.000	141.000	1.614	133041.	-82416.	1.431	129813.	-90684.
159	100.000	120.000	161.000	1.731	195440.	-112877.	1.525	191165.	-125342.

163	I	100.000	140.000	181.000	I	1.840	259133.	-140870.	I	1.607	253871.	-157950.
168	I	100.000	160.000	191.000	I	1.753	84715.	-48338.	I	1.539	82913.	-53885.
171	I	120.000	60.000	111.000	I	1.548	39613.	-25589.	I	1.379	38540.	-27950.
174	I	120.000	80.000	131.000	I	1.558	92179.	-59153.	I	1.388	89697.	-64645.
177	I	120.000	100.000	151.000	I	1.567	171639.	-109524.	I	1.395	167113.	-119834.
180	I	120.000	120.000	171.000	I	1.626	260155.	-160033.	I	1.441	253852.	-176131.
184	I	120.000	140.000	181.000	I	1.555	77767.	-50009.	I	1.384	75727.	-54735.
188	I	120.000	160.000	201.000	I	1.633	134295.	-82260.	I	1.445	131107.	-90746.
190	I	140.000	60.000	121.000	I	1.547	48939.	-31639.	I	1.378	47612.	-34555.
192	I	140.000	80.000	141.000	I	1.557	108835.	-69922.	I	1.386	105902.	-76407.
194	I	140.000	100.000	161.000	I	1.564	200367.	-128119.	I	1.392	194992.	-140058.
196	I	140.000	120.000	181.000	I	1.575	320162.	-203306.	I	1.401	311843.	-222641.
199	I	140.000	140.000	191.000	I	1.533	99232.	-64710.	I	1.367	96517.	-70623.
202	I	140.000	160.000	211.000	I	1.569	183725.	-117103.	I	1.395	179000.	-128342.
203	I	160.000	60.000	131.000	I	1.546	59587.	-38548.	I	1.377	57970.	-42099.
204	I	160.000	80.000	151.000	I	1.555	127276.	-81851.	I	1.385	123842.	-89435.
205	I	160.000	100.000	171.000	I	1.562	228533.	-146298.	I	1.391	222395.	-159916.
206	I	160.000	120.000	191.000	I	1.568	369436.	-235641.	I	1.395	359550.	-257654.
208	I	160.000	140.000	201.000	I	1.533	115650.	-75416.	I	1.367	112486.	-82307.
210	I	160.000	160.000	221.000	I	1.543	226773.	-147001.	I	1.374	220642.	-160561.

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* LIST OF INPUT DATA *
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TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>

NUMBER OF NODAL POINTS..... 22
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 16
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 0
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0250
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	2	0.0	30.0	1.72	1.80	1.000	0.300
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	------GROUP(1)------		------GROUP(2)------	
	X-COOR	Y-COOR	X-COOR	Y-COOR
1	-200.000	0.000	20.000	60.000
2	-40.000	0.000	160.000	60.000
3	-40.000	160.000	160.000	160.000
4	-200.000	160.000	20.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0

STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-7.100E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-2	-190.7	-70.0	-105.0	-62.0
2	-2	-105.0	-62.0	-33.0	-62.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	0.000	0.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-1.000	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	145.000	-75.000
20	10.000	0.000
21	-104.977	-62.000
22	-33.025	-62.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	19

TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-190.750	-125.900	2	1	2.370	0.025	0.839	0.435	1.930	1.805
2	-125.900	-122.900	2	1	2.370	0.025	0.839	0.435	1.930	1.805
3	-122.900	-114.900	5	1	1.800	0.025	0.577	0.000	100.000	100.000
4	-114.900	-111.900	2	1	2.370	0.025	0.839	0.000	100.000	100.000
5	-111.900	-104.977	2	1	2.370	0.025	0.839	0.000	100.000	100.000
6	-104.977	-93.900	2	1	2.370	0.025	0.839	0.000	100.000	100.000
7	-93.900	-93.150	2	1	2.370	0.025	0.839	0.000	100.000	100.000
8	-93.150	-41.025	2	1	2.370	0.025	0.839	0.435	1.930	1.805
9	-41.025	-33.025	2	1	2.370	0.025	0.839	0.435	1.930	1.805
10	-33.025	-15.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
11	-15.525	-9.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
12	-9.525	-6.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
13	-6.000	-1.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
14	-1.000	0.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
15	0.000	10.000	1	1	1.800	0.025	0.577	0.000	100.000	100.000
16	10.000	15.000	2	1	2.370	0.025	0.839	0.556	1.510	1.425
17	15.000	21.000	2	1	2.370	0.025	0.839	0.556	1.510	1.425
18	21.000	24.525	2	1	2.370	0.025	0.839	0.556	1.510	1.425
19	24.525	30.525	2	1	2.370	0.025	0.839	0.556	1.510	1.425
20	30.525	39.525	2	1	2.370	0.025	0.839	0.556	1.510	1.425
21	39.525	145.000	2	1	2.370	0.025	0.839	0.556	1.510	1.425

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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)          *
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TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>
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CALCULATION NUMBER.....................        91

SLIPPE CIRCLE(X-COORDINATE).............    -80.000 (M)
      -DO-    (Y-COORDINATE).............     80.000 (M)
      -DO-    (RADIUS)...................    111.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........      1.979
      -DO-    (SEISMIC CONDITION)........      1.849

RESISTANCE MOMENT(TOTAL:NORMAL )........     48959. (TON*M)
      -DO-        ( -DO-:SEISMIC).....     48440. (TON*M)
RESISTANCE FORCE (COHESION).............      0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...   441.07 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...     0.00 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...     0.00 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...    -4.68 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     24739. (TON*M)
      -DO-    ( -DO-:SEISMIC).....     26198. (TON*M)
SLIDING FORCE (BODY FORCE)..............     222.88 (TON)
      -DO-    (WATER PRESSURE)........       0.00 (TON)
      -DO-    (EARTHQUAKE)............      13.14 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-200.000	160.000	221.000	2.472	72405.	29287.	2.275	71834.	31576.
2	-180.000	60.000	121.000	2.202	47811.	21712.	2.043	47381.	23188.
3	-180.000	80.000	141.000	2.403	72231.	30056.	2.217	71644.	32318.
4	-180.000	100.000	161.000	2.610	100597.	38549.	2.393	99846.	41718.
5	-180.000	120.000	181.000	2.815	132678.	47140.	2.567	131760.	51331.
6	-180.000	140.000	201.000	2.998	169465.	56517.	2.721	168360.	61870.
7	-160.000	0.000	61.000	2.258	35203.	15593.	2.093	34895.	16669.
8	-160.000	20.000	81.000	2.505	59577.	23782.	2.305	59122.	25648.
9	-160.000	40.000	101.000	2.764	89263.	32299.	2.524	88644.	35119.
10	-160.000	60.000	121.000	3.020	123771.	40990.	2.739	122980.	44907.
11	-160.000	80.000	141.000	3.120	168168.	53906.	2.822	167113.	59218.
12	-160.000	100.000	161.000	3.044	228791.	75169.	2.760	227296.	82358.
14	-160.000	120.000	181.000	2.904	309124.	106457.	2.644	306977.	116112.
15	-160.000	140.000	201.000	2.761	412671.	149473.	2.524	409625.	162284.
16	-160.000	160.000	221.000	2.636	542903.	205925.	2.419	538676.	222689.
18	-140.000	0.000	51.000	2.905	12583.	4332.	2.637	12505.	4742.
20	-140.000	20.000	71.000	3.374	22144.	6563.	3.022	22023.	7288.
21	-140.000	40.000	101.000	3.354	162347.	48399.	3.014	161385.	53538.
23	-140.000	60.000	121.000	3.119	234399.	75144.	2.823	232878.	82503.
25	-140.000	80.000	141.000	2.913	327513.	112414.	2.652	325211.	122619.
26	-140.000	100.000	161.000	2.745	444413.	161916.	2.510	441080.	175699.
27	-140.000	120.000	181.000	2.605	587079.	225341.	2.392	582434.	243534.
29	-140.000	140.000	201.000	2.508	756716.	301690.	2.308	750514.	325160.
31	-140.000	160.000	221.000	2.479	932522.	376123.	2.282	924927.	405372.
33	-120.000	0.000	61.000	4.005	102344.	25552.	3.529	101825.	28854.
35	-120.000	20.000	81.000	3.344	171285.	51224.	3.001	170248.	56735.
37	-120.000	40.000	101.000	2.974	262328.	88208.	2.697	260534.	96604.
39	-120.000	60.000	121.000	2.742	378722.	138124.	2.503	375900.	150182.
41	-120.000	80.000	141.000	2.585	523843.	202634.	2.371	519688.	219231.

43	I	-120.000	100.000	161.000	I	2.493	694124.	278478.	I	2.291	688462.	300489.
46	I	-120.000	120.000	171.000	I	2.476	396790.	160282.	I	2.283	393433.	172366.
48	I	-120.000	140.000	191.000	I	2.437	519010.	213006.	I	2.248	514636.	228972.
50	I	-120.000	160.000	211.000	I	2.465	645191.	261708.	I	2.270	639926.	281846.
52	I	-100.000	0.000	61.000	I	3.273	142930.	43673.	I	2.935	142022.	48383.
54	I	-100.000	20.000	81.000	I	2.857	246464.	86264.	I	2.595	244682.	94302.
56	I	-100.000	40.000	101.000	I	2.633	380945.	144705.	I	2.407	377960.	157021.
60	I	-100.000	60.000	101.000	I	2.036	47632.	23398.	I	1.900	47141.	24817.
63	I	-100.000	80.000	121.000	I	2.024	88815.	43879.	I	1.889	87895.	46525.
66	I	-100.000	100.000	141.000	I	2.018	148631.	73654.	I	1.884	147085.	78082.
69	I	-100.000	120.000	161.000	I	2.045	221317.	108227.	I	1.906	219087.	114918.
72	I	-100.000	140.000	181.000	I	2.114	296802.	140422.	I	1.965	293987.	149629.
75	I	-100.000	160.000	201.000	I	2.221	375692.	169161.	I	2.057	372361.	181046.
78	I	-80.000	0.000	41.000	I	2.167	20971.	9677.	I	2.016	20768.	10302.
81	I	-80.000	20.000	61.000	I	2.112	49530.	23448.	I	1.968	49038.	24923.
84	I	-80.000	40.000	81.000	I	2.086	94560.	45333.	I	1.944	93609.	48150.
87	I	-80.000	60.000	101.000	I	2.072	159311.	76905.	I	1.931	157700.	81655.
91	I	-80.000	80.000	111.000	I	1.979	48959.	24739.	I	1.849	48440.	26198.
95	I	-80.000	100.000	131.000	I	2.006	88718.	44229.	I	1.872	87803.	46902.
99	I	-80.000	120.000	151.000	I	2.087	131553.	63041.	I	1.940	130292.	67145.
103	I	-80.000	140.000	171.000	I	2.212	176618.	79848.	I	2.047	175061.	85514.
107	I	-80.000	160.000	191.000	I	2.363	223667.	94649.	I	2.176	221851.	101965.
111	I	-60.000	0.000	31.000	I	2.175	9436.	4338.	I	2.023	9345.	4619.
115	I	-60.000	20.000	51.000	I	2.106	27732.	13166.	I	1.962	27456.	13992.
119	I	-60.000	40.000	71.000	I	2.078	59526.	28644.	I	1.937	58925.	30417.
123	I	-60.000	60.000	91.000	I	2.123	101523.	47826.	I	1.974	100562.	50940.
127	I	-60.000	80.000	111.000	I	2.256	146197.	64796.	I	2.087	144950.	69466.
132	I	-60.000	100.000	121.000	I	2.080	41335.	19875.	I	1.934	40938.	21171.
137	I	-60.000	120.000	141.000	I	2.224	62230.	27980.	I	2.055	61691.	30019.
142	I	-60.000	140.000	161.000	I	2.413	84364.	34957.	I	2.215	83705.	37796.
147	I	-60.000	160.000	181.000	I	2.621	107508.	41018.	I	2.388	106744.	44700.
152	I	-40.000	0.000	21.000	I	2.190	3162.	1444.	I	2.037	3132.	1538.
157	I	-40.000	20.000	41.000	I	2.098	13485.	6429.	I	1.955	13350.	6830.
162	I	-40.000	40.000	61.000	I	2.134	32001.	14993.	I	1.984	31701.	15977.
167	I	-40.000	60.000	81.000	I	2.314	52838.	22838.	I	2.133	52411.	24570.
172	I	-40.000	80.000	101.000	I	2.589	75537.	29172.	I	2.363	75005.	31739.
177	I	-40.000	100.000	121.000	I	2.901	99622.	34345.	I	2.619	99004.	37799.
182	I	-40.000	120.000	141.000	I	3.228	124807.	38670.	I	2.883	124116.	43049.
188	I	-40.000	140.000	151.000	I	2.748	22830.	8309.	I	2.479	22681.	9148.
194	I	-40.000	160.000	171.000	I	3.033	29925.	9867.	I	2.709	29749.	10983.

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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>
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CALCULATION NUMBER.............................      208

SLIPPE CIRCLE(X-COORDINATE).....................    160.000 (M)
      -DO-    (Y-COORDINATE).....................    140.000 (M)
      -DO-    (RADIUS)...........................    201.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)................      1.533
      -DO-    (SEISMIC CONDITION)...............      1.446

RESISTANCE MOMENT(TOTAL:NORMAL )................    115650. (TON*M)
      -DO-          ( -DO-:SEISMIC).............    114068. (TON*M)
RESISTANCE FORCE (COHESION).....................       0.00 (TON)
      -DO-          (FRICTION:BODY FORCE    )...     575.37 (TON)
      -DO-          (  -DO-  :WATER PRESSURE)...       0.00 (TON)
      -DO-          (  -DO-  :PORE  PRESSURE)...       0.00 (TON)
      -DO-          (  -DO-  :EARTHQUAKE    )...      -7.87 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...................    -75416. (TON*M)
      -DO-      ( -DO-:SEISMIC).................    -78862. (TON*M)
SLIDING FORCE (BODY FORCE)......................    -375.20 (TON)
      -DO-      (WATER PRESSURE)................       0.00 (TON)
      -DO-      (EARTHQUAKE)....................      -17.14 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM ORIGINAL SCHEME AFTER COMPLETION 1:2.3 & 1:1.8 <MO-04>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
7	20.000	60.000	71.000	3.738	19090.	-5107.	3.219	19006.	-5905.
14	20.000	80.000	91.000	4.548	26764.	-5885.	3.814	26665.	-6991.
20	20.000	100.000	111.000	5.352	34758.	-6495.	4.377	34647.	-7916.
26	20.000	120.000	131.000	6.151	42971.	-6986.	4.908	42850.	-8731.
32	20.000	140.000	151.000	6.946	51343.	-7392.	5.411	51213.	-9464.
38	20.000	160.000	171.000	7.737	59833.	-7733.	5.889	59697.	-10137.
44	40.000	60.000	81.000	2.177	51182.	-23506.	1.995	50783.	-25460.
51	40.000	80.000	91.000	1.957	10522.	-5376.	1.798	10431.	-5802.
58	40.000	100.000	111.000	2.275	16182.	-7112.	2.065	16063.	-7779.
65	40.000	120.000	131.000	2.620	22445.	-8566.	2.349	22300.	-9495.
72	40.000	140.000	151.000	2.974	29158.	-9803.	2.634	28993.	-11008.
79	40.000	160.000	171.000	3.332	36217.	-10870.	2.915	36032.	-12361.
84	60.000	60.000	91.000	1.791	92735.	-51782.	1.669	91808.	-55015.
90	60.000	80.000	101.000	1.657	30529.	-18429.	1.548	30194.	-19510.
96	60.000	100.000	121.000	1.835	47103.	-25673.	1.701	46650.	-27424.
102	60.000	120.000	141.000	2.052	65621.	-31972.	1.888	65061.	-34459.
108	60.000	140.000	161.000	2.286	85733.	-37505.	2.086	85077.	-40778.
114	60.000	160.000	181.000	2.528	107206.	-42411.	2.289	106462.	-46510.
118	80.000	60.000	101.000	1.650	139366.	-84447.	1.549	137753.	-88942.
123	80.000	80.000	111.000	1.568	54811.	-34946.	1.475	54126.	-36691.
128	80.000	100.000	131.000	1.647	86508.	-52519.	1.542	85534.	-55483.
133	80.000	120.000	151.000	1.794	122390.	-68240.	1.669	121148.	-72566.
138	80.000	140.000	171.000	1.968	162082.	-82338.	1.822	160590.	-88139.
144	80.000	160.000	181.000	1.786	37127.	-20787.	1.658	36754.	-22174.
147	100.000	60.000	111.000	1.618	186793.	-115445.	1.523	184438.	-121102.
151	100.000	80.000	121.000	1.560	77028.	-49388.	1.470	75994.	-51686.
155	100.000	100.000	141.000	1.575	129843.	-82416.	1.482	128229.	-86550.
159	100.000	120.000	161.000	1.656	186915.	-112877.	1.551	184778.	-119109.
163	100.000	140.000	181.000	1.781	250340.	-140555.	1.662	247714.	-149083.

168	I	100.000	160.000	191.000	I	1.651	79830.	-48338.	I	1.544	78929.	-51112.
171	I	120.000	60.000	111.000	I	1.548	39613.	-25589.	I	1.460	39077.	-26770.
174	I	120.000	80.000	131.000	I	1.558	92178.	-59153.	I	1.469	90938.	-61899.
177	I	120.000	100.000	151.000	I	1.562	171091.	-109524.	I	1.472	168828.	-114679.
180	I	120.000	120.000	171.000	I	1.587	253921.	-160033.	I	1.492	250769.	-168082.
184	I	120.000	140.000	181.000	I	1.538	76936.	-50009.	I	1.450	75916.	-52372.
188	I	120.000	160.000	201.000	I	1.576	129664.	-82260.	I	1.481	128071.	-86503.
190	I	140.000	60.000	121.000	I	1.547	48939.	-31639.	I	1.459	48275.	-33097.
192	I	140.000	80.000	141.000	I	1.557	108835.	-69922.	I	1.467	107368.	-73164.
194	I	140.000	100.000	161.000	I	1.564	200368.	-128119.	I	1.474	197680.	-134088.
196	I	140.000	120.000	181.000	I	1.565	318222.	-203306.	I	1.475	314063.	-212974.
199	I	140.000	140.000	191.000	I	1.534	99233.	-64710.	I	1.446	97876.	-67667.
202	I	140.000	160.000	211.000	I	1.547	181104.	-117103.	I	1.456	178741.	-122722.
203	I	160.000	60.000	131.000	I	1.546	59587.	-38548.	I	1.458	58779.	-40323.
204	I	160.000	80.000	151.000	I	1.555	127276.	-81851.	I	1.466	125559.	-85643.
205	I	160.000	100.000	171.000	I	1.562	228533.	-146298.	I	1.473	225464.	-153107.
206	I	160.000	120.000	191.000	I	1.568	369436.	-235641.	I	1.478	364493.	-246647.
208	I	160.000	140.000	201.000	I	1.533	115650.	-75416.	I	1.446	114068.	-78862.
210	I	160.000	160.000	221.000	I	1.540	226405.	-147001.	I	1.452	223339.	-153781.

