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LPile for Version 2022-12.012

License ID : 500127537
License Type : (Single User License)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

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This model was prepared by:
SruthiRamya

Files Used for Analysis

Path to file locations:
\Users\SruthiRamya\ANS Geo\ANS Geo Projects - Documents\3 -
PROJECTS\Urban Grid\Porter Mills (MD)\6 - Reporting\Calcs\1. Inverter
Foundation Design\2. LPile\Evenly spaced\

Name of input data file:
Inverter_Evenly_Strong Axis_PM.lp12d

Name of output report file:
Inverter_Evenly_Strong Axis_PM.lp12o

Name of plot output file:
Inverter_Evenly_Strong Axis_PM.lp12p

Name of runtime message file:
Inverter_Evenly_Strong Axis_PM.lp12r

Date and Time of Analysis

Date: August 11, 2025 Time: 9:08:07

Problem Title

Project: Porter Mill Solar Project

Client: Urban Grid
Engineer: SR
Description: Inverter SG4400UD-MV-US Evenly spaced piles - Strong Axis

Program Options and Settings

Computational Options:
- Conventional Analysis

Engineering Units Used for Data Input and Computations:
- US Customary System Units (pounds, feet, inches)

Analysis Control Options:

- Maximum number of iterations allowed	=	500
- Deflection tolerance for convergence	=	1.0000E-05 in
- Maximum allowable deflection	=	100.0000 in
- Number of pile increments	=	100

Loading Type and Number of Cycles of Loading:
- Static loading specified

- Use of p-y modification factors for p-y curves not selected
- Analysis uses layering correction (Method of Georgiadis)
- No distributed lateral loads are entered
- Loading by lateral soil movements acting on pile not selected
- Input of shear resistance at the pile tip not selected
- Input of moment resistance at the pile tip not selected
- Computation of pile-head foundation stiffness matrix not selected
- Push-over analysis of pile not selected
- Buckling analysis of pile not selected

Output Options:
- Output files use decimal points to denote decimal symbols.

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1
- No p-y curves to be computed and reported for user-specified depths
- Print using wide report formats

Pile Structural Properties and Geometry

Number of pile sections defined = 1
Total length of pile = 30.250 ft
Depth of ground surface below top of pile = 2.7500 ft

Pile diameters used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over
the length of the pile. A summary of values of pile diameter vs. depth follows.

Point No.	Depth Below Pile Head feet	Pile Diameter inches
1	0.000	5.9287
2	30.250	5.9287

Input Structural Properties for Pile Sections:

Pile Section No. 1:

Section 1 is a H strong axis steel pile
Length of section = 30.250000 ft
Pile width = 5.928700 in

Soil and Rock Layering Information

The soil profile is modelled using 4 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	2.750000 ft
Distance from top of pile to bottom of layer	=	4.250000 ft
Effective unit weight at top of layer	=	115.000000 pcf
Effective unit weight at bottom of layer	=	115.000000 pcf
Friction angle at top of layer	=	38.000000 deg.
Friction angle at bottom of layer	=	38.000000 deg.
Subgrade k at top of layer	=	210.000000 pci
Subgrade k at bottom of layer	=	210.000000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	4.250000 ft
Distance from top of pile to bottom of layer	=	6.250000 ft
Effective unit weight at top of layer	=	115.000000 pcf
Effective unit weight at bottom of layer	=	115.000000 pcf
Friction angle at top of layer	=	38.000000 deg.
Friction angle at bottom of layer	=	38.000000 deg.
Subgrade k at top of layer	=	210.000000 pci
Subgrade k at bottom of layer	=	210.000000 pci

Layer 3 is stiff clay with user-defined k-value

Distance from top of pile to top of layer	=	6.250000 ft
Distance from top of pile to bottom of layer	=	10.250000 ft
Effective unit weight at top of layer	=	110.000000 pcf
Effective unit weight at bottom of layer	=	110.000000 pcf
Undrained cohesion at top of layer	=	2250. psf
Undrained cohesion at bottom of layer	=	2250. psf
Epsilon-50 at top of layer	=	0.006000
Epsilon-50 at bottom of layer	=	0.006000
Subgrade k at top of layer	=	750.000000 pci
Subgrade k at bottom of layer	=	750.000000 pci

