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PROJECT : EXAMPLE PROBLEM #1

DEPTH FT	DIAM FT	PHI	GAMMA KIP/FT**3	A	B	PCT	PCD
10.50	5.50	40.0	0.13D+00	1.53	1.09	0.10D+03	0.78D+03

Y FT	P KIP/FT
0.0	0.0
0.008	31.185
0.015	60.753
0.023	69.271
0.031	76.030
0.038	81.723
0.046	86.689
0.053	91.123
0.061	95.147
0.069	98.844
0.076	102.272
0.084	105.476
0.092	108.488
0.206	152.371
5.706	152.371
11.206	152.371
16.706	152.371

DEPTH FT	DIAM FT	PHI	GAMMA KIP/FT**3	A	B	PCT	PCD
59.50	5.50	40.0	0.14D+00	0.88	0.50	0.25D+04	0.47D+04

Y FT	P KIP/FT
0.0	0.0
0.008	176.715
0.015	353.430
0.023	530.045
0.031	631.358
0.038	723.097
0.046	807.865
0.053	887.243
0.061	962.280
0.069	1033.719
0.076	1102.105
0.084	1167.857
0.092	1231.304

0.206	2167.094
5.706	2167.094
11.206	2167.094
16.706	2167.094

DATE : 07/14/86 TIME : 8:59:25 PAGE : 6
PROJECT : EXAMPLE PROBLEM #1

PILE LOADING CONDITION

APPLIED MOMENT AT PILE HEAD = -0.672D+03KIPS-FT
LATERAL LOAD AT PILE HEAD = 0.224D+02KIPS
AXIAL LOAD AT PILE HEAD = 0.0 KIPS

X FT	DEFLECTION IN	MOMENT KIP-FT	SHEAR KIP	TOTAL STRESS KIP/FT**2	DISTR. LOAD KIP/FT	SOIL PRESSURE KIP/FT	
0.0	-0.0102	-0.672D+03	0.224D+02	0.412D+02	0.0	0.0	
1.0	-0.0058	-0.650D+03	0.224D+02	0.398D+02	0.0	0.0	
2.0	-0.0017	-0.627D+03	0.224D+02	0.384D+02	0.0	0.0	
3.0	0.0020	-0.605D+03	0.224D+02	0.370D+02	0.0	0.0	
4.0	0.0054	-0.582D+03	0.224D+02	0.357D+02	0.0	0.0	
5.0	0.0084	-0.560D+03	0.224D+02	0.343D+02	0.0	0.0	
6.0	0.0111	-0.538D+03	0.224D+02	0.329D+02	0.0	0.0	
7.0	0.0135	-0.515D+03	0.224D+02	0.316D+02	0.0	0.0	
8.0	0.0156	-0.493D+03	0.224D+02	0.302D+02	0.0	0.0	
9.0	0.0174	-0.470D+03	0.224D+02	0.288D+02	0.0	0.0	
10.0	0.0190	-0.448D+03	0.224D+02	0.274D+02	0.0	0.0	
11.0	0.0203	-0.426D+03	0.224D+02	0.261D+02	0.0	0.0	
12.0	0.0213	-0.403D+03	0.224D+02	0.247D+02	0.0	0.0	
13.0	0.0222	-0.381D+03	0.224D+02	0.233D+02	0.0	0.0	
14.0	0.0228	-0.358D+03	0.224D+02	0.220D+02	0.0	0.0	
15.0	0.0232	-0.336D+03	0.224D+02	0.206D+02	0.0	0.0	
16.0	0.0234	-0.314D+03	0.224D+02	0.192D+02	0.0	0.0	
17.0	0.0234	-0.291D+03	0.224D+02	0.178D+02	0.0	0.0	
18.0	0.0233	-0.269D+03	0.224D+02	0.165D+02	0.0	0.0	
19.0	0.0230	-0.246D+03	0.224D+02	0.151D+02	0.0	0.0	
20.0	0.0226	-0.224D+03	0.224D+02	0.137D+02	0.0	0.0	
21.0	0.0220	-0.202D+03	0.224D+02	0.123D+02	0.0	0.0	
22.0	0.0213	-0.179D+03	0.224D+02	0.110D+02	0.0	0.0	
23.0	0.0206	-0.157D+03	0.224D+02	0.960D+01	0.0	0.0	
24.0	0.0197	-0.134D+03	0.224D+02	0.823D+01	0.0	-0.709D-01	* see note on pg.44
25.0	0.0188	-0.112D+03	0.223D+02	0.687D+01	0.0	-0.135D+00	
26.0	0.0178	-0.899D+02	0.221D+02	0.551D+01	0.0	-0.192D+00	
27.0	0.0167	-0.679D+02	0.219D+02	0.416D+01	0.0	-0.240D+00	
28.0	0.0156	-0.462D+02	0.216D+02	0.283D+01	0.0	-0.281D+00	