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*****************************************************************************
*                      LIST OF INPUT DATA                                   *
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TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>
-----------------------------------------------------------------------------

NUMBER OF NODAL POINTS.................   26
NUMBER OF DIFFERENT MATERIALS..........    5
NUMBER OF ELEMENTS.....................   16
NUMBER OF SURFACE LINES................    7
NUMBER OF WATER POINTS.................    8
NUMBER OF PORE PRESSURE POINTS.........   26
ACCELERATION OF EARTHQUAKE.............    0.0000
UNITE WEIGHT OF WATER..................    1.0000

MATERIAL PROPATY
----------------

            TYPE        COHESION    FRICTION  WEIGHT(WET) WEIGHT(SAT) ACC.FACTOR PORE.FACTOR
                          (T/M2)    (DEGREE)     (T/M3)      (T/M3)

     1         0           0.0        30.0        1.72        1.80       1.000       0.000
     2         0           0.0        40.0        2.13        2.37       1.000       0.000
     3         0           0.0        36.0        1.93        2.23       1.000       0.000
     4         0           0.0        36.0        1.93        2.23       1.000       0.000
     5         0           0.0        30.0        1.72        1.80       1.000       0.000

DATA OF SLIPPE CIRCLE
---------------------
OUTLINE OF GRID
...............
     NUMBER    ------GROUP(1)------    ------GROUP(2)------
                 X-COOR     Y-COOR       X-COOR     Y-COOR
         1     -200.000     0.000       20.000     60.000
         2      -40.000     0.000      160.000     60.000
         3      -40.000   160.000      160.000    160.000
         4     -200.000   160.000       20.000    160.000
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THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-7.100E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-2	-190.7	-70.0	-105.0	-62.0
2	-2	-105.0	-62.0	-33.0	-62.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	0.000	0.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-1.000	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	145.000	-75.000
20	10.000	0.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	-2.500

24	-0.156	-2.500
25	10.000	-13.500
26	18.300	-38.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

WATER LINE DATA (NODAL NUMBER)

23 24 25 26 10 11 12 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	19

DATA OF PORE PRESSURE IN NON-PERMEATION ZONE

NODAL POINT	X-COORDINATE	Y-COORDINATE	POTENTIAL
1	-9.525	-79.500	-77.000
2	-8.354	-69.875	-77.000
3	-7.183	-60.250	-77.000
4	-6.012	-50.625	-77.000
5	-4.840	-41.000	-77.000
6	-3.669	-31.375	-77.000
7	-2.498	-21.750	-77.000
8	-1.327	-12.125	-77.000
9	-0.156	-2.500	-77.000
10	0.475	-79.500	-57.000
11	2.571	-70.000	-57.000
12	4.666	-60.500	-57.000
13	6.762	-51.000	-57.000
14	8.858	-41.500	-57.000
15	10.953	-32.000	-57.000
16	13.049	-22.500	-57.000
17	10.475	-79.500	-41.500
18	12.040	-71.200	-41.500
19	13.605	-62.900	-41.500
20	15.170	-54.600	-41.500
21	16.735	-46.300	-41.500
22	18.300	-38.000	-41.500
23	20.475	-79.500	-19.500
24	21.737	-69.750	-19.500
25	23.000	-60.000	-19.500
26	24.525	-79.500	0.000

TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.750	0	-	-	-	-	-	-	-
2	-190.750	-125.900	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
3	-125.900	-122.900	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
4	-122.900	-114.900	5	-1	1.800	0.000	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
9	-93.150	-41.025	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
10	-41.025	-33.025	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
11	-33.025	-15.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
12	-15.525	-9.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
13	-9.525	-6.000	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
14	-6.000	-5.750	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
15	-5.750	-1.000	2	1	2.370	0.000	0.839	0.435	1.930	1.930
16	-1.000	-0.938	2	1	2.370	0.000	0.839	0.435	1.930	1.930
17	-0.938	-0.156	2	1	2.370	0.000	0.839	0.435	1.930	1.930
18	-0.156	0.000	2	1	2.370	0.000	0.839	0.435	1.930	1.930
19	0.000	10.000	1	1	1.800	0.000	0.577	0.000	100.000	100.000
20	10.000	10.847	2	1	2.370	0.000	0.839	0.556	1.510	1.510
21	10.847	15.000	2	1	2.370	0.000	0.839	0.556	1.510	1.510
22	15.000	18.300	2	1	2.370	0.000	0.839	0.556	1.510	1.510
23	18.300	21.000	2	1	2.370	0.000	0.839	0.556	1.510	1.510
24	21.000	24.000	2	1	2.370	0.000	0.839	0.556	1.510	1.510
25	24.000	24.525	2	1	2.370	0.000	0.839	0.556	1.510	1.510
26	24.525	30.525	2	1	2.370	0.000	0.839	0.556	1.510	1.510
27	30.525	39.525	2	1	2.370	0.000	0.839	0.556	1.510	1.510
28	39.525	145.000	2	1	2.370	0.000	0.839	0.556	1.510	1.510

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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)          *
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TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>
-----------------------------------------------------------------------------

CALCULATION NUMBER.....................        91

SLIPPE CIRCLE(X-COORDINATE).............    -80.000 (M)
      -DO-    (Y-COORDINATE).............     80.000 (M)
      -DO-    (RADIUS)...................    111.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........      1.979
      -DO-    (SEISMIC CONDITION)........      1.979

RESISTANCE MOMENT(TOTAL:NORMAL )........     31490. (TON*M)
      -DO-          ( -DO-:SEISMIC).....     31490. (TON*M)
RESISTANCE FORCE (COHESION).............         0.00 (TON)
      -DO-          (FRICTION:BODY FORCE  )...  1212.39 (TON)
      -DO-          (  -DO-  :WATER PRESSURE)...  126.01 (TON)
      -DO-          (  -DO-  :PORE  PRESSURE)... -1054.71 (TON)
      -DO-          (  -DO-  :EARTHQUAKE  )...     0.00 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     15912. (TON*M)
      -DO-     ( -DO-:SEISMIC).....          15912. (TON*M)
SLIDING FORCE (BODY FORCE)..............      502.80 (TON)
      -DO-     (WATER PRESSURE).....        -359.45 (TON)
      -DO-     (EARTHQUAKE).........           0.00 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	SLIPPE CIRCLE RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-200.000	160.000	221.000	2.533	44979.	17758.	2.533	44979.	17758.
2	-180.000	60.000	121.000	2.257	30126.	13345.	2.257	30126.	13345.
3	-180.000	80.000	141.000	2.473	45158.	18262.	2.473	45158.	18262.
4	-180.000	100.000	161.000	2.681	62702.	23384.	2.681	62702.	23384.
5	-180.000	120.000	181.000	2.884	82621.	28643.	2.884	82621.	28643.
6	-180.000	140.000	201.000	3.063	105558.	34459.	3.063	105558.	34459.
7	-160.000	0.000	61.000	2.338	22318.	9547.	2.338	22318.	9547.
8	-160.000	20.000	81.000	2.616	37274.	14250.	2.616	37274.	14250.
9	-160.000	40.000	101.000	2.866	55621.	19407.	2.866	55621.	19407.
10	-160.000	60.000	121.000	3.109	77063.	24785.	3.109	77063.	24785.
11	-160.000	80.000	141.000	3.183	104865.	32942.	3.183	104865.	32942.
12	-160.000	100.000	161.000	3.077	143103.	46505.	3.077	143103.	46505.
14	-160.000	120.000	181.000	2.916	194017.	66541.	2.916	194017.	66541.
15	-160.000	140.000	201.000	2.761	259866.	94137.	2.761	259866.	94137.
16	-160.000	160.000	221.000	2.630	342883.	130389.	2.630	342883.	130389.
18	-140.000	0.000	51.000	3.111	7672.	2466.	3.111	7672.	2466.
20	-140.000	20.000	71.000	3.532	13475.	3815.	3.532	13475.	3815.
21	-140.000	40.000	101.000	3.379	101218.	29954.	3.379	101218.	29954.
23	-140.000	60.000	121.000	3.115	146803.	47125.	3.115	146803.	47125.
25	-140.000	80.000	141.000	2.898	205938.	71074.	2.898	205938.	71074.
26	-140.000	100.000	161.000	2.725	280372.	102897.	2.725	280372.	102897.
27	-140.000	120.000	181.000	2.585	371377.	143676.	2.585	371377.	143676.
29	-140.000	140.000	201.000	2.480	481186.	194062.	2.480	481186.	194062.
31	-140.000	160.000	221.000	2.486	600011.	241373.	2.486	600011.	241373.
33	-120.000	0.000	61.000	3.884	63562.	16364.	3.884	63562.	16364.
35	-120.000	20.000	81.000	3.260	107146.	32871.	3.260	107146.	32871.
37	-120.000	40.000	101.000	2.911	164940.	56654.	2.911	164940.	56654.
39	-120.000	60.000	121.000	2.693	239034.	88754.	2.693	239034.	88754.
41	-120.000	80.000	141.000	2.546	331604.	130241.	2.546	331604.	130241.
43	-120.000	100.000	161.000	2.457	442571.	180105.	2.457	442571.	180105.
46	-120.000	120.000	171.000	2.437	252954.	103798.	2.437	252954.	103798.

48	I	-120.000	140.000	191.000	I	2.426	335158.	138148.	I	2.426	335158.	138148.
50	I	-120.000	160.000	211.000	I	2.530	423412.	167356.	I	2.530	423412.	167356.
52	I	-100.000	0.000	61.000	I	3.099	90088.	29066.	I	3.099	90088.	29066.
54	I	-100.000	20.000	81.000	I	2.758	155878.	56512.	I	2.758	155878.	56512.
56	I	-100.000	40.000	101.000	I	2.566	241575.	94130.	I	2.566	241575.	94130.
60	I	-100.000	60.000	101.000	I	2.036	30637.	15049.	I	2.036	30637.	15049.
63	I	-100.000	80.000	121.000	I	2.024	57126.	28223.	I	2.024	57126.	28223.
66	I	-100.000	100.000	141.000	I	2.013	95771.	47567.	I	2.013	95771.	47567.
69	I	-100.000	120.000	161.000	I	2.045	144649.	70725.	I	2.045	144649.	70725.
72	I	-100.000	140.000	181.000	I	2.185	198296.	90742.	I	2.185	198296.	90742.
75	I	-100.000	160.000	201.000	I	2.396	255594.	106693.	I	2.396	255594.	106693.
78	I	-80.000	0.000	41.000	I	2.167	13489.	6224.	I	2.167	13489.	6224.
81	I	-80.000	20.000	61.000	I	2.112	31857.	15081.	I	2.112	31857.	15081.
84	I	-80.000	40.000	81.000	I	2.086	60821.	29158.	I	2.086	60821.	29158.
87	I	-80.000	60.000	101.000	I	2.059	102780.	49920.	I	2.059	102780.	49920.
91	I	-80.000	80.000	111.000	I	1.979	31490.	15912.	I	1.979	31490.	15912.
95	I	-80.000	100.000	131.000	I	1.987	58061.	29219.	I	1.987	58061.	29219.
99	I	-80.000	120.000	151.000	I	2.137	88622.	41471.	I	2.137	88622.	41471.
103	I	-80.000	140.000	171.000	I	2.376	121940.	51312.	I	2.376	121940.	51312.
107	I	-80.000	160.000	191.000	I	2.671	157242.	58870.	I	2.671	157242.	58870.
111	I	-60.000	0.000	31.000	I	2.175	6069.	2790.	I	2.175	6069.	2790.
115	I	-60.000	20.000	51.000	I	2.106	17837.	8468.	I	2.106	17837.	8468.
119	I	-60.000	40.000	71.000	I	2.071	38347.	18518.	I	2.071	38347.	18518.
123	I	-60.000	60.000	91.000	I	2.146	67177.	31306.	I	2.146	67177.	31306.
127	I	-60.000	80.000	111.000	I	2.436	100242.	41149.	I	2.436	100242.	41149.
132	I	-60.000	100.000	121.000	I	2.087	28294.	13558.	I	2.087	28294.	13558.
137	I	-60.000	120.000	141.000	I	2.353	44202.	18782.	I	2.353	44202.	18782.
142	I	-60.000	140.000	161.000	I	2.701	61399.	22733.	I	2.701	61399.	22733.
147	I	-60.000	160.000	181.000	I	3.100	79576.	25672.	I	3.100	79576.	25672.
152	I	-40.000	0.000	21.000	I	2.190	2034.	928.	I	2.190	2034.	928.
157	I	-40.000	20.000	41.000	I	2.098	8673.	4135.	I	2.098	8673.	4135.
162	I	-40.000	40.000	61.000	I	2.123	21331.	10048.	I	2.123	21331.	10048.
167	I	-40.000	60.000	81.000	I	2.504	37217.	14863.	I	2.504	37217.	14863.
172	I	-40.000	80.000	101.000	I	3.061	55009.	17972.	I	3.061	55009.	17972.
177	I	-40.000	100.000	121.000	I	3.735	74089.	19834.	I	3.735	74089.	19834.
182	I	-40.000	120.000	141.000	I	4.526	94164.	20807.	I	4.526	94164.	20807.
188	I	-40.000	140.000	151.000	I	3.077	18725.	6085.	I	3.077	18725.	6085.
194	I	-40.000	160.000	171.000	I	3.557	24865.	6991.	I	3.557	24865.	6991.

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*                          STABILITY ANALYSIS                            *
*                    (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)           *
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TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>
--------------------------------------------------------------------------

CALCULATION NUMBER.....................        199

SLIPPE CIRCLE(X-COORDINATE).............     140.000 (M)
      -DO-   (Y-COORDINATE).............     140.000 (M)
      -DO-   (RADIUS)...................     191.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........       1.533
      -DO-   (SEISMIC CONDITION)........       1.533

RESISTANCE MOMENT(TOTAL:NORMAL )........      99232. (TON*M)
      -DO-       ( -DO-:SEISMIC)........      99232. (TON*M)
RESISTANCE FORCE (COHESION).............        0.00 (TON)
      -DO-       (FRICTION:BODY FORCE   )...  519.54 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...   0.00 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)...   0.00 (TON)
      -DO-       (  -DO-  :EARTHQUAKE   )...   0.00 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     -64710. (TON*M)
      -DO-    ( -DO-:SEISMIC)...........     -64710. (TON*M)
SLIDING FORCE (BODY FORCE)..............     -338.80 (TON)
      -DO-    (WATER PRESSURE)..........        0.00 (TON)
      -DO-    (EARTHQUAKE)..............        0.00 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM ORIGINAL SCHEME DESIGN FLOOD WL.193.5 1:2.3 & 1:1.8 <MO-05>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
4	20.000	60.000	101.000	3.075	293713.	-95514.	3.075	293713.	-95514.
8	20.000	80.000	151.000	3.209	1271833.	-396296.	3.209	1271833.	-396296.
15	20.000	100.000	161.000	3.376	1080667.	-320117.	3.376	1080667.	-320117.
21	20.000	120.000	181.000	3.493	1258603.	-360302.	3.493	1258603.	-360302.
27	20.000	140.000	201.000	3.598	1439189.	-400011.	3.598	1439189.	-400011.
33	20.000	160.000	221.000	3.692	1621976.	-439305.	3.692	1621976.	-439305.
44	40.000	60.000	81.000	2.109	51664.	-24499.	2.109	51664.	-24499.
51	40.000	80.000	91.000	2.221	11939.	-5376.	2.221	11939.	-5376.
57	40.000	100.000	121.000	2.465	91265.	-37028.	2.465	91265.	-37028.
63	40.000	120.000	151.000	2.625	268403.	-102249.	2.625	268403.	-102249.
70	40.000	140.000	171.000	2.759	315147.	-114240.	2.759	315147.	-114240.
76	40.000	160.000	201.000	2.883	661130.	-229306.	2.883	661130.	-229306.
84	60.000	60.000	91.000	1.809	94754.	-52379.	1.809	94754.	-52379.
90	60.000	80.000	101.000	1.773	32666.	-18429.	1.773	32666.	-18429.
96	60.000	100.000	121.000	1.959	50525.	-25789.	1.959	50525.	-25789.
102	60.000	120.000	141.000	2.095	68284.	-32602.	2.095	68284.	-32602.
108	60.000	140.000	161.000	2.218	86783.	-39121.	2.218	86783.	-39121.
113	60.000	160.000	191.000	2.325	294089.	-126495.	2.325	294089.	-126495.
118	80.000	60.000	101.000	1.705	143968.	-84447.	1.705	143968.	-84447.
123	80.000	80.000	111.000	1.606	56126.	-34946.	1.606	56126.	-34946.
128	80.000	100.000	131.000	1.733	91060.	-52550.	1.733	91060.	-52550.
133	80.000	120.000	151.000	1.822	125753.	-69018.	1.822	125753.	-69018.
138	80.000	140.000	171.000	1.905	161792.	-84917.	1.905	161792.	-84917.
144	80.000	160.000	181.000	1.956	40652.	-20787.	1.956	40652.	-20787.
147	100.000	60.000	111.000	1.625	187656.	-115445.	1.625	187656.	-115445.
151	100.000	80.000	121.000	1.560	77056.	-49388.	1.560	77056.	-49388.
155	100.000	100.000	141.000	1.614	133041.	-82416.	1.614	133041.	-82416.
159	100.000	120.000	161.000	1.699	192440.	-113253.	1.699	192440.	-113253.
163	100.000	140.000	181.000	1.756	250886.	-142909.	1.756	250886.	-142909.
168	100.000	160.000	191.000	1.752	84708.	-48338.	1.752	84708.	-48338.
171	120.000	60.000	111.000	1.548	39613.	-25589.	1.548	39613.	-25589.