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	10.250000 ft
Distance from top of pile to bottom of layer	=	30.250000 ft
Effective unit weight at top of layer	=	50.000000 pcf
Effective unit weight at bottom of layer	=	50.000000 pcf
Friction angle at top of layer	=	37.000000 deg.
Friction angle at bottom of layer	=	37.000000 deg.
Subgrade k at top of layer	=	110.000000 pci
Subgrade k at bottom of layer	=	110.000000 pci

(Depth of the lowest soil layer extends 0.000 ft below the pile tip)

Summary of Input Soil Properties

Layer Num.	Soil Type Name or (p-y Curve Type)	Layer Depth ft	Effective Unit Wt. pcf	Cohesion psf	Angle of Friction deg.	E50 or kpy krm	pci
1	Sand	2.7500	115.0000	--	38.0000	--	210.0000
	(Reese, et al.)	4.2500	115.0000	--	38.0000	--	210.0000
2	Sand	4.2500	115.0000	--	38.0000	--	210.0000
	(Reese, et al.)	6.2500	115.0000	--	38.0000	--	210.0000
3	Stiff Clay w/o	6.2500	110.0000	2250.	--	0.00600	750.0000
	Free Water, using k	10.2500	110.0000	2250.	--	0.00600	750.0000
4	Sand	10.2500	50.0000	--	37.0000	--	110.0000
	(Reese, et al.)	30.2500	50.0000	--	37.0000	--	110.0000

Static Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length	Run Analysis
1	1	V = 1103. lbs	M = 0.0000 in-lbs	10857.	Yes	Yes

V = shear force applied normal to pile axis
M = bending moment applied to pile head
y = lateral deflection normal to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applied to pile head
Values of top y vs. pile lengths can be computed only for load types with specified shear loading (Load Types 1, 2, and 3).
Thrust force is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

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Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Steel H Strong Axis:

Length of Section	=	30.250000 ft
Flange Width	=	5.928700 in
Section Depth	=	5.928700 in
Flange Thickness	=	0.198700 in
Web Thickness	=	0.168700 in
Yield Stress of Pipe	=	50.000000 ksi
Elastic Modulus	=	29000. ksi
Cross-sectional Area	=	3.289196 sq. in.
Moment of Inertia	=	21.725982 in^4
Elastic Bending Stiffness	=	630053. kip-in^2

Plastic Modulus, Z = 8.040483in^3
Plastic Moment Capacity = Fy Z = 402.024162in-kip

Axial Structural Capacities:

Nom. Axial Structural Capacity = Fy As = 164.460 kips
Nominal Axial Tensile Capacity = -164.460 kips

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

Number	Axial Thrust Force kips
1	10.857

Definition of Run Messages:

Y = part of pipe section has yielded.

Axial Thrust Force = 10.857 kips

Bending Curvature rad/in.	Bending Moment in-kip	Bending Stiffness kip-in2	Depth to N Axis in	Max Total Stress ksi	Run Msg
0.00001188	7.4756496	629287.	12.5455923	4.3118345	
0.00002376	14.9512992	629287.	7.7549712	5.3228621	
0.00003564	22.4269488	629287.	6.1580974	6.3338896	
0.00004752	29.9025985	629287.	5.3596606	7.3449171	
0.00005940	37.3782481	629287.	4.8805985	8.3559447	
0.00007128	44.8538977	629287.	4.5612237	9.3669722	
0.00008316	52.3295473	629287.	4.3330989	10.3779998	
0.00009504	59.8051969	629287.	4.1620053	11.3890273	
0.0001069	67.2808465	629287.	4.0289325	12.4000549	
0.0001188	74.7564961	629287.	3.9224742	13.4110824	
0.0001307	82.2321458	629287.	3.8353720	14.4221100	
0.0001426	89.7077954	629287.	3.7627869	15.4331375	
0.0001544	97.1834450	629287.	3.7013686	16.4441651	
0.0001663	104.6590946	629287.	3.6487245	17.4551926	
0.0001782	112.1347442	629287.	3.6030995	18.4662202	
0.0001901	119.6103938	629287.	3.5631776	19.4772477	
0.0002020	127.0860434	629287.	3.5279525	20.4882753	
0.0002138	134.5616931	629287.	3.4966412	21.4993028	
0.0002257	142.0373427	629287.	3.4686259	22.5103304	
0.0002376	149.5129923	629287.	3.4434121	23.5213579	