29.0	0.0145	-0.247D+02	0.213D+02	0.151D+01	0.0	-0.313D+00
30.0	0.0134	-0.352D+01	0.210D+02	0.215D+00	0.0	-0.336D+00
31.0	0.0122	0.173D+02	0.207D+02	0.106D+01	0.0	-0.352D+00
32.0	0.0111	0.378D+02	0.203D+02	0.231D+01	0.0	-0.359D+00
33.0	0.0100	0.579D+02	0.192D+02	0.355D+01	0.0	-0.323D+01
34.0	0.0089	0.755D+02	0.160D+02	0.462D+01	0.0	-0.318D+01
35.0	0.0079	0.899D+02	0.129D+02	0.551D+01	0.0	-0.306D+01
36.0	0.0069	0.101D+03	0.990D+01	0.620D+01	0.0	-0.291D+01
37.0	0.0060	0.110D+03	0.708D+01	0.672D+01	0.0	-0.271D+01
38.0	0.0051	0.116D+03	0.448D+01	0.708D+01	0.0	-0.249D+01
39.0	0.0043	0.119D+03	0.211D+01	0.728D+01	0.0	-0.225D+01
40.0	0.0036	0.120D+03	-0.136D-01	0.734D+01	0.0	-0.199D+01
41.0	0.0030	0.119D+03	-0.187D+01	0.728D+01	0.0	-0.173D+01
42.0	0.0024	0.116D+03	-0.346D+01	0.711D+01	0.0	-0.146D+01
43.0	0.0018	0.112D+03	-0.479D+01	0.686D+01	0.0	-0.120D+01
44.0	0.0014	0.107D+03	-0.586D+01	0.653D+01	0.0	-0.947D+00
45.0	0.0010	0.100D+03	-0.669D+01	0.614D+01	0.0	-0.710D+00
46.0	0.0007	0.933D+02	-0.729D+01	0.571D+01	0.0	-0.489D+00
47.0	0.0004	0.858D+02	-0.768D+01	0.525D+01	0.0	-0.288D+00
48.0	0.0001	0.780D+02	-0.788D+01	0.478D+01	0.0	-0.109D+00
49.0	-0.0001	0.701D+02	-0.790D+01	0.429D+01	0.0	0.491D-01
50.0	-0.0002	0.622D+02	-0.779D+01	0.381D+01	0.0	0.184D+00
51.0	-0.0003	0.545D+02	-0.754D+01	0.334D+01	0.0	0.297D+00
52.0	-0.0004	0.471D+02	-0.720D+01	0.289D+01	0.0	0.388D+00
53.0	-0.0005	0.401D+02	-0.678D+01	0.246D+01	0.0	0.459D+00
54.0	-0.0005	0.336D+02	-0.629D+01	0.206D+01	0.0	0.510D+00
55.0	-0.0005	0.276D+02	-0.576D+01	0.169D+01	0.0	0.544D+00
56.0	-0.0005	0.221D+02	-0.521D+01	0.135D+01	0.0	0.561D+00
57.0	-0.0005	0.172D+02	-0.464D+01	0.105D+01	0.0	0.565D+00
58.0	-0.0005	0.128D+02	-0.408D+01	0.784D+00	0.0	0.558D+00
59.0	-0.0005	0.899D+01	-0.353D+01	0.551D+00	0.0	0.540D+00
60.0	-0.0004	0.573D+01	-0.301D+01	0.351D+00	0.0	0.514D+00
61.0	-0.0004	0.297D+01	-0.251D+01	0.182D+00	0.0	0.482D+00
62.0	-0.0004	0.703D+00	-0.204D+01	0.431D-01	0.0	0.445D+00
63.0	-0.0003	-0.112D+01	-0.162D+01	0.688D-01	0.0	0.405D+00
64.0	-0.0003	-0.255D+01	-0.123D+01	0.156D+00	0.0	0.363D+00
65.0	-0.0002	-0.360D+01	-0.892D+00	0.221D+00	0.0	0.321D+00
66.0	-0.0002	-0.434D+01	-0.592D+00	0.266D+00	0.0	0.280D+00
67.0	-0.0002	-0.480D+01	-0.333D+00	0.294D+00	0.0	0.239D+00
68.0	-0.0001	-0.502D+01	-0.113D+00	0.307D+00	0.0	0.201D+00
69.0	-0.0001	-0.503D+01	0.695D-01	0.308D+00	0.0	0.164D+00
70.0	-0.0001	-0.488D+01	0.217D+00	0.299D+00	0.0	0.131D+00
71.0	-0.0001	-0.461D+01	0.332D+00	0.282D+00	0.0	0.995D-01
72.0	-0.0000	-0.423D+01	0.417D+00	0.259D+00	0.0	0.713D-01
73.0	-0.0000	-0.378D+01	0.475D+00	0.232D+00	0.0	0.458D-01
74.0	-0.0000	-0.328D+01	0.509D+00	0.201D+00	0.0	0.227D-01
75.0	-0.0000	-0.277D+01	0.522D+00	0.169D+00	0.0	0.187D-02

76.0	0.0000	-0.225D+01	0.514D+00	0.138D+00	0.0	-0.171D-01
77.0	0.0000	-0.174D+01	0.488D+00	0.107D+00	0.0	-0.345D-01
78.0	0.0000	-0.127D+01	0.445D+00	0.781D-01	0.0	-0.506D-01
79.0	0.0000	-0.857D+00	0.387D+00	0.525D-01	0.0	-0.663D-01
80.0	0.0000	-0.506D+00	0.313D+00	0.310D-01	0.0	-0.814D-01
81.0	0.0001	-0.235D+00	0.224D+00	0.144D-01	0.0	-0.965D-01
82.0	0.0001	-0.618D-01	0.120D+00	0.378D-02	0.0	-0.112D+00
83.0	0.0001	0.0	0.781D-02	0.0	0.0	-0.127D+00