174	I	120.000	80.000	131.000	I	1.558	92179.	-59153.	I	1.558	92179.	-59153.
177	I	120.000	100.000	151.000	I	1.567	171639.	-109524.	I	1.567	171639.	-109524.
180	I	120.000	120.000	171.000	I	1.626	260156.	-160033.	I	1.626	260156.	-160033.
184	I	120.000	140.000	181.000	I	1.555	77767.	-50009.	I	1.555	77767.	-50009.
188	I	120.000	160.000	201.000	I	1.633	134295.	-82260.	I	1.633	134295.	-82260.
190	I	140.000	60.000	121.000	I	1.547	48939.	-31639.	I	1.547	48939.	-31639.
192	I	140.000	80.000	141.000	I	1.557	108835.	-69922.	I	1.557	108835.	-69922.
194	I	140.000	100.000	161.000	I	1.564	200367.	-128119.	I	1.564	200367.	-128119.
196	I	140.000	120.000	181.000	I	1.575	320162.	-203306.	I	1.575	320162.	-203306.
199	I	140.000	140.000	191.000	I	1.533	99232.	-64710.	I	1.533	99232.	-64710.
202	I	140.000	160.000	211.000	I	1.569	183725.	-117103.	I	1.569	183725.	-117103.
203	I	160.000	60.000	131.000	I	1.546	59587.	-38548.	I	1.546	59587.	-38548.
204	I	160.000	80.000	151.000	I	1.555	127276.	-81851.	I	1.555	127276.	-81851.
205	I	160.000	100.000	171.000	I	1.562	228533.	-146298.	I	1.562	228533.	-146298.
206	I	160.000	120.000	191.000	I	1.568	369436.	-235641.	I	1.568	369436.	-235641.
208	I	160.000	140.000	201.000	I	1.533	115650.	-75416.	I	1.533	115650.	-75416.
210	I	160.000	160.000	221.000	I	1.543	226773.	-147001.	I	1.543	226773.	-147001.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m 1:2.3 & 1:1.8 <MF-01>

NUMBER OF NODAL POINTS..... 26
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 5
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	100.000	60.000
2	0.000	20.000	230.000	60.000
3	0.000	140.000	230.000	160.000
4	-100.000	140.000	100.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 1

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-30.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	43.700	19.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.025	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	222.900	-75.000
20	53.700	19.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	13.000
24	36.200	13.000
25	41.537	8.000
26	43.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

WATER LINE DATA (NODAL NUMBER)

23 24 25 26 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	13	21	22	14
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	26
17	2	20	26	19	20

TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m 1:2.3 & 1:1.8 <MF-01>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.750	0	-	-	-	-	-	-	-
2	-190.750	-125.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-125.900	-122.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-122.900	-114.900	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-93.150	-41.025	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
10	-41.025	-33.025	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
11	-33.025	-15.525	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
12	-15.525	-9.525	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
13	-9.525	-6.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
14	-6.000	-0.050	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
15	-0.050	15.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
16	15.000	21.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
17	21.000	24.525	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
18	24.525	29.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
19	29.900	30.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
20	30.525	35.180	2	1	2.370	0.050	0.839	0.435	1.930	1.693
21	35.180	36.200	2	1	2.370	0.050	0.839	0.435	1.930	1.693
22	36.200	39.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
23	39.025	41.537	2	1	2.370	0.050	0.839	0.435	1.930	1.693
24	41.537	41.574	2	1	2.370	0.050	0.839	0.435	1.930	1.693
25	41.574	43.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
26	43.000	43.700	2	1	2.370	0.050	0.839	0.435	1.930	1.693
27	43.700	53.700	1	1	1.800	0.050	0.577	0.000	100.000	100.000
28	53.700	222.900	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m  1:2.3 & 1:1.8 <MF-01>
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CALCULATION NUMBER.....................        177

SLIPPE CIRCLE(X-COORDINATE).............       0.000 (M)
      -DO-   (Y-COORDINATE).............      60.000 (M)
      -DO-   (RADIUS)...................      62.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........       1.711
      -DO-   (SEISMIC CONDITION)........       1.387

RESISTANCE MOMENT(TOTAL:NORMAL )........      14387. (TON*M)
      -DO-       ( -DO-:SEISMIC).......      13973. (TON*M)
RESISTANCE FORCE (COHESION).............       0.00 (TON)
      -DO-       (FRICTION:BODY FORCE  )...    584.18 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...   26.24 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)...  -378.37 (TON)
      -DO-       (  -DO-  :EARTHQUAKE  )...     -6.67 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........       8406. (TON*M)
      -DO-    ( -DO-:SEISMIC).........      10074. (TON*M)
SLIDING FORCE (BODY FORCE)..............     236.88 (TON)
      -DO-    (WATER PRESSURE)........    -101.30 (TON)
      -DO-    (EARTHQUAKE)............      26.90 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m 1:2.3 & 1:1.8 <MF-01>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-100.000	20.000	82.000	2.742	166918.	60871.	2.030	162647.	80107.
5	-100.000	40.000	82.000	2.254	20597.	9139.	1.770	19933.	11263.
8	-100.000	60.000	102.000	2.163	40932.	18924.	1.709	39558.	23145.
11	-100.000	80.000	122.000	2.115	71754.	33929.	1.676	69291.	41332.
14	-100.000	100.000	142.000	2.086	115289.	55262.	1.657	111278.	67159.
17	-100.000	120.000	162.000	2.068	173764.	84030.	1.644	167665.	101963.
20	-100.000	140.000	182.000	2.019	244873.	121278.	1.608	236337.	147013.
23	-80.000	20.000	62.000	2.128	37165.	17464.	1.686	35897.	21296.
26	-80.000	40.000	82.000	2.099	69423.	33071.	1.666	67023.	40227.
30	-80.000	60.000	92.000	1.982	19770.	9972.	1.586	19046.	12010.
34	-80.000	80.000	112.000	1.987	40522.	20390.	1.589	39042.	24567.
37	-80.000	100.000	142.000	1.973	239436.	121340.	1.569	231549.	147594.
41	-80.000	120.000	162.000	1.972	312732.	158602.	1.560	302871.	194109.
46	-80.000	140.000	172.000	1.875	166394.	88744.	1.503	160622.	106837.
50	-60.000	20.000	52.000	2.125	21513.	10124.	1.684	20778.	12341.
54	-60.000	40.000	72.000	2.091	44730.	21387.	1.661	43178.	25998.
58	-60.000	60.000	92.000	2.073	79570.	38382.	1.648	76784.	46584.
62	-60.000	80.000	112.000	1.996	122976.	61624.	1.588	118780.	74805.
66	-60.000	100.000	132.000	1.896	165709.	87409.	1.504	160486.	106693.
72	-60.000	120.000	142.000	1.974	75683.	38336.	1.582	72932.	46095.
77	-60.000	140.000	162.000	1.804	107137.	59403.	1.450	103611.	71468.
82	-40.000	20.000	42.000	2.121	11016.	5195.	1.681	10639.	6330.
87	-40.000	40.000	62.000	2.083	26700.	12816.	1.655	25770.	15568.
92	-40.000	60.000	82.000	2.019	50907.	25212.	1.607	49147.	30581.
97	-40.000	80.000	102.000	1.826	76272.	41777.	1.454	73856.	50798.
102	-40.000	100.000	122.000	1.840	109500.	59521.	1.457	106258.	72943.
108	-40.000	120.000	132.000	1.809	41845.	23128.	1.467	40422.	27559.
114	-40.000	140.000	152.000	1.800	63167.	35091.	1.452	61266.	42186.
120	-20.000	20.000	32.000	2.114	4645.	2198.	1.676	4486.	2677.

125	I	-20.000	40.000	62.000	I	2.052	50598.	24661.	I	1.587	49247.	31034.
132	I	-20.000	60.000	72.000	I	1.882	29127.	15480.	I	1.504	28169.	18726.
138	I	-20.000	80.000	92.000	I	1.786	46748.	26177.	I	1.425	45375.	31832.
144	I	-20.000	100.000	112.000	I	2.047	76738.	37488.	I	1.620	74656.	46093.
150	I	-20.000	120.000	132.000	I	2.418	116543.	48201.	I	1.888	113694.	60212.
157	I	-20.000	140.000	142.000	I	1.853	30756.	16594.	I	1.510	29977.	19857.
163	I	0.000	20.000	32.000	I	2.159	12046.	5578.	I	1.639	11761.	7174.
169	I	0.000	40.000	52.000	I	2.026	29541.	14581.	I	1.562	28763.	18416.
177	I	0.000	60.000	62.000	I	1.711	14387.	8406.	I	1.387	13973.	10074.
184	I	0.000	80.000	82.000	I	1.916	26701.	13939.	I	1.536	26044.	16957.
191	I	0.000	100.000	102.000	I	2.426	46758.	19275.	I	1.912	45751.	23932.
198	I	0.000	120.000	122.000	I	2.947	69127.	23459.	I	2.268	67840.	29908.
205	I	0.000	140.000	142.000	I	3.507	92934.	26503.	I	2.624	91415.	34842.

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*                         STABILITY ANALYSIS                              *
*                 (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)               *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m  1:2.3 & 1:1.8 <MF-01>
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CALCULATION NUMBER..........................        160

SLIPPE CIRCLE(X-COORDINATE)..................     200.000 (M)
      -DO-    (Y-COORDINATE)..................     140.000 (M)
      -DO-    (RADIUS)........................     182.000 (M)

SAFETY FACTOR(NORMAL  CONDITION).............       1.533
      -DO-    (SEISMIC CONDITION).............       1.366

RESISTANCE MOMENT(TOTAL:NORMAL )..............      84668. (TON*M)
      -DO-        ( -DO-:SEISMIC).............      82351. (TON*M)
RESISTANCE FORCE  (COHESION)..................       0.00 (TON)
      -DO-        (FRICTION:BODY FORCE     )...     465.21 (TON)
      -DO-        (  -DO-   :WATER PRESSURE)...       0.00 (TON)
      -DO-        (  -DO-   :PORE  PRESSURE)...       0.00 (TON)
      -DO-        (  -DO-   :EARTHQUAKE    )...     -12.73 (TON)

SLIDING MOMENT(TOTAL:NORMAL )..................    -55220. (TON*M)
      -DO-      ( -DO-:SEISMIC)................    -60265. (TON*M)
SLIDING FORCE  (BODY FORCE)....................    -303.40 (TON)
      -DO-      (WATER PRESSURE)...............       0.00 (TON)
      -DO-      (EARTHQUAKE)...................     -27.72 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209m 1:2.3 & 1:1.8 <MF-01>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
6	100.000	60.000	72.000	1.906	80545.	-42254.	1.674	78796.	-47077.
13	100.000	80.000	82.000	1.792	27690.	-15451.	1.581	27052.	-17116.
20	100.000	100.000	102.000	2.098	49605.	-23646.	1.825	48645.	-26661.
27	100.000	120.000	122.000	2.426	74002.	-30504.	2.078	72773.	-35026.
34	100.000	140.000	142.000	2.756	100169.	-36350.	2.323	98711.	-42492.
41	100.000	160.000	162.000	3.060	126945.	-41490.	2.539	125286.	-49347.
46	120.000	60.000	82.000	1.688	109012.	-64589.	1.495	106306.	-71087.
52	120.000	80.000	92.000	1.585	41746.	-26331.	1.410	40642.	-28820.
58	120.000	100.000	112.000	1.758	80797.	-45970.	1.552	78894.	-50818.
64	120.000	120.000	132.000	1.981	125983.	-63581.	1.733	123372.	-71181.
70	120.000	140.000	152.000	2.221	175300.	-78921.	1.922	172073.	-89529.
77	120.000	160.000	162.000	2.075	42406.	-20436.	1.805	41581.	-23037.
81	140.000	60.000	92.000	1.646	135044.	-82032.	1.461	131603.	-90079.
86	140.000	80.000	102.000	1.565	52611.	-33614.	1.393	51201.	-36749.
91	140.000	100.000	122.000	1.605	108199.	-67405.	1.427	105377.	-73859.
96	140.000	120.000	142.000	1.742	176766.	-101468.	1.540	172554.	-112060.
101	140.000	140.000	162.000	1.918	253284.	-132083.	1.682	247827.	-147307.
107	140.000	160.000	172.000	1.806	81551.	-45146.	1.592	79693.	-50071.
110	160.000	60.000	102.000	1.634	162887.	-99667.	1.451	158706.	-109373.
114	160.000	80.000	112.000	1.562	64478.	-41272.	1.391	62746.	-45114.
118	160.000	100.000	132.000	1.570	130113.	-82849.	1.398	126637.	-90602.
122	160.000	120.000	152.000	1.619	221982.	-137138.	1.438	216245.	-150383.
126	160.000	140.000	172.000	1.734	328115.	-189254.	1.533	320244.	-208895.
131	160.000	160.000	182.000	1.647	120240.	-73007.	1.461	117201.	-80208.
133	180.000	60.000	112.000	1.625	193437.	-119062.	1.443	188442.	-130589.
136	180.000	80.000	122.000	1.560	77874.	-49924.	1.389	75780.	-54565.
139	180.000	100.000	142.000	1.568	151864.	-96863.	1.395	147800.	-105913.

142	I	180.000	120.000	162.000	I	1.574	259857.	-165097.	I	1.401	252930.	-180582.
145	I	180.000	140.000	182.000	I	1.628	395727.	-243039.	I	1.446	385565.	-266657.
149	I	180.000	160.000	192.000	I	1.561	153601.	-98383.	I	1.390	149479.	-107544.
151	I	200.000	60.000	112.000	I	1.548	39922.	-25797.	I	1.378	38840.	-28176.
153	I	200.000	80.000	132.000	I	1.558	92885.	-59625.	I	1.387	90384.	-65160.
155	I	200.000	100.000	152.000	I	1.565	175693.	-112228.	I	1.394	170984.	-122698.
157	I	200.000	120.000	172.000	I	1.571	294439.	-187368.	I	1.399	286578.	-204913.
160	I	200.000	140.000	182.000	I	1.533	84668.	-55220.	I	1.366	82351.	-60265.
163	I	200.000	160.000	202.000	I	1.541	178968.	-116119.	I	1.373	174096.	-126783.
164	I	220.000	60.000	122.000	I	1.546	49281.	-31869.	I	1.377	47944.	-34805.
165	I	220.000	80.000	142.000	I	1.556	109596.	-70431.	I	1.386	106641.	-76962.
166	I	220.000	100.000	162.000	I	1.563	201686.	-128999.	I	1.392	196274.	-141017.
167	I	220.000	120.000	182.000	I	1.569	331635.	-211325.	I	1.397	322769.	-231087.
169	I	220.000	140.000	192.000	I	1.533	99478.	-64878.	I	1.367	96756.	-70805.
171	I	220.000	160.000	212.000	I	1.541	203312.	-131946.	I	1.373	197776.	-144060.
172	I	240.000	140.000	202.000	I	1.533	115920.	-75601.	I	1.367	112748.	-82509.
173	I	240.000	160.000	222.000	I	1.541	229748.	-149134.	I	1.373	223491.	-162824.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209 (U/S) 1:2.5 <MF-02>

NUMBER OF NODAL POINTS..... 26
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 5
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	0.000	0.000
2	0.000	20.000	0.000	0.000
3	0.000	140.000	0.000	0.000
4	-100.000	140.000	0.000	0.000

THE INTERVAL(X) 20.0
THE INTERVAL(Y) 20.0
THE INTERVAL(R) 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-198.9	-70.0	0.0	0.0
2	-1	-33.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	47.500	19.000
2	-101.250	-40.500
3	-123.000	-40.500
4	-131.000	-40.500
5	-198.850	-70.000
6	-134.000	-67.000
7	-120.000	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-102.000	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	226.700	-75.000
20	57.500	19.000
21	-113.077	-62.000
22	-33.025	-62.000
23	-200.000	13.000
24	39.348	13.000

25	44.143	8.000
26	46.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5	4	3	2	1	20	19

WATER LINE DATA (NODAL NUMBER)

23	24	25	26	19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	26
17	2	20	26	19	20

TRO DAM FUTURE EXT. RESERVOIR FULL WL.209 (U/S) 1:2.5 <MF-02>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-198.850	0	-	-	-	-	-	-	-
2	-198.850	-134.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-134.000	-131.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-131.000	-123.000	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-123.000	-120.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-120.000	-113.077	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-113.077	-102.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-102.000	-101.250	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-101.250	-41.025	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
10	-41.025	-33.025	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
11	-33.025	-15.525	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
12	-15.525	-9.525	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
13	-9.525	-6.000	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
14	-6.000	-0.050	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
15	-0.050	15.000	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
16	15.000	21.000	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
17	21.000	24.525	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
18	24.525	30.525	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
19	30.525	32.500	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
20	32.500	38.329	2	1	2.370	0.050	0.839	0.400	2.098	1.827
21	38.329	39.348	2	1	2.370	0.050	0.839	0.400	2.098	1.827
22	39.348	39.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
23	39.525	44.143	2	1	2.370	0.050	0.839	0.400	2.098	1.827
24	44.143	44.185	2	1	2.370	0.050	0.839	0.400	2.098	1.827
25	44.185	46.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
26	46.000	47.500	2	1	2.370	0.050	0.839	0.400	2.098	1.827
27	47.500	57.500	1	1	1.800	0.050	0.577	0.000	100.000	100.000
28	57.500	226.700	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209 (U/S) 1:2.5 <MF-02>
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CALCULATION NUMBER.........................        178

SLIPPE CIRCLE(X-COORDINATE).................      0.000 (M)
      -DO-    (Y-COORDINATE).................     60.000 (M)
      -DO-    (RADIUS).......................     62.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............      1.881
      -DO-    (SEISMIC CONDITION)............      1.509

RESISTANCE MOMENT(TOTAL:NORMAL )............     13511. (TON*M)
      -DO-         ( -DO-:SEISMIC)...........     13124. (TON*M)
RESISTANCE FORCE (COHESION).................      0.00 (TON)
      -DO-         (FRICTION:BODY FORCE    )...    587.87 (TON)
      -DO-         (  -DO-  :WATER PRESSURE)...     28.15 (TON)
      -DO-         (  -DO-  :PORE  PRESSURE)...   -398.09 (TON)
      -DO-         (  -DO-  :EARTHQUAKE    )...     -6.24 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............      7182. (TON*M)
      -DO-     ( -DO-:SEISMIC)...............      8699. (TON*M)
SLIDING FORCE (BODY FORCE)..................     216.74 (TON)
      -DO-     (WATER PRESSURE)..............    -100.91 (TON)
      -DO-     (EARTHQUAKE)..................      24.47 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM FUTURE EXT. RESERVOIR FULL WL.209 (U/S) 1:2.5 <MF-02>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	20.000	62.000	2.328	15713.	6751.	1.819	15223.	8371.
6	-100.000	40.000	82.000	2.288	32265.	14104.	1.792	31242.	17430.
9	-100.000	60.000	102.000	2.263	57466.	25399.	1.776	55623.	31322.
12	-100.000	80.000	122.000	2.246	93119.	41468.	1.765	90110.	51067.
15	-100.000	100.000	142.000	2.233	141031.	63146.	1.756	136448.	77684.
18	-100.000	120.000	162.000	2.224	203007.	91268.	1.750	196383.	112194.
21	-100.000	140.000	182.000	2.217	280853.	126667.	1.746	271660.	155618.
24	-80.000	20.000	62.000	2.348	46878.	19962.	1.832	45429.	24794.
28	-80.000	40.000	72.000	2.171	14078.	6486.	1.714	13608.	7937.
32	-80.000	60.000	92.000	2.171	29371.	13531.	1.714	28389.	16558.
36	-80.000	80.000	112.000	2.171	52992.	24412.	1.714	51220.	29875.
39	-80.000	100.000	142.000	2.161	265640.	122932.	1.697	257527.	151729.
43	-80.000	120.000	162.000	2.143	340122.	158682.	1.676	330160.	197022.
48	-80.000	140.000	172.000	2.098	185642.	88499.	1.659	179584.	108254.
52	-60.000	20.000	52.000	2.339	26423.	11295.	1.826	25603.	14019.
56	-60.000	40.000	72.000	2.289	52181.	22796.	1.793	50527.	28175.
60	-60.000	60.000	92.000	2.262	89153.	39415.	1.775	86292.	48605.
65	-60.000	80.000	102.000	2.151	25897.	12037.	1.702	25023.	14706.
69	-60.000	100.000	132.000	2.073	178791.	86268.	1.624	173572.	106847.
74	-60.000	120.000	152.000	2.091	235688.	112715.	1.631	229096.	140505.
80	-60.000	140.000	162.000	1.985	114783.	57834.	1.578	111179.	70451.
85	-40.000	20.000	42.000	2.326	12978.	5579.	1.818	12573.	6917.
90	-40.000	40.000	62.000	2.273	29696.	13066.	1.783	28748.	16127.
95	-40.000	60.000	82.000	2.247	55538.	24719.	1.765	53744.	30444.
100	-40.000	80.000	102.000	2.014	81460.	40438.	1.586	79045.	49853.
105	-40.000	100.000	122.000	1.965	113443.	57725.	1.540	110266.	71584.
111	-40.000	120.000	132.000	2.112	41991.	19879.	1.683	40598.	24126.