0.0002495	156.9886419	629287.	3.4205996	24.5323855	
0.0002614	164.4642915	629287.	3.3998610	25.5434130	
0.0002732	171.9399411	629287.	3.3809258	26.5544406	
0.0002851	179.4155907	629287.	3.3635684	27.5654681	
0.0002970	186.8912404	629287.	3.3475997	28.5764957	
0.0003089	194.3668900	629287.	3.3328593	29.5875232	
0.0003207	201.8425396	629287.	3.3192108	30.5985508	
0.0003326	209.3181892	629287.	3.3065372	31.6095783	
0.0003445	216.7938388	629287.	3.2947377	32.6206059	
0.0003564	224.2694884	629287.	3.2837247	33.6316334	
0.0003683	231.7451381	629287.	3.2734223	34.6426610	
0.0003801	239.2207877	629287.	3.2637638	35.6536885	
0.0003920	246.6964373	629287.	3.2546907	36.6647161	
0.0004039	254.1720869	629287.	3.2461512	37.6757436	
0.0004158	261.6477365	629287.	3.2380998	38.6867712	
0.0004277	269.1233861	629287.	3.2304956	39.6977987	
0.0004395	276.5990357	629287.	3.2233025	40.7088262	
0.0004514	284.0746854	629287.	3.2164880	41.7198538	
0.0004633	291.5503350	629287.	3.2100229	42.7308813	
0.0004871	306.5016342	629287.	3.1980388	44.7529364	
0.0005108	321.4529334	629287.	3.1871696	46.7749915	
0.0005346	336.4042327	629287.	3.1772665	48.7970466	
0.0005583	350.4095049	627592.	3.1742590	50.0000000	Y
0.0005821	357.6503893	614416.	3.2139161	50.0000000	Y
0.0006059	361.9302521	597385.	3.2686848	50.0000000	Y
0.0006296	365.8690807	581098.	3.3214552	50.0000000	Y
0.0006534	369.5049876	565532.	3.3722859	50.0000000	Y
0.0006771	372.8634754	550649.	3.4212912	50.0000000	Y
0.0007009	375.9770438	536425.	3.4685141	50.0000000	Y
0.0007247	378.8179366	522758.	3.5127548	50.0000000	Y
0.0007484	381.2208805	509373.	3.5495905	50.0000000	Y
0.0007722	383.2322910	496305.	3.5791405	50.0000000	Y
0.0007959	384.8363797	483505.	3.6004660	50.0000000	Y
0.0008197	385.8589316	470738.	3.6079056	50.0000000	Y
0.0008434	386.5498869	458297.	3.6078515	50.0000000	Y
0.0008672	387.1848634	446473.	3.6079400	50.0000000	Y
0.0008910	387.7702561	435224.	3.6080092	50.0000000	Y
0.0009147	388.3076451	424507.	3.6079742	50.0000000	Y
0.0009385	388.8057694	414291.	3.6079220	50.0000000	Y
0.0009622	389.2701030	404544.	3.6102708	50.0000000	Y
0.0009860	389.7015148	395233.	3.6079142	50.0000000	Y
0.0010098	390.0993629	386328.	3.6079777	50.0000000	Y
0.0010335	390.4713474	377807.	3.6094831	50.0000000	Y
0.0010573	390.8216011	369648.	3.6079228	50.0000000	Y
0.0010810	391.1438017	361822.	3.6079499	50.0000000	Y
0.0011048	391.4509541	354319.	3.6078119	50.0000000	Y
0.0011286	391.7346740	347111.	3.6079949	50.0000000	Y
0.0011523	392.0026461	340186.	3.6078370	50.0000000	Y
0.0011761	392.2548645	333528.	3.6080630	50.0000000	Y
0.0011998	392.4913591	327121.	3.6110625	50.0000000	Y
0.0012236	392.7144982	320951.	3.6080018	50.0000000	Y
0.0012474	392.9265400	315008.	3.6122574	50.0000000	Y
0.0012711	393.1229252	309275.	3.6079638	50.0000000	Y
0.0012949	393.3137632	303747.	3.6078096	50.0000000	Y