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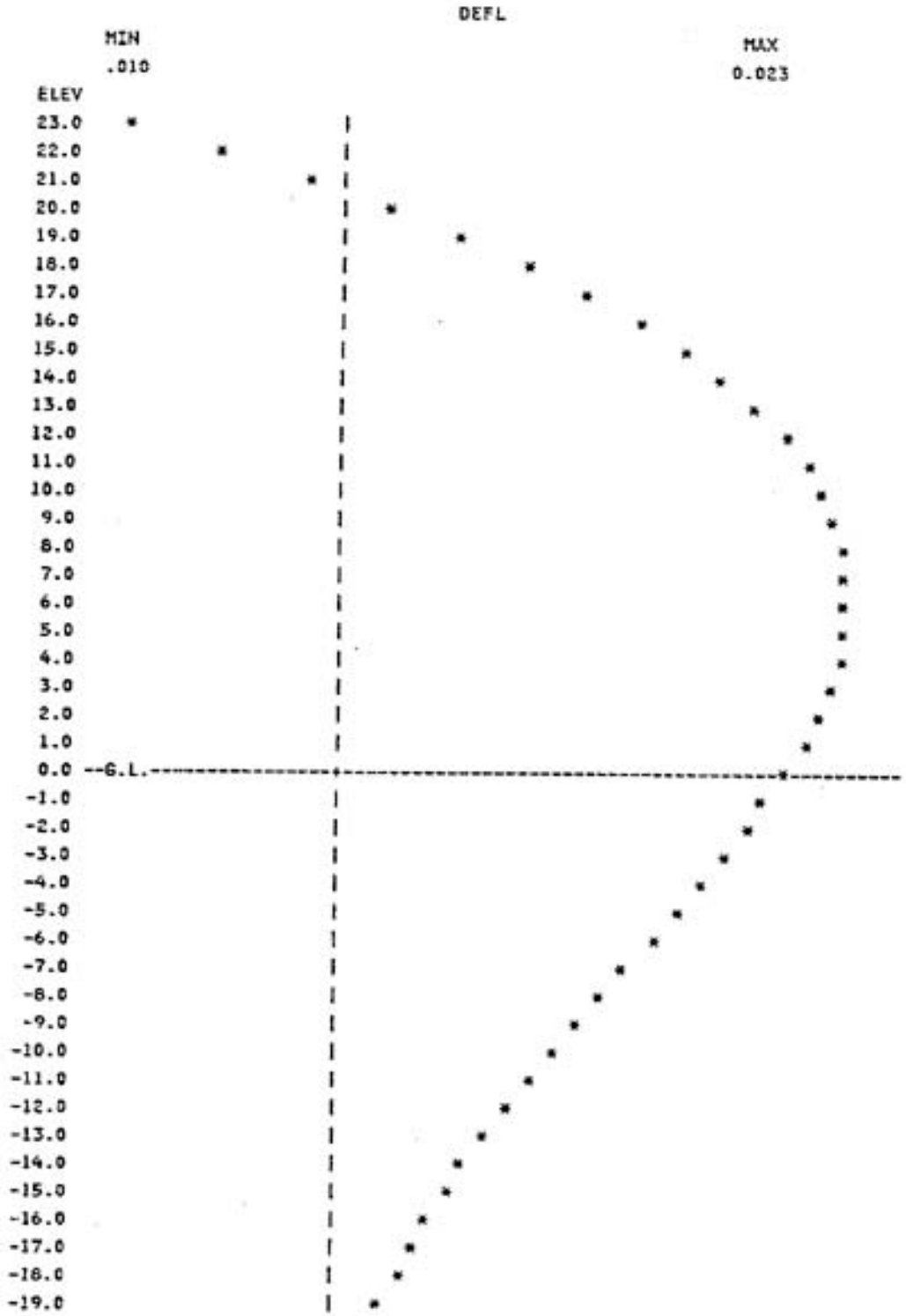
PROJECT : EXAMPLE PROBLEM #1



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-58.0          *
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```