117	I	-40.000	140.000	152.000	I	1.927	63197.	32792.	I	1.543	61323.	39753.
123	I	-20.000	20.000	32.000	I	2.305	5079.	2203.	I	1.804	4919.	2727.
128	I	-20.000	40.000	62.000	I	2.232	52531.	23531.	I	1.704	51242.	30066.
135	I	-20.000	60.000	72.000	I	2.137	30042.	14058.	I	1.683	29093.	17282.
141	I	-20.000	80.000	92.000	I	1.915	46917.	24506.	I	1.514	45593.	30122.
147	I	-20.000	100.000	112.000	I	2.017	71144.	35278.	I	1.583	69295.	43784.
153	I	-20.000	120.000	132.000	I	2.375	111989.	47153.	I	1.849	109257.	59101.
159	I	-20.000	140.000	152.000	I	2.742	155878.	56846.	I	2.102	152434.	72533.
165	I	0.000	20.000	32.000	I	2.306	12233.	5306.	I	1.736	11964.	6893.
171	I	0.000	40.000	52.000	I	2.081	27947.	13428.	I	1.586	27283.	17208.
178	I	0.000	60.000	62.000	I	1.881	13511.	7182.	I	1.509	13124.	8699.
185	I	0.000	80.000	82.000	I	1.907	24290.	12737.	I	1.524	23692.	15550.
192	I	0.000	100.000	102.000	I	2.281	41948.	18394.	I	1.799	41024.	22799.
199	I	0.000	120.000	122.000	I	2.766	64359.	23269.	I	2.141	63113.	29478.
206	I	0.000	140.000	142.000	I	3.269	88439.	27054.	I	2.471	86929.	35184.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>

NUMBER OF NODAL POINTS..... 27
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 10
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	100.000	60.000
2	0.000	20.000	230.000	60.000
3	0.000	140.000	230.000	160.000
4	-100.000	140.000	100.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 1

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-30.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	43.700	19.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.025	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	222.900	-75.000
20	53.700	19.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	-40.500
24	-4.500	-40.500
25	36.200	13.000

26	41.537	8.000
27	43.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5	4	3	2	1	20	19

WATER LINE DATA (NODAL NUMBER)

23	4	3	2	24	16	25	26	27	19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	13	21	22	14
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	27
17	2	20	27	19	20

TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.750	0	-	-	-	-	-	-	-
2	-190.750	-125.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-125.900	-122.900	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-122.900	-114.900	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-93.150	-41.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
10	-41.025	-33.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
11	-33.025	-28.582	2	1	2.370	0.050	0.839	0.435	1.930	1.693
12	-28.582	-15.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
13	-15.525	-9.675	2	1	2.370	0.050	0.839	0.435	1.930	1.693
14	-9.675	-9.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
15	-9.525	-6.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
16	-6.000	-4.500	2	1	2.370	0.050	0.839	0.435	1.930	1.693
17	-4.500	-0.050	2	1	2.370	0.050	0.839	0.435	1.930	1.693
18	-0.050	15.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
19	15.000	21.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
20	21.000	24.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
21	24.525	30.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
22	30.525	36.200	2	1	2.370	0.050	0.839	0.435	1.930	1.693
23	36.200	39.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
24	39.025	41.537	2	1	2.370	0.050	0.839	0.435	1.930	1.693
25	41.537	41.574	2	1	2.370	0.050	0.839	0.435	1.930	1.693
26	41.574	43.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
27	43.000	43.700	2	1	2.370	0.050	0.839	0.435	1.930	1.693
28	43.700	53.700	1	1	1.800	0.050	0.577	0.000	100.000	100.000
29	53.700	222.900	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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**********************************************************************************
*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)  (NORMAL)              *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>
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CALCULATION NUMBER.........................      169

SLIPPE CIRCLE(X-COORDINATE).................      0.000 (M)
      -DO-    (Y-COORDINATE).................     40.000 (M)
      -DO-    (RADIUS).......................     52.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............      1.506
      -DO-    (SEISMIC CONDITION)............      1.294

RESISTANCE MOMENT(TOTAL:NORMAL )............     38118. (TON*M)
      -DO-        ( -DO-:SEISMIC)............     37365. (TON*M)
RESISTANCE FORCE (COHESION).................      0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...    907.88 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...     17.07 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...   -191.91 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...    -14.47 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............     25308. (TON*M)
      -DO-     ( -DO-:SEISMIC)...............     28865. (TON*M)
SLIDING FORCE (BODY FORCE)..................      473.24 (TON)
      -DO-     (WATER PRESSURE)..............      13.46 (TON)
      -DO-     (EARTHQUAKE)..................      68.40 (TON)
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****
* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-100.000	20.000	82.000	2.221	197778.	89055.	1.800	193873.	107688.
3	-100.000	40.000	102.000	2.117	314417.	148512.	1.743	307941.	176709.
6	-100.000	60.000	122.000	2.053	463235.	225592.	1.708	453498.	265546.
9	-100.000	80.000	142.000	1.965	625485.	318298.	1.646	612629.	372210.
12	-100.000	100.000	162.000	1.822	774594.	425113.	1.532	758542.	495096.
15	-100.000	120.000	182.000	1.734	953680.	550084.	1.460	932209.	638523.
18	-100.000	140.000	202.000	1.718	1177219.	685086.	1.448	1150365.	794358.
21	-80.000	20.000	82.000	2.075	287595.	138607.	1.723	281818.	163522.
24	-80.000	40.000	102.000	1.973	433884.	219909.	1.652	425342.	257513.
27	-80.000	60.000	122.000	1.803	573225.	317860.	1.516	561788.	370510.
31	-80.000	80.000	142.000	1.660	732632.	441399.	1.399	716240.	511862.
35	-80.000	100.000	162.000	1.648	953681.	578546.	1.392	931870.	669532.
39	-80.000	120.000	182.000	1.725	1207416.	699765.	1.453	1180776.	812801.
45	-80.000	140.000	182.000	1.778	585457.	329313.	1.543	573208.	371604.
47	-60.000	20.000	82.000	1.912	351646.	183920.	1.602	345275.	215476.
51	-60.000	40.000	102.000	1.644	482687.	293527.	1.387	472602.	340780.
55	-60.000	60.000	122.000	1.585	680232.	429236.	1.342	664876.	495569.
59	-60.000	80.000	142.000	1.686	932090.	552889.	1.423	911805.	640662.
66	-60.000	100.000	132.000	1.758	246275.	140054.	1.533	241518.	157509.
71	-60.000	120.000	152.000	1.709	320724.	187675.	1.484	314260.	211803.
77	-60.000	140.000	162.000	1.770	159707.	90247.	1.547	156501.	101176.
78	-40.000	20.000	82.000	1.564	380496.	243215.	1.322	372775.	282063.
83	-40.000	40.000	102.000	1.641	612957.	373602.	1.390	600002.	431613.
91	-40.000	60.000	92.000	1.765	188797.	106954.	1.530	185401.	121179.
96	-40.000	80.000	112.000	1.730	275162.	159097.	1.494	269323.	180280.
102	-40.000	100.000	122.000	1.611	154320.	95782.	1.400	151309.	108070.
107	-40.000	120.000	142.000	1.711	219368.	128227.	1.476	214810.	145516.
114	-40.000	140.000	152.000	1.744	89649.	51413.	1.518	87895.	57919.

117	I	-20.000	20.000	62.000	I	1.761	183813.	104375.	I	1.502	180576.	120218.
124	I	-20.000	40.000	72.000	I	1.693	166609.	98419.	I	1.453	163165.	112309.
131	I	-20.000	60.000	82.000	I	1.617	118710.	73426.	I	1.394	116226.	83397.
138	I	-20.000	80.000	92.000	I	1.628	65964.	40511.	I	1.416	64688.	45688.
144	I	-20.000	100.000	112.000	I	1.716	99962.	58256.	I	1.479	97979.	66253.
150	I	-20.000	120.000	132.000	I	1.908	143884.	75411.	I	1.628	141134.	86686.
157	I	-20.000	140.000	142.000	I	1.843	40655.	22062.	I	1.590	39923.	25108.
162	I	0.000	20.000	42.000	I	1.566	48255.	30817.	I	1.330	47214.	35498.
169	I	0.000	40.000	52.000	I	1.506	38118.	25308.	I	1.294	37365.	28865.
177	I	0.000	60.000	62.000	I	1.680	20254.	12059.	I	1.462	19869.	13588.
184	I	0.000	80.000	82.000	I	1.734	34476.	19884.	I	1.491	33848.	22707.
191	I	0.000	100.000	102.000	I	2.055	56564.	27520.	I	1.741	55586.	31926.
198	I	0.000	120.000	122.000	I	2.383	81022.	33996.	I	1.987	79764.	40140.
205	I	0.000	140.000	142.000	I	2.719	106925.	39324.	I	2.229	105435.	47304.

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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)          *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>
-----------------------------------------------------------------------------

CALCULATION NUMBER.....................        160

SLIPPE CIRCLE(X-COORDINATE).............     200.000 (M)
      -DO-    (Y-COORDINATE).............     140.000 (M)
      -DO-    (RADIUS)...................     182.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........        1.533
      -DO-    (SEISMIC CONDITION)........        1.366

RESISTANCE MOMENT(TOTAL:NORMAL )........       84668. (TON*M)
      -DO-        ( -DO-:SEISMIC).....       82351. (TON*M)
RESISTANCE FORCE (COHESION).............         0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...  465.21 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...    0.00 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...    0.00 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...  -12.73 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     -55220. (TON*M)
      -DO-    ( -DO-:SEISMIC).........     -60265. (TON*M)
SLIDING FORCE (BODY FORCE)..............     -303.40 (TON)
      -DO-    (WATER PRESSURE)........        0.00 (TON)
      -DO-    (EARTHQUAKE)............      -27.72 (TON)
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****
* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 1:2.3 & 1:1.8 <MF-03>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
6	100.000	60.000	72.000	1.906	80545.	-42254.	1.674	78796.	-47077.
13	100.000	80.000	82.000	1.792	27690.	-15451.	1.581	27052.	-17116.
20	100.000	100.000	102.000	2.098	49605.	-23646.	1.825	48645.	-26661.
27	100.000	120.000	122.000	2.426	74002.	-30504.	2.078	72773.	-35026.
34	100.000	140.000	142.000	2.756	100169.	-36350.	2.323	98711.	-42492.
41	100.000	160.000	162.000	3.069	127195.	-41443.	2.547	125538.	-49294.
46	120.000	60.000	82.000	1.688	109012.	-64589.	1.495	106306.	-71087.
52	120.000	80.000	92.000	1.585	41746.	-26331.	1.410	40642.	-28820.
58	120.000	100.000	112.000	1.758	80797.	-45970.	1.552	78894.	-50818.
64	120.000	120.000	132.000	1.981	125983.	-63581.	1.733	123372.	-71181.
70	120.000	140.000	152.000	2.221	175300.	-78921.	1.922	172073.	-89529.
77	120.000	160.000	162.000	2.075	42406.	-20436.	1.805	41581.	-23037.
81	140.000	60.000	92.000	1.646	135044.	-82032.	1.461	131603.	-90079.
86	140.000	80.000	102.000	1.565	52611.	-33614.	1.393	51201.	-36749.
91	140.000	100.000	122.000	1.605	108199.	-67405.	1.427	105377.	-73859.
96	140.000	120.000	142.000	1.742	176766.	-101468.	1.540	172554.	-112060.
101	140.000	140.000	162.000	1.918	253284.	-132083.	1.682	247827.	-147307.
107	140.000	160.000	172.000	1.806	81551.	-45146.	1.592	79693.	-50071.
110	160.000	60.000	102.000	1.634	162887.	-99667.	1.451	158706.	-109373.
114	160.000	80.000	112.000	1.562	64478.	-41272.	1.391	62746.	-45114.
118	160.000	100.000	132.000	1.570	130113.	-82849.	1.398	126637.	-90602.
122	160.000	120.000	152.000	1.619	221982.	-137138.	1.438	216245.	-150383.
126	160.000	140.000	172.000	1.734	328115.	-189254.	1.533	320244.	-208895.
131	160.000	160.000	182.000	1.647	120240.	-73007.	1.461	117201.	-80208.
133	180.000	60.000	112.000	1.625	193437.	-119062.	1.443	188442.	-130589.
136	180.000	80.000	122.000	1.560	77874.	-49924.	1.389	75780.	-54565.
139	180.000	100.000	142.000	1.568	151864.	-96863.	1.395	147800.	-105913.
142	180.000	120.000	162.000	1.574	259857.	-165097.	1.401	252930.	-180582.

145	I	180.000	140.000	182.000	I	1.628	395727.	-243039.	I	1.446	385565.	-266657.
149	I	180.000	160.000	192.000	I	1.561	153601.	-98383.	I	1.390	149479.	-107544.
151	I	200.000	60.000	112.000	I	1.548	39922.	-25797.	I	1.378	38840.	-28176.
153	I	200.000	80.000	132.000	I	1.558	92885.	-59625.	I	1.387	90384.	-65160.
155	I	200.000	100.000	152.000	I	1.565	175693.	-112228.	I	1.394	170984.	-122698.
157	I	200.000	120.000	172.000	I	1.571	294439.	-187368.	I	1.399	286578.	-204913.
160	I	200.000	140.000	182.000	I	1.533	84668.	-55220.	I	1.366	82351.	-60265.
163	I	200.000	160.000	202.000	I	1.541	178968.	-116119.	I	1.373	174096.	-126783.
164	I	220.000	60.000	122.000	I	1.546	49281.	-31869.	I	1.377	47944.	-34805.
165	I	220.000	80.000	142.000	I	1.556	109596.	-70431.	I	1.386	106641.	-76962.
166	I	220.000	100.000	162.000	I	1.563	201686.	-128999.	I	1.392	196274.	-141017.
167	I	220.000	120.000	182.000	I	1.569	331635.	-211325.	I	1.397	322769.	-231087.
169	I	220.000	140.000	192.000	I	1.533	99478.	-64878.	I	1.367	96756.	-70805.
171	I	220.000	160.000	212.000	I	1.541	203312.	-131946.	I	1.373	197776.	-144060.
172	I	240.000	140.000	202.000	I	1.533	115920.	-75601.	I	1.367	112748.	-82509.
173	I	240.000	160.000	222.000	I	1.541	229748.	-149134.	I	1.373	223491.	-162824.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 (U/S) 1:2.5 <MF-04>

NUMBER OF NODAL POINTS..... 27
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 10
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	0.000	0.000
2	0.000	20.000	0.000	0.000
3	0.000	140.000	0.000	0.000
4	-100.000	140.000	0.000	0.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-198.9	-70.0	0.0	0.0
2	-1	-33.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	47.500	19.000
2	-101.250	-40.500
3	-123.000	-40.500
4	-131.000	-40.500
5	-198.850	-70.000
6	-134.000	-67.000
7	-120.000	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-102.000	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	226.700	-75.000
20	57.500	19.000
21	-113.077	-62.000
22	-33.025	-62.000
23	-200.000	-40.500
24	-3.706	-40.500
25	39.348	13.000

26	44.143	8.000
27	46.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

WATER LINE DATA (NODAL NUMBER)

23 4 3 2 24 16 25 26 27 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	13	21	22	14
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	27
17	2	20	27	19	20

TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 (U/S) 1:2.5 <MF-04>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-198.850	0	-	-	-	-	-	-	-
2	-198.850	-134.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-134.000	-131.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-131.000	-123.000	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-123.000	-120.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-120.000	-113.077	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-113.077	-102.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-102.000	-101.250	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-101.250	-41.025	2	1	2.370	0.050	0.839	0.400	2.098	1.827
10	-41.025	-33.025	2	1	2.370	0.050	0.839	0.400	2.098	1.827
11	-33.025	-28.582	2	1	2.370	0.050	0.839	0.400	2.098	1.827
12	-28.582	-15.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
13	-15.525	-9.675	2	1	2.370	0.050	0.839	0.400	2.098	1.827
14	-9.675	-9.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
15	-9.525	-6.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
16	-6.000	-3.706	2	1	2.370	0.050	0.839	0.400	2.098	1.827
17	-3.706	-0.057	2	1	2.370	0.050	0.839	0.400	2.098	1.827
18	-0.057	-0.050	2	1	2.370	0.050	0.839	0.400	2.098	1.827
19	-0.050	15.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
20	15.000	21.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
21	21.000	24.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
22	24.525	30.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
23	30.525	39.348	2	1	2.370	0.050	0.839	0.400	2.098	1.827
24	39.348	39.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
25	39.525	44.143	2	1	2.370	0.050	0.839	0.400	2.098	1.827
26	44.143	44.185	2	1	2.370	0.050	0.839	0.400	2.098	1.827
27	44.185	46.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
28	46.000	47.500	2	1	2.370	0.050	0.839	0.400	2.098	1.827
29	47.500	57.500	1	1	1.800	0.050	0.577	0.000	100.000	100.000
30	57.500	226.700	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)  (NORMAL)           *
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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 (U/S) 1:2.5 <MF-04>
-----------------------------------------------------------------------------