0.0013186	393.4887201	298407.	3.6078973	50.0000000	Y
0.0013424	393.6605798	293253.	3.6080497	50.0000000	Y
0.0013661	393.8196827	288270.	3.6078011	50.0000000	Y
0.0013899	393.9691486	283450.	3.6079499	50.0000000	Y
0.0014137	394.1164826	278790.	3.6079919	50.0000000	Y
0.0015087	394.6258051	261566.	3.6077939	50.0000000	Y
0.0016037	395.0463670	246328.	3.6102708	50.0000000	Y
0.0016988	395.3996867	232756.	3.6101393	50.0000000	Y
0.0017938	395.6993774	220591.	3.6078047	50.0000000	Y
0.0018888	395.9562035	209628.	3.6077346	50.0000000	Y
0.0019839	396.1752635	199697.	3.6081139	50.0000000	Y
0.0020789	396.3615918	190657.	3.6079255	50.0000000	Y
0.0021740	396.5305018	182400.	3.6077267	50.0000000	Y
0.0022690	396.6729574	174823.	3.6080395	50.0000000	Y
0.0023640	396.8027015	167850.	3.6158962	50.0000000	Y

Summary of Results for Nominal Moment Capacity for Section 1

Load No.	Axial Thrust kips	Nominal Moment Capacity in-kips
1	10.8570000000	396.8027014870

Note that the values in the above table are not factored by a strength reduction factor for LRFD.

The value of the strength reduction factor depends on the provisions of the
LRFD code being followed.

The above values should be multiplied by the appropriate strength reduction
factor to compute ultimate moment capacity according to the LRFD structural
design standard being followed.

Layering Correction Equivalent Depths of Soil & Rock Layers

	Top of	Equivalent

Layer No.	Layer Below Pile Head ft	Top Depth Below Grnd Surf ft	Same Layer Type As Layer Above	Layer is Rock or is Below Rock Layer	F0 Integral for Layer lbs	F1 Integral for Layer lbs
1	2.7500	0.00	N.A.	No	0.00	1062.
2	4.2500	1.4999	Yes	No	1062.	6188.
3	6.2500	1.6762	No	No	7250.	30704.
4	10.2500	6.5987	No	No	37954.	N.A.

Notes: The F0 integral of Layer n+1 equals the sum of the F0 and F1 integrals
for Layer n. Layering correction equivalent depths are computed only
for soil types with both shallow-depth and deep-depth expressions for
peak lateral load transfer. These soil types are soft and stiff clays,
non-liquefied sands, and cemented c-phi soil.

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 1103.0 lbs
Applied moment at pile head = 0.0 in-lbs
Axial thrust load on pile head = 10857.0 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Bending Stress psi*	Soil Res. Soil Spr. Distrib. Stiffness p lb-in^2	Es*H Lat. Load lb/inch	lb/inch