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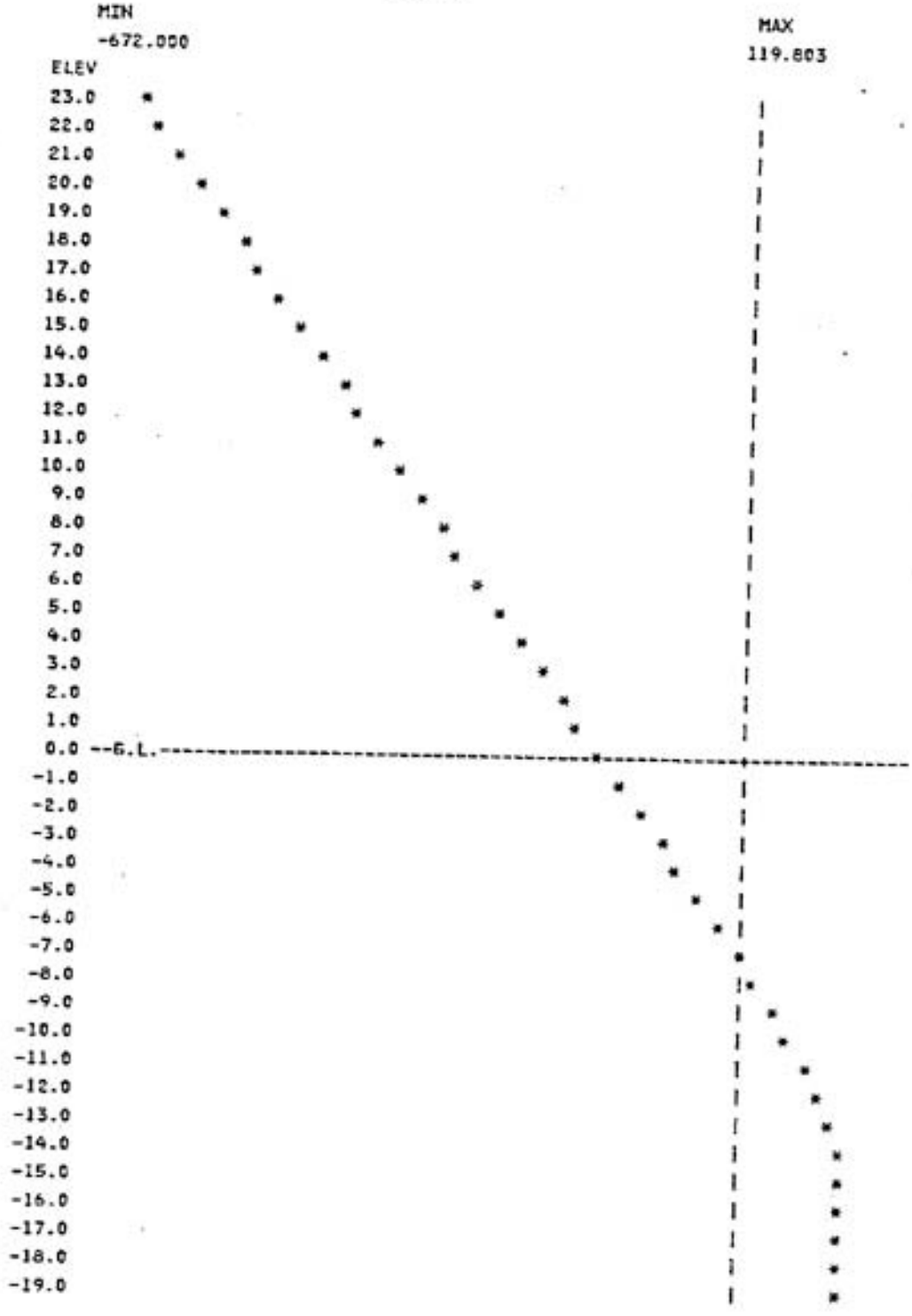
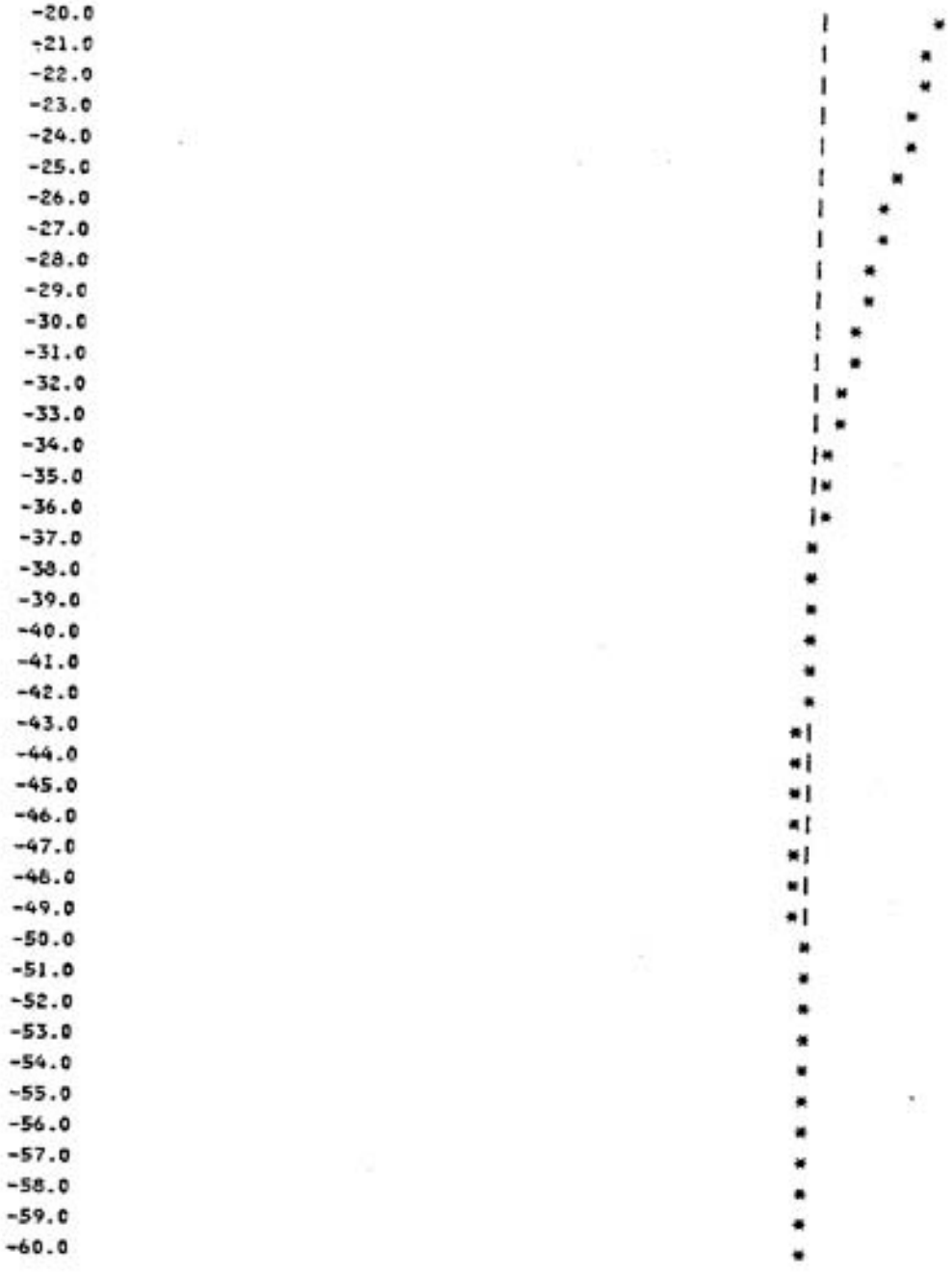
PROJECT : EXAMPLE PROBLEM #1