CALCULATION NUMBER.....................        171

SLIPPE CIRCLE(X-COORDINATE).............      0.000 (M)
      -DO-   (Y-COORDINATE).............     40.000 (M)
      -DO-   (RADIUS)...................     52.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........      1.620
      -DO-   (SEISMIC CONDITION)........      1.386

RESISTANCE MOMENT(TOTAL:NORMAL )........     37765. (TON*M)
      -DO-       ( -DO-:SEISMIC)........     37130. (TON*M)
RESISTANCE FORCE (COHESION).............      0.00 (TON)
      -DO-       (FRICTION:BODY FORCE   )...  871.20 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...   8.63 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)... -153.57 (TON)
      -DO-       (  -DO-  :EARTHQUAKE   )...  -12.21 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     23307. (TON*M)
      -DO-    ( -DO-:SEISMIC).........     26790. (TON*M)
SLIDING FORCE (BODY FORCE)..............     438.07 (TON)
      -DO-    (WATER PRESSURE)........      10.13 (TON)
      -DO-    (EARTHQUAKE)............      66.98 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM FUTURE EXT. RAPID DRAWDOWN WL.155.5 (U/S) 1:2.5 <MF-04>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	20.000	62.000	2.226	23360.	10496.	1.914	22920.	11972.
4	-100.000	40.000	102.000	2.200	346190.	157332.	1.805	339441.	188009.
7	-100.000	60.000	122.000	2.151	503044.	233842.	1.780	493073.	276954.
10	-100.000	80.000	142.000	2.077	673701.	324329.	1.729	660669.	382022.
13	-100.000	100.000	162.000	1.953	834309.	427222.	1.631	818215.	501534.
16	-100.000	120.000	182.000	1.847	1011168.	547504.	1.546	990302.	640737.
19	-100.000	140.000	202.000	1.811	1240064.	684580.	1.518	1213391.	799303.
22	-80.000	20.000	82.000	2.189	310509.	141854.	1.810	304658.	168355.
25	-80.000	40.000	102.000	2.095	464276.	221651.	1.743	455720.	261397.
29	-80.000	60.000	122.000	1.940	613451.	316191.	1.621	602119.	371496.
33	-80.000	80.000	142.000	1.786	775908.	434446.	1.496	759976.	507974.
37	-80.000	100.000	162.000	1.743	996709.	571820.	1.463	975255.	666425.
41	-80.000	120.000	182.000	1.799	1256269.	698356.	1.507	1229779.	815813.
45	-80.000	140.000	202.000	1.898	1537916.	810199.	1.583	1506905.	951666.
49	-60.000	20.000	82.000	2.065	373603.	180911.	1.718	367308.	213811.
53	-60.000	40.000	102.000	1.798	513403.	285586.	1.506	503602.	334493.
57	-60.000	60.000	122.000	1.685	704949.	418283.	1.418	690042.	486593.
61	-60.000	80.000	142.000	1.755	960827.	547429.	1.475	940792.	637808.
67	-60.000	100.000	152.000	1.883	884869.	469886.	1.600	867319.	542086.
74	-60.000	120.000	152.000	1.847	340628.	184466.	1.595	334546.	209812.
79	-60.000	140.000	172.000	1.907	451187.	236621.	1.639	442373.	269966.
81	-40.000	20.000	82.000	1.741	399150.	229265.	1.456	391927.	269251.
86	-40.000	40.000	102.000	1.732	627047.	361932.	1.458	614565.	421400.
92	-40.000	60.000	112.000	1.882	630251.	334884.	1.596	618293.	387311.
99	-40.000	80.000	112.000	1.876	285570.	152220.	1.610	280112.	174036.
105	-40.000	100.000	122.000	1.774	164115.	92502.	1.533	161184.	105126.
110	-40.000	120.000	142.000	1.803	223920.	124206.	1.549	219631.	141796.
116	-40.000	140.000	162.000	1.922	300911.	156532.	1.641	295122.	179850.

119	I	-20.000	20.000	72.000	I	1.898	331666.	174714.	I	1.599	326243.	203983.
127	I	-20.000	40.000	72.000	I	1.842	170312.	92467.	I	1.568	167120.	106571.
134	I	-20.000	60.000	82.000	I	1.736	119952.	69114.	I	1.487	117730.	79170.
141	I	-20.000	80.000	92.000	I	1.817	68637.	37782.	I	1.572	67421.	42886.
147	I	-20.000	100.000	112.000	I	1.768	97146.	54936.	I	1.520	95406.	62786.
153	I	-20.000	120.000	132.000	I	1.945	142470.	73238.	I	1.657	139849.	84392.
159	I	-20.000	140.000	152.000	I	2.140	191172.	89348.	I	1.804	187840.	104104.
164	I	0.000	20.000	42.000	I	1.723	48559.	28177.	I	1.451	47623.	32831.
171	I	0.000	40.000	52.000	I	1.620	37765.	23307.	I	1.386	37130.	26790.
177	I	0.000	60.000	72.000	I	1.802	75881.	42119.	I	1.531	74332.	48542.
185	I	0.000	80.000	82.000	I	1.812	32887.	18149.	I	1.557	32322.	20755.
192	I	0.000	100.000	102.000	I	2.021	52728.	26093.	I	1.715	51838.	30231.
199	I	0.000	120.000	122.000	I	2.327	77396.	33258.	I	1.947	76186.	39140.
206	I	0.000	140.000	142.000	I	2.638	103746.	39327.	I	2.173	102270.	47071.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. MEDIUM WL:174 1:2.3 & 1:1.8 <MF-05>

NUMBER OF NODAL POINTS..... 27
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 7
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	------GROUP(1)------		------GROUP(2)------	
	X-COOR	Y-COOR	X-COOR	Y-COOR
1	-100.000	60.000	100.000	60.000
2	0.000	60.000	230.000	60.000
3	0.000	180.000	230.000	160.000
4	-100.000	180.000	100.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 1

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-30.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	43.700	19.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.500	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.025	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	222.900	-75.000
20	53.700	19.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	-22.000
24	-0.945	-22.000
25	36.200	13.000

26	41.537	8.000
27	43.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5	4	3	2	1	20	19

WATER LINE DATA (NODAL NUMBER)

23	24	16	25	26	27	19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	13	21	22	14
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	27
17	2	20	27	19	20

TRO DAM FUTURE EXT. MEDIUM WL.174 1:2.3 & 1:1.8 <MF-05>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.500	0	-	-	-	-	-	-	-
2	-190.500	-125.900	2	-1	2.370	0.050	0.839	0.436	1.923	1.544
3	-125.900	-122.900	2	-1	2.370	0.050	0.839	0.436	1.923	1.544
4	-122.900	-114.900	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-93.150	-50.600	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
10	-50.600	-41.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
11	-41.025	-33.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
12	-33.025	-27.343	2	1	2.370	0.050	0.839	0.435	1.930	1.693
13	-27.343	-15.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
14	-15.525	-11.530	2	1	2.370	0.050	0.839	0.435	1.930	1.693
15	-11.530	-9.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
16	-9.525	-6.900	2	1	2.370	0.050	0.839	0.435	1.930	1.693
17	-6.900	-6.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
18	-6.000	-0.945	2	1	2.370	0.050	0.839	0.435	1.930	1.693
19	-0.945	-0.050	2	1	2.370	0.050	0.839	0.435	1.930	1.693
20	-0.050	15.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
21	15.000	21.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
22	21.000	24.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
23	24.525	30.525	2	1	2.370	0.050	0.839	0.435	1.930	1.693
24	30.525	36.200	2	1	2.370	0.050	0.839	0.435	1.930	1.693
25	36.200	39.025	2	1	2.370	0.050	0.839	0.435	1.930	1.693
26	39.025	41.537	2	1	2.370	0.050	0.839	0.435	1.930	1.693
27	41.537	41.574	2	1	2.370	0.050	0.839	0.435	1.930	1.693
28	41.574	43.000	2	1	2.370	0.050	0.839	0.435	1.930	1.693
29	43.000	43.700	2	1	2.370	0.050	0.839	0.435	1.930	1.693
30	43.700	53.700	1	1	1.800	0.050	0.577	0.000	100.000	100.000
31	53.700	222.900	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                          STABILITY ANALYSIS                                *
*                (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)                   *
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TRO DAM FUTURE EXT. MEDIUM WL.174 1:2.3 & 1:1.8 <MF-05>
------------------------------------------------------------------------------

CALCULATION NUMBER..........................        88

SLIPPE CIRCLE(X-COORDINATE)..................     -40.000 (M)
      -DO-    (Y-COORDINATE).................      60.000 (M)
      -DO-    (RADIUS).......................     102.000 (M)

SAFETY FACTOR(NORMAL  CONDITION).............       1.523
      -DO-    (SEISMIC CONDITION)............       1.289

RESISTANCE MOMENT(TOTAL:NORMAL )............      306414. (TON*M)
      -DO-       ( -DO-:SEISMIC)............      298710. (TON*M)
RESISTANCE FORCE (COHESION).................         0.00 (TON)
      -DO-       (FRICTION:BODY FORCE     )...    4796.45 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...     167.20 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)...   -1959.59 (TON)
      -DO-       (  -DO-  :EARTHQUAKE     )...    -75.54 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............      201143. (TON*M)
      -DO-    ( -DO-:SEISMIC)...............      231684. (TON*M)
SLIDING FORCE (BODY FORCE)..................      1973.82 (TON)
      -DO-    (WATER PRESSURE)..............        -1.82 (TON)
      -DO-    (EARTHQUAKE)..................       299.42 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. MEDIUM WL.174 1:2.3 & 1:1.8 <MF-05>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	60.000	102.000	2.032	43973.	21637.	1.652	42636.	25801.
6	-100.000	80.000	122.000	1.947	81635.	41939.	1.613	79279.	49156.
7	-100.000	100.000	162.000	1.816	668607.	368110.	1.481	651850.	440243.
10	-100.000	120.000	182.000	1.722	831111.	482723.	1.410	808894.	573728.
13	-100.000	140.000	202.000	1.715	1040245.	606385.	1.409	1012629.	718601.
18	-100.000	160.000	202.000	1.689	393033.	232728.	1.442	383397.	265870.
22	-100.000	180.000	222.000	1.604	478009.	298084.	1.368	466286.	340947.
24	-80.000	60.000	122.000	1.814	493478.	272028.	1.475	481534.	326402.
28	-80.000	80.000	142.000	1.666	639683.	384039.	1.364	622774.	456586.
32	-80.000	100.000	162.000	1.665	848006.	509232.	1.370	825680.	602629.
38	-80.000	120.000	162.000	1.576	369796.	234699.	1.342	360505.	268641.
42	-80.000	140.000	182.000	1.576	479636.	304327.	1.340	467058.	348630.
47	-80.000	160.000	192.000	1.626	289647.	178097.	1.408	283217.	201194.
51	-80.000	180.000	212.000	1.627	367756.	225993.	1.403	359491.	256308.
53	-60.000	60.000	122.000	1.606	603628.	375826.	1.324	588003.	444001.
59	-60.000	80.000	122.000	1.551	306012.	197242.	1.316	298366.	226807.
63	-60.000	100.000	142.000	1.552	422535.	272208.	1.316	411343.	312554.
69	-60.000	120.000	152.000	1.560	284136.	182185.	1.341	277600.	207002.
74	-60.000	140.000	172.000	1.640	384704.	234624.	1.404	375618.	267466.
80	-60.000	160.000	182.000	1.701	205570.	120855.	1.479	201492.	136261.
85	-60.000	180.000	202.000	1.784	270442.	151619.	1.540	265053.	172085.
88	-40.000	60.000	102.000	1.523	306414.	201143.	1.289	298710.	231684.
94	-40.000	80.000	112.000	1.548	241726.	156175.	1.325	235855.	178004.
100	-40.000	100.000	122.000	1.611	154320.	95782.	1.400	151309.	108070.
105	-40.000	120.000	142.000	1.710	219340.	128289.	1.475	214783.	145578.
112	-40.000	140.000	152.000	1.744	89649.	51413.	1.518	87895.	57919.
118	-40.000	160.000	172.000	1.799	123778.	68807.	1.553	121414.	78179.
124	-40.000	180.000	192.000	1.946	166082.	85325.	1.666	163030.	97861.

129	I	-20.000	60.000	82.000	I	1.618	118719.	73369.	I	1.395	116235.	83340.
136	I	-20.000	80.000	92.000	I	1.628	65964.	40511.	I	1.416	64688.	45688.
142	I	-20.000	100.000	112.000	I	1.715	99963.	58279.	I	1.478	97979.	66276.
148	I	-20.000	120.000	132.000	I	1.911	143882.	75296.	I	1.630	141133.	86571.
155	I	-20.000	140.000	142.000	I	1.843	40655.	22062.	I	1.590	39923.	25108.
162	I	-20.000	160.000	162.000	I	2.012	59745.	29698.	I	1.716	58731.	34226.
169	I	-20.000	180.000	182.000	I	2.235	81842.	36616.	I	1.884	80546.	42753.
176	I	0.000	60.000	62.000	I	1.680	20254.	12059.	I	1.462	19869.	13588.
183	I	0.000	80.000	82.000	I	1.734	34476.	19884.	I	1.491	33848.	22707.
190	I	0.000	100.000	102.000	I	2.055	56564.	27520.	I	1.741	55586.	31926.
197	I	0.000	120.000	122.000	I	2.384	81023.	33993.	I	1.987	79765.	40137.
204	I	0.000	140.000	142.000	I	2.719	106925.	39324.	I	2.229	105435.	47304.
211	I	0.000	160.000	162.000	I	3.054	133957.	43866.	I	2.461	132272.	53754.
219	I	0.000	180.000	172.000	I	2.736	22571.	8251.	I	2.241	22297.	9949.

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**********************************************************************************
*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
**********************************************************************************

TRO DAM FUTURE EXT. MEDIUM WL.174 1:2.3 & 1:1.8 <MF-05>
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CALCULATION NUMBER.........................       160

SLIPPE CIRCLE(X-COORDINATE).................     200.000 (M)
      -DO-    (Y-COORDINATE).................     140.000 (M)
      -DO-    (RADIUS).......................     182.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............       1.533
      -DO-    (SEISMIC CONDITION)............       1.366

RESISTANCE MOMENT(TOTAL:NORMAL )............       84668. (TON*M)
      -DO-        ( -DO-:SEISMIC)............       82351. (TON*M)
RESISTANCE FORCE (COHESION).................         0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...      465.21 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...        0.00 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...        0.00 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...      -12.73 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............     -55220. (TON*M)
      -DO-    ( -DO-:SEISMIC)...............     -60265. (TON*M)
SLIDING FORCE (BODY FORCE)..................     -303.40 (TON)
      -DO-    (WATER PRESSURE)..............        0.00 (TON)
      -DO-    (EARTHQUAKE)..................      -27.72 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. MEDIUM WL.174 1:2.3 & 1:1.8 <MF-05>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
6	100.000	60.000	72.000	1.906	80545.	-42254.	1.674	78796.	-47077.
13	100.000	80.000	82.000	1.792	27690.	-15451.	1.581	27052.	-17116.
20	100.000	100.000	102.000	2.098	49605.	-23646.	1.825	48645.	-26661.
27	100.000	120.000	122.000	2.426	74002.	-30504.	2.078	72773.	-35026.
34	100.000	140.000	142.000	2.756	100169.	-36350.	2.323	98711.	-42492.
41	100.000	160.000	162.000	3.069	127195.	-41443.	2.547	125538.	-49294.
46	120.000	60.000	82.000	1.688	109012.	-64589.	1.495	106306.	-71087.
52	120.000	80.000	92.000	1.585	41746.	-26331.	1.410	40642.	-28820.
58	120.000	100.000	112.000	1.758	80797.	-45970.	1.552	78894.	-50818.
64	120.000	120.000	132.000	1.981	125983.	-63581.	1.733	123372.	-71181.
70	120.000	140.000	152.000	2.221	175300.	-78921.	1.922	172073.	-89529.
77	120.000	160.000	162.000	2.075	42406.	-20436.	1.805	41581.	-23037.
81	140.000	60.000	92.000	1.646	135044.	-82032.	1.461	131603.	-90079.
86	140.000	80.000	102.000	1.565	52611.	-33614.	1.393	51201.	-36749.
91	140.000	100.000	122.000	1.605	108199.	-67405.	1.427	105377.	-73859.
96	140.000	120.000	142.000	1.742	176766.	-101468.	1.540	172554.	-112060.
101	140.000	140.000	162.000	1.918	253284.	-132083.	1.682	247827.	-147307.
107	140.000	160.000	172.000	1.806	81551.	-45146.	1.592	79693.	-50071.
110	160.000	60.000	102.000	1.634	162887.	-99667.	1.451	158706.	-109373.
114	160.000	80.000	112.000	1.562	64478.	-41272.	1.391	62746.	-45114.
118	160.000	100.000	132.000	1.570	130113.	-82849.	1.398	126637.	-90602.
122	160.000	120.000	152.000	1.619	221982.	-137138.	1.438	216245.	-150383.
126	160.000	140.000	172.000	1.734	328115.	-189254.	1.533	320244.	-208895.
131	160.000	160.000	182.000	1.647	120240.	-73007.	1.461	117201.	-80208.
133	180.000	60.000	112.000	1.625	193437.	-119062.	1.443	188442.	-130589.
136	180.000	80.000	122.000	1.560	77874.	-49924.	1.389	75780.	-54565.
139	180.000	100.000	142.000	1.568	151864.	-96863.	1.395	147800.	-105913.
142	180.000	120.000	162.000	1.574	259857.	-165097.	1.401	252930.	-180582.