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      0.00     0.2936   5.30E-09      1103.   -0.00545      3301.
6.29E+08       0.00       0.00       0.00
    0.3025     0.2738      4219.      1103.   -0.00544      3876.
6.29E+08       0.00       0.00       0.00
    0.6050     0.2541      8436.      1103.   -0.00540      4452.
6.29E+08       0.00       0.00       0.00
    0.9075     0.2346     12652.      1103.   -0.00534      5027.
6.29E+08       0.00       0.00       0.00
    1.2100     0.2154     16865.      1103.   -0.00526      5602.
6.29E+08       0.00       0.00       0.00
    1.5125     0.1965     21074.      1103.   -0.00515      6176.
6.29E+08       0.00       0.00       0.00
    1.8150     0.1780     25278.      1103.   -0.00501      6750.
6.29E+08       0.00       0.00       0.00
    2.1175     0.1601     29477.      1103.   -0.00485      7323.
6.29E+08       0.00       0.00       0.00
    2.4200     0.1428     33669.      1103.   -0.00467      7895.
6.29E+08       0.00       0.00       0.00
    2.7225     0.1262     37853.      1103.   -0.00447      8466.
6.29E+08       0.00       0.00       0.00
    3.0250     0.1103     42029.      1076.   -0.00424      9035.
6.29E+08    -14.798   486.8424       0.00
    3.3275    0.09540     46000.   988.8781   -0.00398      9577.
6.29E+08    -33.281      1266.       0.00
    3.6300    0.08143     49522.   839.9575   -0.00371     10058.
6.29E+08    -48.769      2174.       0.00
    3.9325    0.06850     52390.   644.5641   -0.00341     10449.
6.29E+08    -58.886      3121.       0.00
    4.2350    0.05666     54470.   424.3893   -0.00310     10733.
6.29E+08    -62.423      3999.       0.00
    4.5375    0.04597     55716.   196.9943   -0.00279     10903.
6.29E+08    -62.864      4964.       0.00
    4.8400    0.03644     56120.    -25.371   -0.00246     10958.
6.29E+08    -59.652      5943.       0.00
    5.1425    0.02808     55726.   -244.434   -0.00214     10904.
6.29E+08    -61.044      7891.       0.00
    5.4450    0.02089     54514.   -468.132   -0.00182     10739.
6.29E+08    -62.206     10807.       0.00
    5.7475    0.01485     52471.   -692.702   -0.00151     10460.
6.29E+08    -61.524     15042.       0.00
    6.0500    0.00990     49604.   -908.752   -0.00122     10069.
6.29E+08    -57.511     21087.       0.00
    6.3525    0.00599     45969.     -1223.  -9.44E-04      9573.
6.29E+08   -115.425     69932.       0.00
    6.6550    0.00305     40803.     -1621.  -6.94E-04      8868.
6.29E+08   -103.866    123811.       0.00
    6.9575   9.53E-04     34258.     -1875.  -4.77E-04      7975.