MOMENT

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-59.0
-60.0

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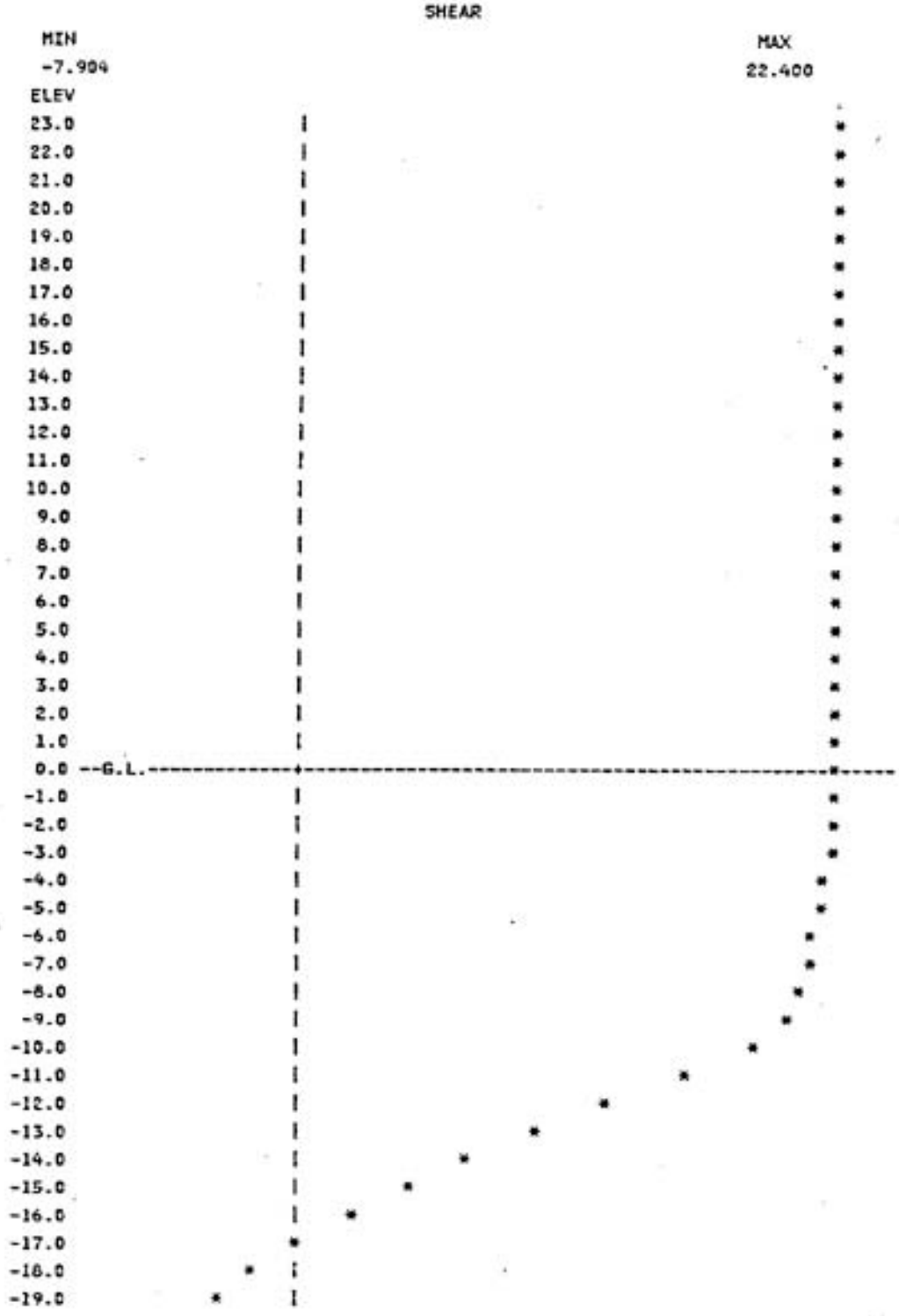
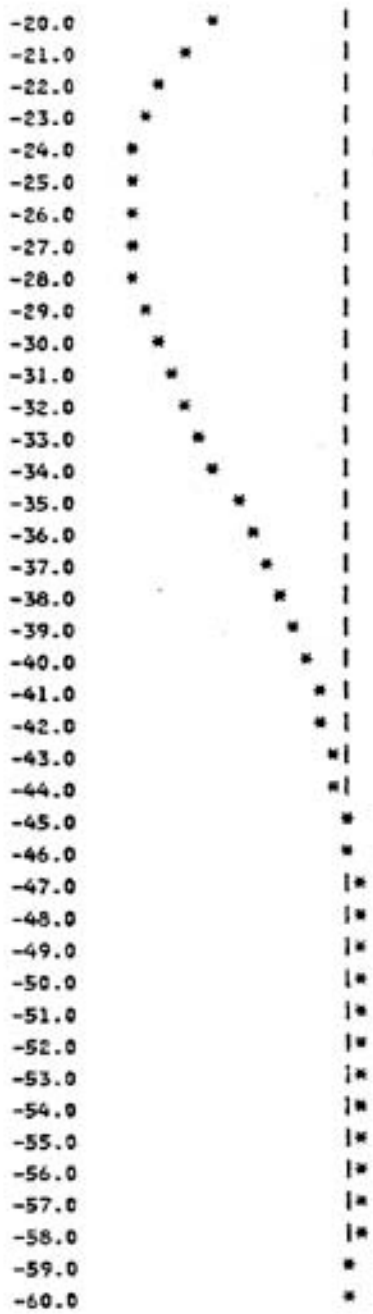
PROJECT : EXAMPLE PROBLEM #1