145	I	180.000	140.000	182.000	I	1.628	395727.	-243039.	I	1.446	385565.	-266657.
149	I	180.000	160.000	192.000	I	1.561	153601.	-98383.	I	1.390	149479.	-107544.
151	I	200.000	60.000	112.000	I	1.548	39922.	-25797.	I	1.378	38840.	-28176.
153	I	200.000	80.000	132.000	I	1.558	92885.	-59625.	I	1.387	90384.	-65160.
155	I	200.000	100.000	152.000	I	1.565	175693.	-112228.	I	1.394	170984.	-122698.
157	I	200.000	120.000	172.000	I	1.571	294439.	-187368.	I	1.399	286578.	-204913.
160	I	200.000	140.000	182.000	I	1.533	84668.	-55220.	I	1.366	82351.	-60265.
163	I	200.000	160.000	202.000	I	1.541	178968.	-116119.	I	1.373	174096.	-126783.
164	I	220.000	60.000	122.000	I	1.546	49281.	-31869.	I	1.377	47944.	-34805.
165	I	220.000	80.000	142.000	I	1.556	109596.	-70431.	I	1.386	106641.	-76962.
166	I	220.000	100.000	162.000	I	1.563	201686.	-128999.	I	1.392	196274.	-141017.
167	I	220.000	120.000	182.000	I	1.569	331635.	-211325.	I	1.397	322769.	-231087.
169	I	220.000	140.000	192.000	I	1.533	99478.	-64878.	I	1.367	96756.	-70805.
171	I	220.000	160.000	212.000	I	1.541	203312.	-131946.	I	1.373	197776.	-144060.
172	I	240.000	140.000	202.000	I	1.533	115920.	-75601.	I	1.367	112748.	-82509.
173	I	240.000	160.000	222.000	I	1.541	229748.	-149134.	I	1.373	223491.	-162824.

****
* LIST OF INPUT DATA *
****

TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>

NUMBER OF NODAL POINTS..... 27
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 7
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0500
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1)		GROUP(2)	
	X-COOR	Y-COOR	X-COOR	Y-COOR
1	-100.000	20.000	0.000	0.000
2	0.000	20.000	0.000	0.000
3	0.000	140.000	0.000	0.000
4	-100.000	140.000	0.000	0.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-198.9	-70.0	0.0	0.0
2	-1	-33.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	47.500	19.000
2	-101.250	-40.500
3	-123.000	-40.500
4	-131.000	-40.500
5	-198.850	-70.000
6	-134.000	-67.000
7	-120.000	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-102.000	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	226.700	-75.000
20	57.500	19.000
21	-113.077	-62.000
22	-33.025	-62.000
23	-200.000	-22.000
24	-0.945	-22.000
25	39.348	13.000

26	44.143	8.000
27	46.000	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

WATER LINE DATA (NODAL NUMBER)

23 24 16 25 26 27 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	27
17	2	20	27	19	20

TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-198.850	0	-	-	-	-	-	-	-
2	-198.850	-134.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
3	-134.000	-131.000	2	-1	2.370	0.050	0.839	0.435	1.930	1.549
4	-131.000	-123.000	5	-1	1.800	0.050	0.577	0.000	100.000	100.000
5	-123.000	-120.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
6	-120.000	-113.077	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
7	-113.077	-102.000	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
8	-102.000	-101.250	2	-1	2.370	0.050	0.839	0.000	100.000	100.000
9	-101.250	-55.000	2	-1	2.370	0.050	0.839	0.400	2.098	1.665
10	-55.000	-41.025	2	1	2.370	0.050	0.839	0.400	2.098	1.827
11	-41.025	-33.025	2	1	2.370	0.050	0.839	0.400	2.098	1.827
12	-33.025	-29.327	2	1	2.370	0.050	0.839	0.400	2.098	1.827
13	-29.327	-15.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
14	-15.525	-11.530	2	1	2.370	0.050	0.839	0.400	2.098	1.827
15	-11.530	-9.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
16	-9.525	-6.900	2	1	2.370	0.050	0.839	0.400	2.098	1.827
17	-6.900	-6.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
18	-6.000	-0.945	2	1	2.370	0.050	0.839	0.400	2.098	1.827
19	-0.945	-0.050	2	1	2.370	0.050	0.839	0.400	2.098	1.827
20	-0.050	15.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
21	15.000	21.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
22	21.000	24.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
23	24.525	30.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
24	30.525	39.348	2	1	2.370	0.050	0.839	0.400	2.098	1.827
25	39.348	39.525	2	1	2.370	0.050	0.839	0.400	2.098	1.827
26	39.525	44.143	2	1	2.370	0.050	0.839	0.400	2.098	1.827
27	44.143	44.185	2	1	2.370	0.050	0.839	0.400	2.098	1.827
28	44.185	46.000	2	1	2.370	0.050	0.839	0.400	2.098	1.827
29	46.000	47.500	2	1	2.370	0.050	0.839	0.400	2.098	1.827
30	47.500	57.500	1	1	1.800	0.050	0.577	0.000	100.000	100.000
31	57.500	226.700	2	1	2.370	0.050	0.839	0.556	1.510	1.347

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*                          STABILITY ANALYSIS                               *
*                (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)                  *
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TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>
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CALCULATION NUMBER..........................        171

SLIPPE CIRCLE(X-COORDINATE)..................       0.000  (M)
      -DO-    (Y-COORDINATE).................      40.000  (M)
      -DO-    (RADIUS).......................      52.000  (M)

SAFETY FACTOR(NORMAL  CONDITION).............       1.620
      -DO-    (SEISMIC CONDITION)............       1.386

RESISTANCE MOMENT(TOTAL:NORMAL )............     37765.  (TON*M)
      -DO-         ( -DO-:SEISMIC)...........     37130.  (TON*M)
RESISTANCE FORCE (COHESION)..................       0.00  (TON)
      -DO-         (FRICTION:BODY FORCE    )...   871.20  (TON)
      -DO-         (  -DO-  :WATER PRESSURE)...     8.63  (TON)
      -DO-         (  -DO-  :PORE  PRESSURE)...  -153.57  (TON)
      -DO-         (  -DO-  :EARTHQUAKE    )...   -12.21  (TON)

SLIDING MOMENT(TOTAL:NORMAL )................    23307.  (TON*M)
      -DO-     ( -DO-:SEISMIC)...............    26790.  (TON*M)
SLIDING FORCE (BODY FORCE)...................    438.07  (TON)
      -DO-     (WATER PRESSURE)..............     10.13  (TON)
      -DO-     (EARTHQUAKE)..................     66.98  (TON)
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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)  (SEISMIC)          *
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TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>
-----------------------------------------------------------------------------

CALCULATION NUMBER.....................        93

SLIPPE CIRCLE(X-COORDINATE).............    -40.000 (M)
      -DO-   (Y-COORDINATE).............     60.000 (M)
      -DO-   (RADIUS)...................    102.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........      1.640
      -DO-   (SEISMIC CONDITION)........      1.378

RESISTANCE MOMENT(TOTAL:NORMAL )........    317088. (TON*M)
      -DO-       ( -DO-:SEISMIC)........    309782. (TON*M)
RESISTANCE FORCE (COHESION).............        0.00 (TON)
      -DO-       (FRICTION:BODY FORCE   )...  4939.36 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...  163.71 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)... -1994.36 (TON)
      -DO-       (  -DO-  :EARTHQUAKE   )...   -71.63 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........    193292. (TON*M)
      -DO-    ( -DO-:SEISMIC).........     224840. (TON*M)
SLIDING FORCE (BODY FORCE)..............     1886.52 (TON)
      -DO-    (WATER PRESSURE)........        8.50 (TON)
      -DO-    (EARTHQUAKE)............      309.29 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	20.000	62.000	2.327	15716.	6755.	1.818	15226.	8375.
6	-100.000	40.000	82.000	2.197	33316.	15165.	1.749	32306.	18471.
9	-100.000	60.000	102.000	2.101	62394.	29701.	1.706	60608.	35532.
12	-100.000	80.000	122.000	2.052	106009.	51662.	1.690	103134.	61019.
13	-100.000	100.000	162.000	1.949	717925.	368270.	1.576	701104.	444972.
16	-100.000	120.000	182.000	1.833	876651.	478266.	1.489	855016.	574342.
19	-100.000	140.000	202.000	1.803	1089594.	604353.	1.470	1062132.	722337.
24	-80.000	20.000	62.000	2.110	50428.	23894.	1.711	49031.	28659.
28	-80.000	40.000	72.000	1.997	16507.	8266.	1.661	16059.	9671.
29	-80.000	60.000	122.000	1.944	525488.	270256.	1.569	513644.	327464.
33	-80.000	80.000	142.000	1.785	673158.	377084.	1.450	656700.	452912.
37	-80.000	100.000	162.000	1.751	879941.	502512.	1.430	857965.	599779.
43	-80.000	120.000	162.000	1.736	405754.	233739.	1.466	396405.	270383.
47	-80.000	140.000	182.000	1.692	508013.	300307.	1.427	495840.	347476.
52	-60.000	20.000	52.000	2.034	32474.	15967.	1.707	31716.	18577.
53	-60.000	40.000	102.000	1.800	443059.	246135.	1.459	432999.	296707.
57	-60.000	60.000	122.000	1.692	620173.	366535.	1.385	605009.	436869.
62	-60.000	80.000	132.000	1.706	566262.	331870.	1.419	552475.	389388.
68	-60.000	100.000	142.000	1.676	444417.	265219.	1.410	433553.	307522.
74	-60.000	120.000	152.000	1.670	299245.	179151.	1.428	293093.	205275.
79	-60.000	140.000	172.000	1.742	401741.	230571.	1.483	392847.	264850.
81	-40.000	20.000	82.000	1.709	344779.	201735.	1.389	337566.	243060.
87	-40.000	40.000	92.000	1.685	356369.	211556.	1.396	348578.	249623.
93	-40.000	60.000	102.000	1.640	317088.	193292.	1.378	309782.	224840.
99	-40.000	80.000	112.000	1.666	249787.	149893.	1.417	244303.	172399.
104	-40.000	100.000	132.000	1.735	354706.	204409.	1.473	346801.	235515.
110	-40.000	120.000	142.000	1.803	223920.	124205.	1.549	219631.	141795.
116	-40.000	140.000	162.000	1.922	300913.	156531.	1.641	295124.	179849.

120	I	-20.000	20.000	62.000	I	1.669	157246.	94208.	I	1.390	154337.	111019.
127	I	-20.000	40.000	72.000	I	1.657	152369.	91971.	I	1.402	149197.	106439.
134	I	-20.000	60.000	82.000	I	1.736	119952.	69115.	I	1.487	117730.	79170.
141	I	-20.000	80.000	92.000	I	1.817	68637.	37782.	I	1.572	67421.	42886.
147	I	-20.000	100.000	112.000	I	1.768	97146.	54936.	I	1.520	95406.	62786.
153	I	-20.000	120.000	132.000	I	1.945	142470.	73238.	I	1.657	139849.	84392.
159	I	-20.000	140.000	152.000	I	2.140	191172.	89348.	I	1.804	187840.	104104.
164	I	0.000	20.000	42.000	I	1.723	48559.	28177.	I	1.451	47623.	32831.
171	I	0.000	40.000	52.000	I	1.620	37765.	23307.	I	1.386	37130.	26790.
177	I	0.000	60.000	72.000	I	1.802	75881.	42119.	I	1.531	74332.	48542.
185	I	0.000	80.000	82.000	I	1.812	32887.	18149.	I	1.557	32322.	20755.
192	I	0.000	100.000	102.000	I	2.021	52728.	26093.	I	1.715	51838.	30231.
199	I	0.000	120.000	122.000	I	2.327	77396.	33258.	I	1.947	76186.	39140.
206	I	0.000	140.000	142.000	I	2.638	103746.	39327.	I	2.173	102270.	47071.

****
* MINMIM SAFETY FACTOR AT EACH GRID POINT (SEISMIC) *
****

TRO DAM FUTURE EXT. MEDIUM WL.174 (U/S) 1:2.5 <MF-06>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	20.000	62.000	2.327	15716.	6755.	1.818	15226.	8375.
6	-100.000	40.000	82.000	2.197	33316.	15165.	1.749	32306.	18471.
9	-100.000	60.000	102.000	2.101	62394.	29701.	1.706	60608.	35532.
12	-100.000	80.000	122.000	2.052	106009.	51662.	1.690	103134.	61019.
13	-100.000	100.000	162.000	1.949	717925.	368270.	1.576	701104.	444972.
16	-100.000	120.000	182.000	1.833	876651.	478266.	1.489	855016.	574342.
19	-100.000	140.000	202.000	1.803	1089594.	604353.	1.470	1062132.	722337.
24	-80.000	20.000	62.000	2.110	50428.	23894.	1.711	49031.	28659.
28	-80.000	40.000	72.000	1.997	16507.	8266.	1.661	16059.	9671.
29	-80.000	60.000	122.000	1.944	525488.	270256.	1.569	513644.	327464.
33	-80.000	80.000	142.000	1.785	673158.	377084.	1.450	656700.	452912.
37	-80.000	100.000	162.000	1.751	879941.	502512.	1.430	857965.	599779.
43	-80.000	120.000	162.000	1.736	405754.	233739.	1.466	396405.	270383.
47	-80.000	140.000	182.000	1.692	508013.	300307.	1.427	495840.	347476.
49	-60.000	20.000	82.000	2.057	316574.	153927.	1.648	310018.	188125.
53	-60.000	40.000	102.000	1.800	443059.	246135.	1.459	432999.	296707.
57	-60.000	60.000	122.000	1.692	620173.	366535.	1.385	605009.	436869.
62	-60.000	80.000	132.000	1.706	566262.	331870.	1.419	552475.	389388.
68	-60.000	100.000	142.000	1.676	444417.	265219.	1.410	433553.	307522.
74	-60.000	120.000	152.000	1.670	299245.	179151.	1.428	293093.	205275.
79	-60.000	140.000	172.000	1.742	401741.	230571.	1.483	392847.	264850.
81	-40.000	20.000	82.000	1.709	344779.	201735.	1.389	337566.	243060.
87	-40.000	40.000	92.000	1.685	356369.	211556.	1.396	348578.	249623.
93	-40.000	60.000	102.000	1.640	317088.	193292.	1.378	309782.	224840.
99	-40.000	80.000	112.000	1.666	249787.	149893.	1.417	244303.	172399.
104	-40.000	100.000	132.000	1.735	354706.	204409.	1.473	346801.	235515.
110	-40.000	120.000	142.000	1.803	223920.	124205.	1.549	219631.	141795.
116	-40.000	140.000	162.000	1.922	300913.	156531.	1.641	295124.	179849.

120	I	-20.000	20.000	62.000	I	1.669	157246.	94208.	I	1.390	154337.	111019.
127	I	-20.000	40.000	72.000	I	1.657	152369.	91971.	I	1.402	149197.	106439.
133	I	-20.000	60.000	92.000	I	1.737	253395.	145839.	I	1.471	247985.	168610.
141	I	-20.000	80.000	92.000	I	1.817	68637.	37782.	I	1.572	67421.	42886.
147	I	-20.000	100.000	112.000	I	1.768	97146.	54936.	I	1.520	95406.	62786.
153	I	-20.000	120.000	132.000	I	1.945	142470.	73238.	I	1.657	139849.	84392.
159	I	-20.000	140.000	152.000	I	2.140	191172.	89348.	I	1.804	187840.	104104.
164	I	0.000	20.000	42.000	I	1.723	48559.	28177.	I	1.451	47623.	32831.
171	I	0.000	40.000	52.000	I	1.620	37765.	23307.	I	1.386	37130.	26790.
177	I	0.000	60.000	72.000	I	1.802	75881.	42119.	I	1.531	74332.	48542.
185	I	0.000	80.000	82.000	I	1.812	32887.	18149.	I	1.557	32322.	20755.
192	I	0.000	100.000	102.000	I	2.021	52728.	26093.	I	1.715	51838.	30231.
199	I	0.000	120.000	122.000	I	2.327	77396.	33258.	I	1.947	76186.	39140.
206	I	0.000	140.000	142.000	I	2.638	103746.	39327.	I	2.173	102270.	47071.

****
* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>

NUMBER OF NODAL POINTS..... 22
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 16
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 0
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0250
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	2	0.0	30.0	1.72	1.80	1.000	0.300
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	100.000	60.000
2	0.000	20.000	230.000	60.000
3	0.000	140.000	230.000	160.000
4	-100.000	140.000	100.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 1

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-30.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	43.700	19.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.025	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	222.900	-75.000
20	53.700	19.000
21	-104.977	-62.000
22	-33.025	-62.000

GROUND SURFACE DATA (NODAL NUMBER)

5	4	3	2	1	20	19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	13	21	22	14
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	19

TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-190.750	-125.900	2	1	2.370	0.025	0.839	0.435	1.930	1.805
2	-125.900	-122.900	2	1	2.370	0.025	0.839	0.435	1.930	1.805
3	-122.900	-114.900	5	1	1.800	0.025	0.577	0.000	100.000	100.000
4	-114.900	-111.900	2	1	2.370	0.025	0.839	0.000	100.000	100.000
5	-111.900	-104.977	2	1	2.370	0.025	0.839	0.000	100.000	100.000
6	-104.977	-93.900	2	1	2.370	0.025	0.839	0.000	100.000	100.000
7	-93.900	-93.150	2	1	2.370	0.025	0.839	0.000	100.000	100.000
8	-93.150	-41.025	2	1	2.370	0.025	0.839	0.435	1.930	1.805
9	-41.025	-33.025	2	1	2.370	0.025	0.839	0.435	1.930	1.805
10	-33.025	-15.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
11	-15.525	-9.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
12	-9.525	-6.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
13	-6.000	-0.050	2	1	2.370	0.025	0.839	0.435	1.930	1.805
14	-0.050	15.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
15	15.000	21.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
16	21.000	24.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
17	24.525	30.525	2	1	2.370	0.025	0.839	0.435	1.930	1.805
18	30.525	39.025	2	1	2.370	0.025	0.839	0.435	1.930	1.805
19	39.025	43.700	2	1	2.370	0.025	0.839	0.435	1.930	1.805
20	43.700	53.700	1	1	1.800	0.025	0.577	0.000	100.000	100.000
21	53.700	222.900	2	1	2.370	0.025	0.839	0.556	1.510	1.425

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*                          STABILITY ANALYSIS                            *
*                  (MOST DANGEROUS SLIPPE CIRCLE)  (NORMAL)              *
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TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>
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CALCULATION NUMBER.....................        138

SLIPPE CIRCLE(X-COORDINATE).............     -20.000 (M)
      -DO-   (Y-COORDINATE).............      80.000 (M)
      -DO-   (RADIUS)...................      92.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........       1.543
      -DO-   (SEISMIC CONDITION)........       1.435