6.29E+08    -36.104    137459.       0.00
    7.2600  -4.21E-04     27230.     -1909.  -3.00E-04      7016.
6.29E+08    17.0906    147342.       0.00
    7.5625   -0.00123     20421.     -1782.  -1.63E-04      6087.
6.29E+08    53.0729    157224.       0.00
    7.8650   -0.00160     14306.     -1552.  -6.25E-05      5253.
6.29E+08    73.7500    167107.       0.00
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8.1675	-0.00168	9161.	-1269.	5.18E-06	4551.
6.29E+08	81.8719	176990.	0.00		
8.4700	-0.00156	5092.	-974.441	4.63E-05	3996.
6.29E+08	80.5389	186872.	0.00		
8.7725	-0.00134	2083.	-696.126	6.70E-05	3585.
6.29E+08	72.8027	196755.	0.00		
9.0750	-0.00108	32.4113	-452.586	7.31E-05	3305.
6.29E+08	61.3790	206638.	0.00		
9.3775	-8.13E-04	-1209.	-253.206	6.97E-05	3466.
6.29E+08	48.4724	216520.	0.00		
9.6800	-5.72E-04	-1811.	-100.435	6.10E-05	3548.
6.29E+08	35.6986	226403.	0.00		
9.9825	-3.70E-04	-1943.	8.0722	5.01E-05	3566.
6.29E+08	24.0852	236286.	0.00		
10.2850	-2.08E-04	-1757.	55.5481	3.95E-05	3540.
6.29E+08	2.0723	36105.	0.00		
10.5875	-8.35E-05	-1543.	60.8764	3.00E-05	3511.
6.29E+08	0.8635	37554.	0.00		
10.8900	9.12E-06	-1317.	62.2659	2.17E-05	3481.
6.29E+08	-0.09794	39004.	0.00		
11.1925	7.41E-05	-1092.	60.5890	1.48E-05	3450.
6.29E+08	-0.826	40453.	0.00		
11.4950	1.16E-04	-878.387	56.6545	9.07E-06	3421.
6.29E+08	-1.342	41903.	0.00		
11.7975	1.40E-04	-681.829	51.1851	4.57E-06	3394.
6.29E+08	-1.672	43352.	0.00		
12.1000	1.49E-04	-507.143	44.8038	1.14E-06	3370.
6.29E+08	-1.844	44801.	0.00		
12.4025	1.48E-04	-356.644	38.0278	-1.35E-06	3349.
6.29E+08	-1.889	46251.	0.00		
12.7050	1.40E-04	-230.955	31.2689	-3.04E-06	3332.
6.29E+08	-1.835	47700.	0.00		
13.0075	1.26E-04	-129.392	24.8382	-4.08E-06	3318.
6.29E+08	-1.708	49150.	0.00		
13.3100	1.10E-04	-50.308	18.9551	-4.60E-06	3308.
6.29E+08	-1.533	50599.	0.00		
13.6125	9.28E-05	8.5856	13.7587	-4.72E-06	3302.
6.29E+08	-1.330	52049.	0.00		
13.9150	7.57E-05	49.9523	9.3198	-4.55E-06	3308.
6.29E+08	-1.116	53498.	0.00		
14.2175	5.97E-05	76.6060	5.6546	-4.19E-06	3311.
6.29E+08	-0.904	54948.	0.00		
14.5200	4.53E-05	91.3350	2.7372	-3.70E-06	3313.
6.29E+08	-0.704	56397.	0.00		
14.8225	3.28E-05	96.7698	0.5109	-3.16E-06	3314.
6.29E+08	-0.523	57847.	0.00		
15.1250	2.23E-05	95.2933	-1.101	-2.61E-06	3314.
6.29E+08	-0.365	59296.	0.00		
15.4275	1.39E-05	88.9853	-2.185	-2.08E-06	3313.
6.29E+08	-0.232	60746.	0.00		
15.7300	7.28E-06	79.5966	-2.832	-1.59E-06	3312.
6.29E+08	-0.125	62195.	0.00		
16.0325	2.34E-06	68.5471	-3.133	-1.16E-06	3310.
6.29E+08	-0.04101	63644.	0.00		