SHEAR

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-57.0
-58.0
-59.0
-60.0

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PROJECT : EXAMPLE PROBLEM #1

SUMMARY TABLE

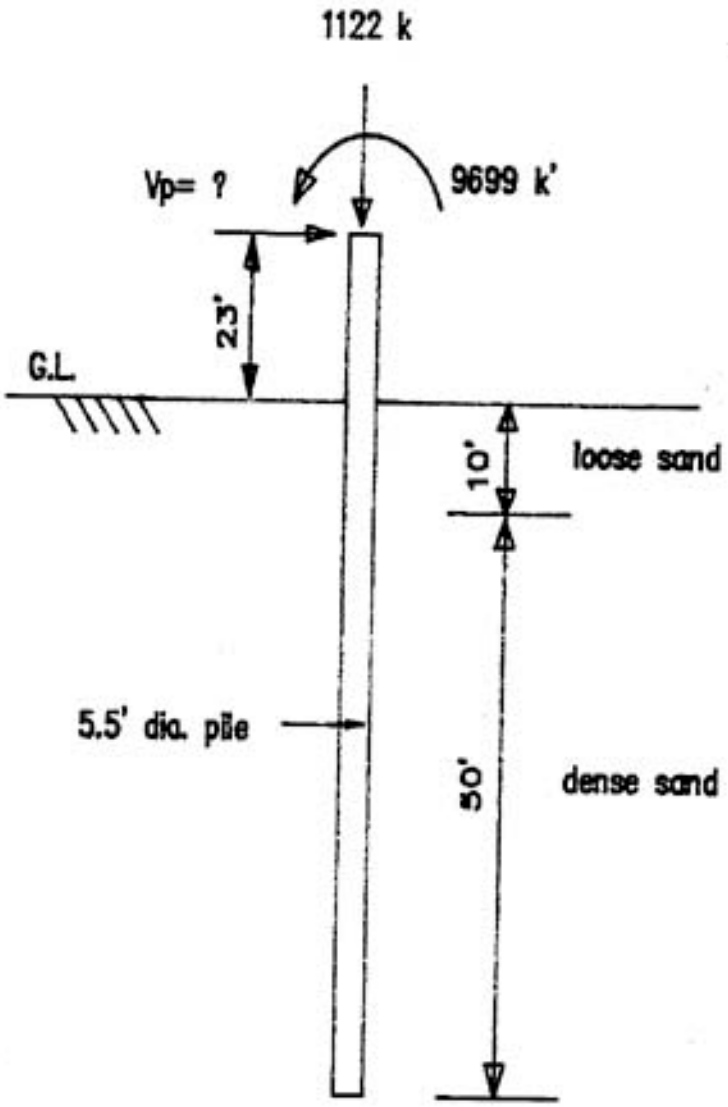
LOAD NO	AXIAL FORCE (KIPS)	LATERAL FORCE (KIPS)	MOMENT (FT-KIP)	LATERAL SPRING (KIP/FT)	ROTATIONAL SPRING	PILE HEAD SLOPE
1	0.0	22.4	-672.0	0.0	0.0	0.0

LOAD NO	PILE HEAD DEFLECTION (IN)	MAX. MOMENT (FT-KIP)	MAX. SHEAR (KIP)	MAX. STRESS (KIP/FT**2)	PILE HEAD SLOPE
1	-0.01	-672.0	22.4	41.158	0.00039

Note: The Maximum Moment (-134 k') and Shear(22.4 k) are located at ground level. See * on page 35.