RESISTANCE MOMENT(TOTAL:NORMAL )........      61698. (TON*M)
      -DO-       ( -DO-:SEISMIC).......      61066. (TON*M)
RESISTANCE FORCE (COHESION).............       0.00 (TON)
      -DO-       (FRICTION:BODY FORCE  ).     779.13 (TON)
      -DO-       (  -DO-  :WATER PRESSURE).     0.00 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE).  -108.50 (TON)
      -DO-       (  -DO-  :EARTHQUAKE  ).     -6.87 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........      39987. (TON*M)
      -DO-    ( -DO-:SEISMIC).........      42560. (TON*M)
SLIDING FORCE (BODY FORCE)..............     434.64 (TON)
      -DO-    (WATER PRESSURE)........       0.00 (TON)
      -DO-    (EARTHQUAKE)............      27.97 (TON)
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****
* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-100.000	20.000	82.000	2.841	263998.	92940.	2.580	262088.	101596.
5	-100.000	40.000	82.000	2.254	32024.	14209.	2.092	31726.	15163.
8	-100.000	60.000	102.000	2.164	63653.	29418.	2.013	63035.	31315.
11	-100.000	80.000	122.000	2.116	111602.	52741.	1.971	110495.	56068.
14	-100.000	100.000	142.000	2.088	179328.	85901.	1.946	177525.	91248.
17	-100.000	120.000	162.000	2.069	270295.	130619.	1.929	267554.	138679.
20	-100.000	140.000	182.000	2.021	380919.	188519.	1.885	377084.	200084.
23	-80.000	20.000	62.000	2.128	57782.	27153.	1.981	57212.	28874.
26	-80.000	40.000	82.000	2.099	107935.	51416.	1.956	106857.	54632.
30	-80.000	60.000	92.000	1.982	30737.	15505.	1.852	30412.	16420.
34	-80.000	80.000	112.000	1.987	63001.	31701.	1.856	62336.	33578.
37	-80.000	100.000	142.000	1.881	357501.	190061.	1.754	353962.	201846.
41	-80.000	120.000	162.000	1.796	456000.	253918.	1.673	451529.	269947.
46	-80.000	140.000	172.000	1.850	251931.	136179.	1.728	249337.	144306.
50	-60.000	20.000	52.000	2.125	33447.	15740.	1.979	33117.	16736.
54	-60.000	40.000	72.000	2.091	69543.	33251.	1.949	68846.	35323.
57	-60.000	60.000	102.000	1.980	290877.	146929.	1.840	288248.	156645.
61	-60.000	80.000	122.000	1.957	407665.	208268.	1.818	403985.	222166.
66	-60.000	100.000	132.000	1.706	236804.	138818.	1.589	234440.	147514.
71	-60.000	120.000	152.000	1.771	326681.	184497.	1.646	323487.	196470.
77	-60.000	140.000	162.000	1.699	152787.	89902.	1.586	151188.	95354.
82	-40.000	20.000	42.000	2.121	17128.	8076.	1.975	16958.	8587.
86	-40.000	40.000	72.000	1.977	128200.	64831.	1.836	127080.	69219.
91	-40.000	60.000	92.000	1.803	188161.	104354.	1.674	186484.	111421.
97	-40.000	80.000	102.000	1.659	108228.	65245.	1.546	107138.	69302.
102	-40.000	100.000	122.000	1.548	145902.	94279.	1.439	144412.	100381.
107	-40.000	120.000	142.000	1.808	226651.	125346.	1.676	224412.	133889.
114	-40.000	140.000	152.000	1.641	83906.	51121.	1.527	83032.	54362.

119	I	-20.000	20.000	42.000	I	2.010	38713.	19263.	I	1.860	38399.	20650.
125	I	-20.000	40.000	62.000	I	1.690	69813.	41304.	I	1.566	69198.	44182.
132	I	-20.000	60.000	72.000	I	1.839	43514.	23656.	I	1.716	43083.	25113.
138	I	-20.000	80.000	92.000	I	1.543	61698.	39987.	I	1.435	61066.	42560.
144	I	-20.000	100.000	112.000	I	1.730	98957.	57205.	I	1.602	97977.	61166.
150	I	-20.000	120.000	132.000	I	2.017	148714.	73716.	I	1.859	147361.	79280.
157	I	-20.000	140.000	142.000	I	1.657	36410.	21971.	I	1.535	36045.	23489.
163	I	0.000	20.000	32.000	I	1.693	15897.	9392.	I	1.560	15768.	10111.
169	I	0.000	40.000	52.000	I	1.619	38950.	24059.	I	1.495	38583.	25814.
177	I	0.000	60.000	62.000	I	1.558	18634.	11959.	I	1.450	18443.	12721.
184	I	0.000	80.000	82.000	I	1.615	31709.	19632.	I	1.493	31397.	21033.
191	I	0.000	100.000	102.000	I	2.040	55441.	27181.	I	1.872	54956.	29365.
198	I	0.000	120.000	122.000	I	2.427	81262.	33482.	I	2.208	80639.	36523.
205	I	0.000	140.000	142.000	I	2.802	108632.	38767.	I	2.526	107895.	42714.

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*                              STABILITY ANALYSIS                           *
*                        (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)          *
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TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>
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CALCULATION NUMBER.........................       160

SLIPPE CIRCLE(X-COORDINATE).................    200.000 (M)
      -DO-    (Y-COORDINATE).................    140.000 (M)
      -DO-    (RADIUS).......................    182.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............      1.533
      -DO-    (SEISMIC CONDITION)............      1.446

RESISTANCE MOMENT(TOTAL:NORMAL )............     84668. (TON*M)
      -DO-        ( -DO-:SEISMIC)............     83509. (TON*M)
RESISTANCE FORCE (COHESION).................      0.00 (TON)
      -DO-        (FRICTION:BODY FORCE    )...    465.21 (TON)
      -DO-        (  -DO-  :WATER PRESSURE)...      0.00 (TON)
      -DO-        (  -DO-  :PORE  PRESSURE)...      0.00 (TON)
      -DO-        (  -DO-  :EARTHQUAKE    )...     -6.36 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............    -55220. (TON*M)
      -DO-    ( -DO-:SEISMIC)...............    -57742. (TON*M)
SLIDING FORCE (BODY FORCE)..................    -303.40 (TON)
      -DO-    (WATER PRESSURE)..............      0.00 (TON)
      -DO-    (EARTHQUAKE)..................     -13.86 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. AFTER COMPLETION. 1:2.3 & 1:1.8 <MF-07>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
6	100.000	60.000	72.000	1.897	80167.	-42254.	1.775	79293.	-44665.
13	100.000	80.000	82.000	1.779	27486.	-15451.	1.668	27167.	-16283.
20	100.000	100.000	102.000	2.067	48885.	-23646.	1.924	48404.	-25154.
27	100.000	120.000	122.000	2.384	72713.	-30504.	2.200	72098.	-32765.
34	100.000	140.000	142.000	2.704	98275.	-36350.	2.474	97546.	-39421.
41	100.000	160.000	162.000	3.021	125120.	-41416.	2.741	124292.	-45340.
46	120.000	60.000	82.000	1.687	108955.	-64589.	1.586	107602.	-67838.
52	120.000	80.000	92.000	1.585	41726.	-26331.	1.493	41174.	-27576.
58	120.000	100.000	112.000	1.748	80332.	-45970.	1.640	79381.	-48394.
64	120.000	120.000	132.000	1.963	124826.	-63581.	1.833	123521.	-67381.
70	120.000	140.000	152.000	2.197	173428.	-78921.	2.040	171814.	-84225.
77	120.000	160.000	162.000	2.033	41538.	-20436.	1.892	41125.	-21737.
81	140.000	60.000	92.000	1.646	135044.	-82032.	1.549	133323.	-86055.
86	140.000	80.000	102.000	1.565	52611.	-33614.	1.475	51906.	-35182.
91	140.000	100.000	122.000	1.604	108100.	-67405.	1.510	106689.	-70632.
96	140.000	120.000	142.000	1.734	175955.	-101468.	1.628	173848.	-106764.
101	140.000	140.000	162.000	1.905	251649.	-132083.	1.782	248921.	-139695.
107	140.000	160.000	172.000	1.788	80729.	-45146.	1.676	79800.	-47609.
110	160.000	60.000	102.000	1.634	162887.	-99667.	1.538	160796.	-104520.
114	160.000	80.000	112.000	1.562	64478.	-41272.	1.473	63612.	-43193.
118	160.000	100.000	132.000	1.570	130113.	-82849.	1.480	128375.	-86726.
122	160.000	120.000	152.000	1.617	221710.	-137138.	1.522	218841.	-143761.
126	160.000	140.000	172.000	1.727	326893.	-189254.	1.622	322958.	-199075.
131	160.000	160.000	182.000	1.640	119765.	-73007.	1.544	118245.	-76607.
133	180.000	60.000	112.000	1.625	193437.	-119062.	1.530	190939.	-124826.
136	180.000	80.000	122.000	1.560	77874.	-49924.	1.471	76827.	-52244.
139	180.000	100.000	142.000	1.568	151864.	-96863.	1.478	149832.	-101388.
142	180.000	120.000	162.000	1.574	259858.	-165097.	1.483	256394.	-172840.

145	I	180.000	140.000	182.000	I	1.626	395154.	-243039.	I	1.531	390073.	-254848.
149	I	180.000	160.000	192.000	I	1.560	153495.	-98383.	I	1.471	151434.	-102963.
151	I	200.000	60.000	112.000	I	1.548	39922.	-25797.	I	1.459	39381.	-26987.
153	I	200.000	80.000	132.000	I	1.558	92885.	-59625.	I	1.469	91634.	-62393.
155	I	200.000	100.000	152.000	I	1.565	175693.	-112228.	I	1.476	173338.	-117463.
157	I	200.000	120.000	172.000	I	1.571	294439.	-187368.	I	1.481	290509.	-196140.
160	I	200.000	140.000	182.000	I	1.533	84668.	-55220.	I	1.446	83509.	-57742.
163	I	200.000	160.000	202.000	I	1.541	178968.	-116119.	I	1.454	176532.	-121451.
164	I	220.000	60.000	122.000	I	1.546	49281.	-31869.	I	1.458	48612.	-33337.
165	I	220.000	80.000	142.000	I	1.556	109596.	-70431.	I	1.467	108119.	-73697.
166	I	220.000	100.000	162.000	I	1.563	201686.	-128999.	I	1.474	198980.	-135008.
167	I	220.000	120.000	182.000	I	1.569	331635.	-211325.	I	1.479	327202.	-221206.
169	I	220.000	140.000	192.000	I	1.533	99478.	-64878.	I	1.446	98117.	-67841.
171	I	220.000	160.000	212.000	I	1.541	203312.	-131946.	I	1.453	200544.	-138003.
172	I	240.000	140.000	202.000	I	1.533	115920.	-75601.	I	1.446	114334.	-79055.
173	I	240.000	160.000	222.000	I	1.541	229748.	-149134.	I	1.453	226620.	-155979.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. AFTER COMPLETION. (U/S) 1:2.5 <MF-08>

NUMBER OF NODAL POINTS..... 22
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 16
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 0
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0250
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	2	0.0	30.0	1.72	1.80	1.000	0.300
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	0.000	0.000
2	0.000	20.000	0.000	0.000
3	0.000	140.000	0.000	0.000
4	-100.000	140.000	0.000	0.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 2

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-198.9	-70.0	0.0	0.0
2	-1	-33.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	47.500	19.000
2	-101.250	-40.500
3	-123.000	-40.500
4	-131.000	-40.500
5	-198.850	-70.000
6	-134.000	-67.000
7	-120.000	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-102.000	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	226.700	-75.000
20	57.500	19.000
21	-113.077	-62.000
22	-33.025	-62.000

GROUND SURFACE DATA (NODAL NUMBER)

5 4 3 2 1 20 19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	13
4	2	3	13	2	3
5	4	21	22	14	13
6	2	2	13	14	15
7	2	1	2	15	1
8	2	15	14	22	8
9	3	15	8	9	16
10	3	1	15	16	1
11	1	16	9	10	17
12	1	1	16	17	20
13	3	20	17	18	20
14	3	17	10	11	18
15	2	18	11	12	18
16	2	20	18	12	19

TRO DAM FUTURE EXT. AFTER COMPLETION. (U/S) 1:2.5 <MF-08>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-198.850	-134.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
2	-134.000	-131.000	2	1	2.370	0.025	0.839	0.435	1.930	1.805
3	-131.000	-123.000	5	1	1.800	0.025	0.577	0.000	100.000	100.000
4	-123.000	-120.000	2	1	2.370	0.025	0.839	0.000	100.000	100.000
5	-120.000	-113.077	2	1	2.370	0.025	0.839	0.000	100.000	100.000
6	-113.077	-102.000	2	1	2.370	0.025	0.839	0.000	100.000	100.000
7	-102.000	-101.250	2	1	2.370	0.025	0.839	0.000	100.000	100.000
8	-101.250	-41.025	2	1	2.370	0.025	0.839	0.400	2.098	1.955
9	-41.025	-33.025	2	1	2.370	0.025	0.839	0.400	2.098	1.955
10	-33.025	-15.525	2	1	2.370	0.025	0.839	0.400	2.098	1.955
11	-15.525	-9.525	2	1	2.370	0.025	0.839	0.400	2.098	1.955
12	-9.525	-6.000	2	1	2.370	0.025	0.839	0.400	2.098	1.955
13	-6.000	-0.050	2	1	2.370	0.025	0.839	0.400	2.098	1.955
14	-0.050	15.000	2	1	2.370	0.025	0.839	0.400	2.098	1.955
15	15.000	21.000	2	1	2.370	0.025	0.839	0.400	2.098	1.955
16	21.000	24.525	2	1	2.370	0.025	0.839	0.400	2.098	1.955
17	24.525	30.525	2	1	2.370	0.025	0.839	0.400	2.098	1.955
18	30.525	39.525	2	1	2.370	0.025	0.839	0.400	2.098	1.955
19	39.525	47.500	2	1	2.370	0.025	0.839	0.400	2.098	1.955
20	47.500	57.500	1	1	1.800	0.025	0.577	0.000	100.000	100.000
21	57.500	226.700	2	1	2.370	0.025	0.839	0.556	1.510	1.425

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**********************************************************************************
*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM FUTURE EXT. AFTER COMPLETION. (U/S) 1:2.5 <MF-08>
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CALCULATION NUMBER.....................        171

SLIPPE CIRCLE(X-COORDINATE).............       0.000 (M)
      -DO-   (Y-COORDINATE).............      40.000 (M)
      -DO-   (RADIUS)...................      52.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........       1.597
      -DO-   (SEISMIC CONDITION)........       1.469

RESISTANCE MOMENT(TOTAL:NORMAL )........      35628. (TON*M)
      -DO-       ( -DO-:SEISMIC)........      35318. (TON*M)
RESISTANCE FORCE (COHESION).............       0.00 (TON)
      -DO-       (FRICTION:BODY FORCE   )...  862.74 (TON)
      -DO-       (  -DO-  :WATER PRESSURE)...   0.00 (TON)
      -DO-       (  -DO-  :PORE  PRESSURE)... -177.58 (TON)
      -DO-       (  -DO-  :EARTHQUAKE   )...   -5.98 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........      22312. (TON*M)
      -DO-    ( -DO-:SEISMIC).........      24034. (TON*M)
SLIDING FORCE (BODY FORCE)..............      429.07 (TON)
      -DO-    (WATER PRESSURE)........       0.00 (TON)
      -DO-    (EARTHQUAKE)............       33.13 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
****

TRO DAM FUTURE EXT. AFTER COMPLETION. (U/S) 1:2.5 <MF-08>

NUMBER	SLIPPE CIRCLE COORDINATE X	Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
3	-100.000	20.000	62.000	2.328	24429.	10496.	2.157	24209.	11224.
6	-100.000	40.000	82.000	2.288	50164.	21928.	2.122	49704.	23423.
9	-100.000	60.000	102.000	2.263	89345.	39488.	2.100	88517.	42150.
12	-100.000	80.000	122.000	2.246	144777.	64472.	2.085	143424.	68785.
15	-100.000	100.000	142.000	2.233	219266.	98176.	2.074	217207.	104709.
18	-100.000	120.000	162.000	2.224	315622.	141898.	2.066	312646.	151302.
21	-100.000	140.000	182.000	2.217	436653.	196934.	2.060	432522.	209944.
24	-80.000	20.000	62.000	2.348	72883.	31036.	2.175	72232.	33207.
28	-80.000	40.000	72.000	2.171	21888.	10083.	2.019	21677.	10736.
32	-80.000	60.000	92.000	2.171	45664.	21037.	2.019	45223.	22397.
36	-80.000	80.000	112.000	2.171	82389.	37955.	2.019	81592.	40409.
39	-80.000	100.000	142.000	2.085	400632.	192115.	1.936	396994.	205040.
43	-80.000	120.000	162.000	1.974	500831.	253749.	1.831	496327.	271028.
47	-80.000	140.000	182.000	2.071	662198.	319764.	1.919	656349.	342012.
52	-60.000	20.000	52.000	2.339	41081.	17561.	2.167	40712.	18785.
56	-60.000	40.000	72.000	2.289	81128.	35442.	2.123	80385.	37859.
59	-60.000	60.000	102.000	2.182	316165.	144916.	2.018	313556.	155341.
63	-60.000	80.000	122.000	2.111	429746.	203557.	1.953	426207.	218277.
69	-60.000	100.000	132.000	1.889	258342.	136738.	1.753	255988.	145997.
74	-60.000	120.000	152.000	1.829	332269.	181695.	1.695	329257.	194290.
80	-60.000	140.000	162.000	1.936	169797.	87712.	1.801	168172.	93392.
85	-40.000	20.000	42.000	2.326	20177.	8674.	2.156	19995.	9275.
89	-40.000	40.000	72.000	2.183	137883.	63162.	2.017	136783.	67810.
94	-40.000	60.000	92.000	1.988	200142.	100693.	1.837	198521.	108073.
100	-40.000	80.000	102.000	1.880	118344.	62965.	1.745	117260.	67189.
105	-40.000	100.000	122.000	1.691	154435.	91315.	1.568	152983.	97592.
110	-40.000	120.000	142.000	1.866	226986.	121627.	1.725	224874.	130335.
117	-40.000	140.000	152.000	1.843	88291.	47901.	1.712	87437.	51061.

122	I	-20.000	20.000	42.000	I	2.226	41057.	18442.	I	2.050	40753.	19883.
128	I	-20.000	40.000	62.000	I	1.862	72973.	39194.	I	1.718	72389.	42139.
134	I	-20.000	60.000	82.000	I	1.936	128526.	66393.	I	1.786	127441.	71362.
141	I	-20.000	80.000	92.000	I	1.713	64165.	37451.	I	1.589	63561.	39992.
147	I	-20.000	100.000	112.000	I	1.706	92249.	54087.	I	1.576	91388.	57982.
153	I	-20.000	120.000	132.000	I	2.024	145185.	71734.	I	1.863	143893.	77247.
159	I	-20.000	140.000	152.000	I	2.292	200057.	87303.	I	2.098	198420.	94578.
165	I	0.000	20.000	32.000	I	1.868	16326.	8739.	I	1.714	16205.	9453.
171	I	0.000	40.000	52.000	I	1.597	35628.	22312.	I	1.469	35318.	24034.
178	I	0.000	60.000	62.000	I	1.825	18852.	10327.	I	1.696	18676.	11014.
185	I	0.000	80.000	82.000	I	1.661	29836.	17963.	I	1.535	29556.	19259.
192	I	0.000	100.000	102.000	I	1.955	50407.	25787.	I	1.795	49965.	27840.
199	I	0.000	120.000	122.000	I	2.333	76632.	32848.	I	2.126	76031.	35762.
206	I	0.000	140.000	142.000	I	2.693	104554.	38821.	I	2.434	103823.	42654.