16.3350	-1.16E-06	56.9418	-3.170	-8.00E-07	3309.
6.29E+08	0.02085	65094.	0.00		
16.6375	-3.47E-06	45.5982	-3.016	-5.05E-07	3307.
6.29E+08	0.06365	66543.	0.00		
16.9400	-4.83E-06	35.0830	-2.737	-2.72E-07	3306.
6.29E+08	0.09041	67993.	0.00		
17.2425	-5.45E-06	25.7511	-2.384	-9.65E-08	3304.
6.29E+08	0.1042	69442.	0.00		
17.5450	-5.53E-06	17.7862	-1.999	2.91E-08	3303.
6.29E+08	0.1079	70892.	0.00		
17.8475	-5.24E-06	11.2396	-1.613	1.13E-07	3302.
6.29E+08	0.1043	72341.	0.00		
18.1500	-4.71E-06	6.0652	-1.250	1.63E-07	3302.
6.29E+08	0.09571	73791.	0.00		
18.4525	-4.05E-06	2.1506	-0.924	1.86E-07	3301.
6.29E+08	0.08403	75240.	0.00		
18.7550	-3.35E-06	-0.657	-0.643	1.91E-07	3301.
6.29E+08	0.07088	76690.	0.00		
19.0575	-2.67E-06	-2.531	-0.410	1.82E-07	3301.
6.29E+08	0.05746	78139.	0.00		
19.3600	-2.04E-06	-3.647	-0.225	1.64E-07	3301.
6.29E+08	0.04466	79588.	0.00		
19.6625	-1.48E-06	-4.174	-0.08346	1.41E-07	3301.
6.29E+08	0.03306	81038.	0.00		
19.9650	-1.01E-06	-4.264	0.01830	1.17E-07	3301.
6.29E+08	0.02300	82487.	0.00		
20.2675	-6.33E-07	-4.051	0.08661	9.28E-08	3301.
6.29E+08	0.01464	83937.	0.00		
20.5700	-3.38E-07	-3.643	0.1276	7.06E-08	3301.
6.29E+08	0.00796	85386.	0.00		
20.8725	-1.20E-07	-3.130	0.1473	5.11E-08	3301.
6.29E+08	0.00287	86836.	0.00		
21.1750	3.25E-08	-2.578	0.1511	3.46E-08	3301.
6.29E+08	-7.91E-04	88285.	0.00		
21.4775	1.31E-07	-2.036	0.1437	2.13E-08	3301.
6.29E+08	-0.00325	89735.	0.00		
21.7800	1.87E-07	-1.536	0.1293	1.10E-08	3301.
6.29E+08	-0.00471	91184.	0.00		
22.0825	2.11E-07	-1.098	0.1110	3.43E-09	3301.
6.29E+08	-0.00539	92634.	0.00		
22.3850	2.12E-07	-0.730	0.09120	-1.84E-09	3301.
6.29E+08	-0.00550	94083.	0.00		
22.6875	1.98E-07	-0.435	0.07175	-5.20E-09	3301.
6.29E+08	-0.00521	95533.	0.00		
22.9900	1.75E-07	-0.209	0.05383	-7.06E-09	3301.
6.29E+08	-0.00466	96982.	0.00		
23.2925	1.47E-07	-0.04407	0.03814	-7.79E-09	3301.
6.29E+08	-0.00398	98431.	0.00		
23.5950	1.18E-07	0.06845	0.02502	-7.72E-09	3301.
6.29E+08	-0.00325	99881.	0.00		
23.8975	9.07E-08	0.1382	0.01453	-7.12E-09	3301.
6.29E+08	-0.00253	101330.	0.00		
24.2000	6.63E-08	0.1745	0.00652	-6.22E-09	3301.
6.29E+08	-0.00188	102780.	0.00		

```
   24.5025   4.56E-08     0.1860   7.38E-04  -5.18E-09      3301.
6.29E+08   -0.00131    104229.       0.00
   24.8050   2.87E-08     0.1802   -0.00315  -4.12E-09      3301.
6.29E+08  -8.36E-04    105679.       0.00
   25.1075   1.56E-08     0.1634   -0.00551  -3.13E-09      3301.
6.29E+08  -4.61E-04    107128.       0.00
   25.4100   5.96E-09     0.1405   -0.00667  -2.26E-09      3301.
6.29E+08  -1.78E-04    108578.       0.00
   25.7125  -7.59E-10     0.1152   -0.00695  -1.52E-09      3301.
6.29E+08   2.30E-05    110027.       0.00
   26.0150  -5.07E-09    0.09016   -0.00663  -9.27E-10      3301.
6.29E+08   1.56E-04    111477.       0.00
   26.3175  -7.49E-09    0.06716   -0.00592  -4.73E-10      3301.
6.29E+08   2.33E-04    112926.       0.00
   26.6200  -8.50E-09    0.04722   -0.00501  -1.43E-10      3301.
6.29E+08   2.68E-04    114375.       0.00
   26.9225  -8.53E-09    0.03079   -0.00403   8.16E-11      3301.
6.29E+08   2.72E-04    115825.       0.00
   27.2250  -7.91E-09    0.01794   -0.00307   2.22E-10      3301.
6.29E+08   2.56E-04    117274.       0.00
   27.5275  -6.92E-09    0.00846   -0.00220   2.98E-10      3301.
6.29E+08   2.26E-04    118724.       0.00
   27.8300  -5.74E-09    0.00195   -0.00144   3.28E-10      3301.
6.29E+08   1.90E-04    120173.       0.00
   28.1325  -4.53E-09   -0.00205  -8.23E-04   3.28E-10      3301.
6.29E+08   1.52E-04    121623.       0.00
   28.4350  -3.36E-09   -0.00405  -3.40E-04   3.10E-10      3301.
6.29E+08   1.14E-04    123072.       0.00
   28.7375  -2.28E-09   -0.00454   8.73E-06   2.86E-10      3301.
6.29E+08   7.82E-05    124522.       0.00
   29.0400  -1.29E-09   -0.00401   2.32E-04   2.61E-10      3301.
6.29E+08   4.47E-05    125971.       0.00
   29.3425  -3.84E-10   -0.00288   3.38E-04   2.41E-10      3301.
6.29E+08   1.35E-05    127421.       0.00
   29.6450   4.61E-10   -0.00158   3.32E-04   2.28E-10      3301.
6.29E+08  -1.64E-05    128870.       0.00
   29.9475   1.27E-09  -4.88E-04   2.20E-04   2.22E-10      3301.
6.29E+08  -4.57E-05    130320.       0.00
   30.2500   2.07E-09       0.00       0.00   2.21E-10      3301.
6.29E+08  -7.53E-05     65884.       0.00
```