EXAMPLE PROBLEM 2

(Same data as Example Problem 1)From YIELD program, the plastic capacity of column/shaft is Pt=1122k, Mt=9699k', Vt=436k at column top, and Pp=1277k, Mp=9921k' in pile shaft. Apply at the top of the column the associated plastic moment (Mt) and axial load (Pt) while incrementing the plastic shear (Vp) until a second plastic hinge forms in the pile shaft. Determine the maximum plastic shear force.



```
*****************************************************************************
*                                                                           *
*                                                                           *
*   PILE GEOMETRY                                                           *
*   JOBID: Example Problem #2                                               *
*       E= 486000   KSF            P  |                                     *
*                                   --+-+                                   *
*                           M        | V   M(POSITIVE SIGN)                 *
*                           -------> V                                      *
*   - - - - - - - - - - - - - - - - -+=====+                                *
*     | X= 23     FT               |<--->| D1= 5.5        FT               *
*     |                            |     | A1= 23.8       FT**2            *
*     |                            |     | I1= 44.9       FT**4            *
*     V     GROUND LINE            |     | L1= 83         FT               *
*   ------------------------------|     |-----------------------------------*
*                                 |=====|                                   *
*                                 |<--->| D2= _______    FT                *
*                                 |     | A2= _________  FT**2             *
*                                 |     | I2= _________  FT**4             *
*                                 |     | L2= _____      FT                *
*                                 |     |                                   *
*   PILE HEAD TYPE :  1                                CYCLIC LOAD : 0      CYCLES
*        1 - FREE HEAD                                       0 FOR STATIC LOAD
*        2 - HEAD FIXED AGAINST ROTATION                     PLOT : N
*        3 - HEAD RESTRAINED W/ A ROTATIONAL SPRING
*        4 - HEAD WITH LATERAL & ROTATIONAL SPRINGS
*                                                                           *
*                                                                           *
*                                                                           *
*****************************************************************************
```

LAYER NO	SOIL TYPE	THICKNESS FT	SHEAR STRENGTH	PHI DEGREE	GAMMA KCF	NO. OF USER'S P-Y CURVES
1	6	10.0	0.000	28.000	0.130	0
2	10	50.0	0.000	40.000	0.140	0
3	—	—	—	—	—	—
4	—	—	—	—	—	—
5	—	—	—	—	—	—
6	—	—	—	—	—	—
7	—	—	—	—	—	—
8	—	—	—	—	—	—
9	—	—	—	—	—	—

SOIL TYPE0 USER SUPPLIED P-Y CURVES
1 SOFT CLAY
2 STIFF CLAY BELOW WATER TABLE
3 STIFF CLAY ABOVE WATER TABLE
4 UNIFIED CLAY
5 LOOSE SAND BELOW WATER TABLE
6 LOOSE SAND ABOVE WATER TABLE
7 MEDIUM SAND BELOW WATER TABLE
8 MEDIUM SAND ABOVE WATER TABLE
9 DENSE SAND BELOW WATER TABLE
10 DENSE SAND ABOVE WATER TABLE

NOTE : IF SOIL TYPE IS 0, USER NEEDS TO INPUT K, THE MODULUS OF SUBGRADE REACTION (KCF) UNDER COLUMN OF SHEAR STRENGTH.