****
* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>

NUMBER OF NODAL POINTS..... 26
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 19
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 5
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0000
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	100.000	60.000
2	0.000	20.000	230.000	60.000
3	0.000	140.000	230.000	160.000
4	-100.000	140.000	100.000	160.000

THE INTERVAL(X)..... 20.0
THE INTERVAL(Y)..... 20.0
THE INTERVAL(R)..... 10.0
STOPPING HEIGHT FROM SURFACE..... 5.0
START LINE OF CIRCLE ..... Y=(0.000E-01)X+(-6.200E+01)
NUMBER OF LIMITTED CONDITIONS..... 1

NUMBER	TYPE	**********	**********	**********	**********
1	-1	-30.0	-62.0	0.0	0.0

COORDINATE OF NODAL POINT

POINT	X-COORDINATE (M)	Y-COORDINATE (M)
1	43.700	19.000
2	-93.150	-40.500
3	-114.900	-40.500
4	-122.900	-40.500
5	-190.750	-70.000
6	-125.900	-67.000
7	-111.900	-67.000
8	-15.525	-79.500
9	-9.525	-79.500
10	24.525	-79.500
11	30.525	-79.500
12	39.525	-71.000
13	-93.900	-54.000
14	-41.025	-54.000
15	-6.000	-16.000
16	-0.050	-16.000
17	15.000	-16.000
18	21.000	-16.000
19	222.900	-75.000
20	53.700	19.000
21	-104.977	-62.000
22	-33.025	-62.000
23	-200.000	16.500
24	40.575	16.500

25	45.407	11.500
26	47.500	-71.000

GROUND SURFACE DATA (NODAL NUMBER)

5	4	3	2	1	20	19

WATER LINE DATA (NODAL NUMBER)

23	24	25	26	19

ELEMENT DATA

ELEMENT	TYPE	I	J	K	L
1	2	4	5	6	4
2	5	4	6	7	3
3	2	3	7	21	3
4	2	3	21	13	3
5	2	3	13	2	3
6	4	21	22	14	13
7	2	2	13	14	15
8	2	1	2	15	1
9	2	15	14	22	15
10	2	15	22	8	15
11	3	15	8	9	16
12	3	1	15	16	1
13	1	16	9	10	17
14	1	1	16	17	20
15	3	20	17	18	20
16	3	17	10	11	18
17	2	18	11	12	18
18	2	20	18	12	26
19	2	20	26	19	20

TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>

BLOCK	-- X-COORDINATE -- (START)	(PERIOD)	MAT	WATER	WEIGHT(SAT)	ACCEL	FRICTION	GRA. OF SLOPE	SAFETY FACTOR (NORMAL)	(SEISMIC)
1	-200.000	-190.750	0	-	-	-	-	-	-	-
2	-190.750	-125.900	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
3	-125.900	-122.900	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
4	-122.900	-114.900	5	-1	1.800	0.000	0.577	0.000	100.000	100.000
5	-114.900	-111.900	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
6	-111.900	-104.977	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
7	-104.977	-93.900	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
8	-93.900	-93.150	2	-1	2.370	0.000	0.839	0.000	100.000	100.000
9	-93.150	-41.025	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
10	-41.025	-33.025	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
11	-33.025	-15.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
12	-15.525	-9.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
13	-9.525	-6.000	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
14	-6.000	-0.050	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
15	-0.050	15.000	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
16	15.000	21.000	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
17	21.000	24.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
18	24.525	30.525	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
19	30.525	37.950	2	-1	2.370	0.000	0.839	0.435	1.930	1.930
20	37.950	39.525	2	1	2.370	0.000	0.839	0.435	1.930	1.930
21	39.525	40.150	2	1	2.370	0.000	0.839	0.435	1.930	1.930
22	40.150	40.575	2	1	2.370	0.000	0.839	0.435	1.930	1.930
23	40.575	43.700	2	1	2.370	0.000	0.839	0.435	1.930	1.930
24	43.700	45.407	1	1	1.800	0.000	0.577	0.000	100.000	100.000
25	45.407	45.441	1	1	1.800	0.000	0.577	0.000	100.000	100.000
26	45.441	47.500	1	1	1.800	0.000	0.577	0.000	100.000	100.000
27	47.500	53.700	1	1	1.800	0.000	0.577	0.000	100.000	100.000
28	53.700	222.900	2	1	2.370	0.000	0.839	0.556	1.510	1.510

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*                              STABILITY ANALYSIS                             *
*                        (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)            *
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TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>
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CALCULATION NUMBER.........................      177

SLIPPE CIRCLE(X-COORDINATE).................      0.000 (M)
      -DO-    (Y-COORDINATE).................     60.000 (M)
      -DO-    (RADIUS).......................     62.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)............      1.831
      -DO-    (SEISMIC CONDITION)............      1.831

RESISTANCE MOMENT(TOTAL:NORMAL )............     13680. (TON*M)
      -DO-         ( -DO-:SEISMIC)............     13680. (TON*M)
RESISTANCE FORCE (COHESION).................      0.00 (TON)
      -DO-         (FRICTION:BODY FORCE    )...    682.43 (TON)
      -DO-         (  -DO-  :WATER PRESSURE)...     42.94 (TON)
      -DO-         (  -DO-  :PORE  PRESSURE)...   -504.72 (TON)
      -DO-         (  -DO-  :EARTHQUAKE    )...      0.00 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...............      7473. (TON*M)
      -DO-     ( -DO-:SEISMIC)...............      7473. (TON*M)
SLIDING FORCE (BODY FORCE)..................     272.00 (TON)
      -DO-     (WATER PRESSURE)..............    -151.46 (TON)
      -DO-     (EARTHQUAKE)..................      0.00 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *

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TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
1	-100.000	20.000	82.000	2.742	166919.	60871.	2.742	166919.	60871.
5	-100.000	40.000	82.000	2.254	20597.	9139.	2.254	20597.	9139.
8	-100.000	60.000	102.000	2.163	40932.	18924.	2.163	40932.	18924.
11	-100.000	80.000	122.000	2.115	71754.	33929.	2.115	71754.	33929.
14	-100.000	100.000	142.000	2.086	115289.	55262.	2.086	115289.	55262.
17	-100.000	120.000	162.000	2.068	173765.	84030.	2.068	173765.	84030.
20	-100.000	140.000	182.000	2.019	244867.	121270.	2.019	244867.	121270.
23	-80.000	20.000	62.000	2.128	37165.	17465.	2.128	37165.	17465.
26	-80.000	40.000	82.000	2.099	69423.	33071.	2.099	69423.	33071.
30	-80.000	60.000	92.000	1.982	19770.	9972.	1.982	19770.	9972.
34	-80.000	80.000	112.000	1.987	40522.	20390.	1.987	40522.	20390.
37	-80.000	100.000	142.000	1.975	239338.	121189.	1.975	239338.	121189.
42	-80.000	120.000	152.000	1.993	116617.	58504.	1.993	116617.	58504.
46	-80.000	140.000	172.000	1.890	165484.	87539.	1.890	165484.	87539.
50	-60.000	20.000	52.000	2.125	21513.	10124.	2.125	21513.	10124.
54	-60.000	40.000	72.000	2.091	44730.	21387.	2.091	44730.	21387.
58	-60.000	60.000	92.000	2.073	79570.	38382.	2.073	79570.	38382.
62	-60.000	80.000	112.000	1.996	122976.	61624.	1.996	122976.	61624.
66	-60.000	100.000	132.000	1.923	164535.	85540.	1.923	164535.	85540.
72	-60.000	120.000	142.000	1.984	75337.	37976.	1.984	75337.	37976.
77	-60.000	140.000	162.000	1.851	105256.	56872.	1.851	105256.	56872.
82	-40.000	20.000	42.000	2.121	11016.	5195.	2.121	11016.	5195.
87	-40.000	40.000	62.000	2.083	26700.	12816.	2.083	26700.	12816.
92	-40.000	60.000	82.000	2.019	50907.	25212.	2.019	50907.	25212.
97	-40.000	80.000	102.000	1.854	75783.	40882.	1.854	75783.	40882.
102	-40.000	100.000	122.000	1.905	107238.	56281.	1.905	107238.	56281.
108	-40.000	120.000	132.000	1.865	40881.	21918.	1.865	40881.	21918.
114	-40.000	140.000	152.000	1.892	60791.	32127.	1.892	60791.	32127.

120	I	-20.000	20.000	32.000	I	2.114	4645.	2198.	I	2.114	4645.	2198.
126	I	-20.000	40.000	52.000	I	2.072	14269.	6886.	I	2.072	14269.	6886.
132	I	-20.000	60.000	72.000	I	1.905	28916.	15180.	I	1.905	28916.	15180.
138	I	-20.000	80.000	92.000	I	1.871	45366.	24251.	I	1.871	45366.	24251.
144	I	-20.000	100.000	112.000	I	2.174	73585.	33847.	I	2.174	73585.	33847.
150	I	-20.000	120.000	132.000	I	2.608	111452.	42728.	I	2.608	111452.	42728.
157	I	-20.000	140.000	142.000	I	2.012	28524.	14175.	I	2.012	28524.	14175.
163	I	0.000	20.000	32.000	I	2.163	12044.	5568.	I	2.163	12044.	5568.
170	I	0.000	40.000	42.000	I	2.056	6408.	3116.	I	2.056	6408.	3116.
177	I	0.000	60.000	62.000	I	1.831	13680.	7473.	I	1.831	13680.	7473.
184	I	0.000	80.000	82.000	I	2.107	25039.	11883.	I	2.107	25039.	11883.
191	I	0.000	100.000	102.000	I	2.722	43954.	16146.	I	2.722	43954.	16146.
198	I	0.000	120.000	122.000	I	3.394	64957.	19138.	I	3.394	64957.	19138.
205	I	0.000	140.000	142.000	I	4.148	87426.	21078.	I	4.148	87426.	21078.

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*                                STABILITY ANALYSIS                              *
*                          (MOST DANGEROUS SLIPPE CIRCLE)   (NORMAL)             *
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TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>
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CALCULATION NUMBER.....................        160

SLIPPE CIRCLE(X-COORDINATE).............     200.000 (M)
      -DO-    (Y-COORDINATE).............     140.000 (M)
      -DO-    (RADIUS)...................     182.000 (M)

SAFETY FACTOR(NORMAL  CONDITION)........       1.533
      -DO-    (SEISMIC CONDITION)........       1.533

RESISTANCE MOMENT(TOTAL:NORMAL )........      84668. (TON*M)
      -DO-         ( -DO-:SEISMIC)........      84668. (TON*M)
RESISTANCE FORCE (COHESION).............        0.00 (TON)
      -DO-         (FRICTION:BODY FORCE    )...     465.21 (TON)
      -DO-         (  -DO-  :WATER PRESSURE)...       0.00 (TON)
      -DO-         (  -DO-  :PORE  PRESSURE)...       0.00 (TON)
      -DO-         (  -DO-  :EARTHQUAKE    )...       0.00 (TON)

SLIDING MOMENT(TOTAL:NORMAL )...........     -55220. (TON*M)
      -DO-    ( -DO-:SEISMIC)...........     -55220. (TON*M)
SLIDING FORCE (BODY FORCE)..............     -303.40 (TON)
      -DO-    (WATER PRESSURE)..........        0.00 (TON)
      -DO-    (EARTHQUAKE)..............        0.00 (TON)
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* MINMIM SAFETY FACTOR AT EACH GRID POINT (NORMAL) *
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TRO DAM FUTURE EXT. FLOOD WL.212.5 1:2.3 & 1:1.8 <MF-09>

NUMBER	SLIPPE CIRCLE COORDINATE X	SLIPPE CIRCLE COORDINATE Y	RADIUS	STATIC SAFETY FACTOR	STATIC MOMENT RESISTANCE	STATIC MOMENT SLIDING	DYNAMIC SAFETY FACTOR	DYNAMIC MOMENT RESISTANCE	DYNAMIC MOMENT SLIDING
6	100.000	60.000	72.000	1.906	80545.	-42254.	1.906	80545.	-42254.
13	100.000	80.000	82.000	1.792	27689.	-15451.	1.792	27689.	-15451.
20	100.000	100.000	102.000	2.098	49605.	-23646.	2.098	49605.	-23646.
27	100.000	120.000	122.000	2.369	72775.	-30714.	2.369	72775.	-30714.
34	100.000	140.000	142.000	2.587	96382.	-37254.	2.587	96382.	-37254.
40	100.000	160.000	172.000	2.744	322067.	-117389.	2.744	322067.	-117389.
46	120.000	60.000	82.000	1.688	109011.	-64589.	1.688	109011.	-64589.
52	120.000	80.000	92.000	1.585	41746.	-26331.	1.585	41746.	-26331.
58	120.000	100.000	112.000	1.758	80798.	-45970.	1.758	80798.	-45970.
64	120.000	120.000	132.000	1.966	125247.	-63698.	1.966	125247.	-63698.
70	120.000	140.000	152.000	2.128	170091.	-79924.	2.128	170091.	-79924.
77	120.000	160.000	162.000	2.075	42403.	-20436.	2.075	42403.	-20436.
81	140.000	60.000	92.000	1.646	135044.	-82032.	1.646	135044.	-82032.
86	140.000	80.000	102.000	1.565	52611.	-33614.	1.565	52611.	-33614.
91	140.000	100.000	122.000	1.605	108200.	-67405.	1.605	108200.	-67405.
96	140.000	120.000	142.000	1.742	176767.	-101468.	1.742	176767.	-101468.
101	140.000	140.000	162.000	1.882	249701.	-132652.	1.882	249701.	-132652.
107	140.000	160.000	172.000	1.806	81549.	-45146.	1.806	81549.	-45146.
110	160.000	60.000	102.000	1.634	162887.	-99667.	1.634	162887.	-99667.
114	160.000	80.000	112.000	1.562	64478.	-41272.	1.562	64478.	-41272.
118	160.000	100.000	132.000	1.570	130113.	-82849.	1.570	130113.	-82849.
122	160.000	120.000	152.000	1.619	221983.	-137138.	1.619	221983.	-137138.
126	160.000	140.000	172.000	1.733	328047.	-189259.	1.733	328047.	-189259.
131	160.000	160.000	182.000	1.647	120238.	-73007.	1.647	120238.	-73007.
133	180.000	60.000	112.000	1.625	193437.	-119062.	1.625	193437.	-119062.
136	180.000	80.000	122.000	1.560	77874.	-49924.	1.560	77874.	-49924.
139	180.000	100.000	142.000	1.568	151864.	-96863.	1.568	151864.	-96863.
142	180.000	120.000	162.000	1.574	259860.	-165097.	1.574	259860.	-165097.

145	I	180.000	140.000	182.000	I	1.628	395726.	-243039.	I	1.628	395726.	-243039.
149	I	180.000	160.000	192.000	I	1.561	153604.	-98383.	I	1.561	153604.	-98383.
151	I	200.000	60.000	112.000	I	1.548	39922.	-25797.	I	1.548	39922.	-25797.
153	I	200.000	80.000	132.000	I	1.558	92885.	-59625.	I	1.558	92885.	-59625.
155	I	200.000	100.000	152.000	I	1.565	175693.	-112228.	I	1.565	175693.	-112228.
157	I	200.000	120.000	172.000	I	1.571	294439.	-187368.	I	1.571	294439.	-187368.
160	I	200.000	140.000	182.000	I	1.533	84668.	-55220.	I	1.533	84668.	-55220.
163	I	200.000	160.000	202.000	I	1.541	178968.	-116119.	I	1.541	178968.	-116119.
164	I	220.000	60.000	122.000	I	1.546	49281.	-31869.	I	1.546	49281.	-31869.
165	I	220.000	80.000	142.000	I	1.556	109596.	-70431.	I	1.556	109596.	-70431.
166	I	220.000	100.000	162.000	I	1.563	201686.	-128999.	I	1.563	201686.	-128999.
167	I	220.000	120.000	182.000	I	1.569	331635.	-211325.	I	1.569	331635.	-211325.
169	I	220.000	140.000	192.000	I	1.533	99478.	-64878.	I	1.533	99478.	-64878.
171	I	220.000	160.000	212.000	I	1.541	203312.	-131946.	I	1.541	203312.	-131946.
172	I	240.000	140.000	202.000	I	1.533	115920.	-75601.	I	1.533	115920.	-75601.
173	I	240.000	160.000	222.000	I	1.541	229748.	-149134.	I	1.541	229748.	-149134.

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* LIST OF INPUT DATA *
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TRO DAM FUTURE EXT. DESIGN FLOOD. WL.212.5 (U/S) 1:2.5 <MF-10>

NUMBER OF NODAL POINTS..... 26
NUMBER OF DIFFERENT MATERIALS..... 5
NUMBER OF ELEMENTS..... 17
NUMBER OF SURFACE LINES..... 7
NUMBER OF WATER POINTS..... 5
NUMBER OF PORE PRESSURE POINTS..... 0
ACCELERATION OF EARTHQUAKE..... 0.0000
UNITE WEIGHT OF WATER..... 1.0000

MATERIAL PROPATY

	TYPE	COHESION (T/M2)	FRICTION (DEGREE)	WEIGHT(WET) (T/M3)	WEIGHT(SAT) (T/M3)	ACC.FACTOR	PORE.FACTOR
1	0	0.0	30.0	1.72	1.80	1.000	0.000
2	0	0.0	40.0	2.13	2.37	1.000	0.000
3	0	0.0	36.0	1.93	2.23	1.000	0.000
4	0	0.0	36.0	1.93	2.23	1.000	0.000
5	0	0.0	30.0	1.72	1.80	1.000	0.000

DATA OF SLIPPE CIRCLE

OUTLINE OF GRID

NUMBER	GROUP(1) X-COOR	GROUP(1) Y-COOR	GROUP(2) X-COOR	GROUP(2) Y-COOR
1	-100.000	20.000	0.000	0.000
2	0.000	20.000	0.000	0.000
3	0.000	140.000	0.000	0.000
4	-100.000	140.000	0.000	0.000