* This analysis computed pile response using nonlinear moment-curvature relationships. Values of total stress due to combined axial and bending stresses are computed only for elastic sections only and do not equal the actual stresses in concrete and steel. Stresses in concrete and steel may be interpolated from the output for nonlinear bending properties relative to the magnitude of bending moment developed in the pile.

Output Summary for Load Case No. 1:

```
Pile-head deflection              =     0.29360386 inches
Computed slope at pile head       =     -0.0054498 radians
Maximum bending moment            =         56120. inch-lbs
Maximum shear force               =         -1909. lbs
Depth of maximum bending moment   =     4.84000000 feet below pile head
Depth of maximum shear force      =     7.26000000 feet below pile head
Number of iterations              =             12
Number of zero deflection points  =              6
Pile deflection at ground         =     0.12471389 inches
```

Pile-head Deflection vs. Pile Length for Load Case 1

Boundary Condition Type 1, Shear and Moment

```
Shear      =           1103. lbs
Moment     =              0. in-lbs
Axial Load =          10857. lbs
```

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
30.25000	0.29360386	56120.	-1909.
28.73750	0.29277576	56027.	-1915.
27.22500	0.29252849	56090.	-1921.
25.71250	0.29397748	55989.	-1900.
24.20000	0.29253494	56014.	-1907.
22.68750	0.29375383	56012.	-1902.
21.17500	0.29399141	56065.	-1911.
19.66250	0.29329419	56050.	-1920.
18.15000	0.29388434	56004.	-1906.
16.63750	0.29336045	56001.	-1916.
15.12500	0.29392894	56007.	-1905.
13.61250	0.29288431	56005.	-1925.
12.10000	0.29345686	56007.	-1919.
10.58750	0.29432018	55993.	-1896.
9.07500	0.29512709	55959.	-2015.
7.56250	0.61757637	55119.	-2753.
6.05000	-8.7799962	-19618.	3539.
4.53750	-3.8936393	4270.	1275.

Summary of Pile-head Responses for Conventional Analyses

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, V, lbs, and Load 2 = Moment, M, in-lbs
Load Type 2: Load 1 = Shear, V, lbs, and Load 2 = Slope, S, radians
Load Type 3: Load 1 = Shear, V, lbs, and Load 2 = Rot. Stiffness, R, in-lbs/rad.
Load Type 4: Load 1 = Top Deflection, y, inches, and Load 2 = Moment, M, in-lbs
Load Type 5: Load 1 = Top Deflection, y, inches, and Load 2 = Slope, S, radians

Load Case No.	Load Type 1	Load Pile-head Load 1	Load Type 2	Load Pile-head Load 2	Axial Loading lbs	Pile-head Deflection inches	Pile-head Rotation radians	Max Shear in Pile lbs	Max Moment in Pile in-lbs
1	V, lb	1103.	M, in-lb	0.00	10857.	0.2936	-0.00545	-1909.	56120.

Maximum pile-head deflection = 0.2936038550 inches
Maximum pile-head rotation = -0.0054497529 radians = -0.312248 deg.

The analysis ended normally.