PRESS <ENTER> TO CONTINUE PF3=QUIT

```
*****************************************************************************
*                                                                           *
*                                                                           *
*   LOAD DATA                                                               *
*                                                                           *
*       LOAD   VERTICAL    LATERAL   MOMENT                                 *
*        NO      LOAD       LOAD                                           *
*                KIPS       KIPS     FT-KIPS                                *
*         1   ___1122.0  ____450.0  _-9699.0                                *
*         2   ___1122.0  ____500.0  _-9699.0                                *
*         3   ___1122.0  ____550.0  _-9699.0                                *
*         4   ___1122.0  ____560.0  _-9699.0                                *
*         5   ___1122.0  ____570.0  _-9699.0                                *
*         6   ___1122.0  ____580.0  _-9699.0                                *
*         7   ___1122.0  ____590.0  _-9699.0                                *
*         8   ___1122.0  ____600.0  _-9699.0_                               *
*         9   ________   ________  ________                                *
*        10   ________   ________  ________                                *
*        11   ________   ________  ________                                *
*        12   ________   ________  ________                                *
*        13   ________   ________  ________                                *
*        14   ________   ________  ________                                *
*        15   ________   ________  ________                                *
*        16   ________   ________  ________                                *
*        17   ________   ________  ________                                *
*        18   ________   ________  ________                                *
* <ENTER>=CONT PF3=QUIT PF4=GEOM PF5=GEO2 PF6=SOIL PF7=P-Y PF8=LOAD PF9=FILE *
*                                                                           *
*                                                                           *
*****************************************************************************
```

```
**********************************
YOUR PILE FILENAME IS: EX2
**********************************
EXAMPLE PROBLEM #2
K-FT
  166    2    1    0
    4    4    0
   83.000  468000.0    23.000
   1    2
   1    1    1              0
 100
    0.000     5.500    44.900    23.800
   1    4    23.000    33.000    43.200     0.000     0.000
   2    4    33.000    83.000   388.800     0.000     0.000
   23.000     0.130
   33.000     0.130
   33.000     0.140
   83.000     0.140
   23.000     0.000    28.000     0.000
   33.000     0.000    28.000     0.000
   33.000     0.000    40.000     0.000
   83.000     0.000    40.000     0.000
   4
   23.500
   32.500
   33.500
   82.500
   1   450.000 -9699.000  1122.000       0.0     0.000
   1   500.000 -9699.000  1122.000       0.0     0.000
   1   550.000 -9699.000  1122.000       0.0     0.000
   1   560.000 -9699.000  1122.000       0.0     0.000
   1   570.000 -9699.000  1122.000       0.0     0.000
   1   580.000 -9699.000  1122.000       0.0     0.000
   1   590.000 -9699.000  1122.000       0.0     0.000
   1   600.000 -9699.000  1122.000       0.0     0.000
  -1
 END
```

```
DATE        :  07/14/86        TIME :  7:33: 3        PAGE :   1
PROJECT     :  EXAMPLE PROBLEM #2

  UNITS--K-FT

                 I N P U T   I N F O R M A T I O N
                 *********************************

THE LOADING IS STATIC

PILE GEOMETRY AND PROPERTIES

   PILE LENGTH                          =      83.00 FT
   MODULUS OF ELASTICITY OF PILE        =  0.468D+06KIPS/FT**2
                 1 SECTION(S)

              X            DIAMETER     MOMENT OF        AREA
                                        INERTIA
              FT            FT          FT**4            FT**2
             0.0
                           5.500       0.449D+02        0.238D+02
            83.00
```

```
DATE        :  07/14/86        TIME :  7:33: 3        PAGE : 2
PROJECT     :  EXAMPLE PROBLEM #2

SOILS INFORMATION

   X AT THE GROUND SURFACE              =      23.00 FT

   2 LAYER(S) OF SOIL

   LAYER  1
   THE SOIL IS A SAND
   X AT THE TOP OF THE LAYER            =      23.00 FT
   X AT THE BOTTOM OF THE LAYER         =      33.00 FT
   MODULUS OF SUBGRADE REACTION         =  0.432D+02KIPS/FT**3

   LAYER  2
   THE SOIL IS A SAND
   X AT THE TOP OF THE LAYER            =      33.00 FT
   X AT THE BOTTOM OF THE LAYER         =      83.00 FT
   MODULUS OF SUBGRADE REACTION         =  0.389D+03KIPS/FT**3
```

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DATE        :  07/14/86        TIME :  7:33: 3        PAGE :  3
PROJECT     :  EXAMPLE PROBLEM #2


   DISTRIBUTION OF EFFECTIVE UNIT WEIGHT WITH DEPTH
                    4 POINTS
          X,FT     WEIGHT,KIP/FT**3
         23.00       0.13D+00
         33.00       0.13D+00
         33.00       0.14D+00
         83.00       0.14D+00

   DISTRIBUTION OF STRENGTH PARAMETERS WITH DEPTH
                    4 POINTS
     X,FT      C,KIP/FT**2     PHI,DEGREES     ESO
    23.00       0.0              28.000       *****
    33.00       0.0              28.000       *****
    33.00       0.0              40.000       *****
    83.00       0.0              40.000       *****


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PROJECT     :  EXAMPLE PROBLEM #2

                O U T P U T   I N F O R M A T I O N
                ***********************************

              ( Pages 4 to 13 have been omitted. )
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PROJECT : EXAMPLE PROBLEM #2

SUMMARY TABLE

LOAD NO	AXIAL FORCE (KIPS)	LATERAL FORCE (KIPS)	MOMENT (FT-KIP)	LATERAL SPRING (KIP/FT)	ROTATIONAL SPRING	PILE HEAD SLOPE
1	1122.0	450.0	-9699.0	0.0	0.0	0.0
2	1122.0	500.0	-9699.0	0.0	0.0	0.0
3	1122.0	550.0	-9699.0	0.0	0.0	0.0
4	1122.0	560.0	-9699.0	0.0	0.0	0.0
5	1122.0	570.0	-9699.0	0.0	0.0	0.0
6	1122.0	580.0	-9699.0	0.0	0.0	0.0
7	1122.0	590.0	-9699.0	0.0	0.0	0.0
8	1122.0	600.0	-9699.0	0.0	0.0	0.0

LOAD NO	PILE HEAD DEFLECTION (IN)	MAX. MOMENT (FT-KIP)	MAX. SHEAR (KIP)	MAX. STRESS (KIP/FT**2)	PILE HEAD SLOPE
1	2.02	-9699.0	450.0	641.180	-0.00046
2	2.97	-9699.0	500.0	641.180	-0.00302
3	3.96	-9699.0	-568.5	641.180	-0.00564
4	4.16	-9699.0	-587.9	641.180	-0.00618
5	4.36	-9699.0	-607.3	641.180	-0.00672
6	4.57	9941.7	-626.7	656.047	-0.00726
7	4.78	10276.3	-645.9	676.540	-0.00780
8	4.99	10612.0	-664.9	697.101	-0.00835

Note: The Maximum Plastic shear, Vp(580 k), at top of the column will generate a moment of 9941.7 k' which is nearly equal to Mp=9921 k' in pile shaft.